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Game Industry Research

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Game Industry Research

How to get a job in the game industry.

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This paper details the information attained about the needs of the game industry local to Worcester, MA. It is intended to provide insight into the hiring process and details as to how to become a part of this fledgling industry.

Table of Contents

Section 1 - Introduction

The aim of this project is two-fold: to document the current state of the video games industry, as it pertains to the hiring process and what factors affect these decisions, and to provide an accessible and informative resource for those seeking employment in this field, and wish to know what skills and qualifications will maximize their chance of success. More specifically, this project aims to dispel some of the myths regarding employment for students that have recently graduated from college and have no industry experience.

A paradoxical situation has arisen, where game companies often seek employees with years of experience, or at least several major projects on their resumes, even for seemingly entry-level positions, as is echoed by the 2006 book on video game careers, *Paid to Play*:

> As you begin hunting for your first job in the video game business, be prepared for a fair amount of disappointment and frustration. Most jobs require that you have previous experience in the field, and the only way to get that experience is by having held a similar position, which you need previous job experience to get, and so on.[1]

Students and other developers that have set their sights on joining these companies are often left at a disadvantage, for without prior experience or major projects under their belts, how are they to obtain or even hope to compete for these highly coveted positions? The aim of this project is help show, through interviews with active and experienced game developers, what companies in hiring positions are looking for specifically in applicants. More importantly, this project will help show what can give applicants an advantage in this process despite the

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[1] Hodgson et al, p 240.

rigid structures in place for filtering out candidates, and it will address the problem of needing experience for entry-level jobs.

The results of this project, in addition to this paper, will be new resources for people to use for educating themselves on this issue. The project team created a website which contains complete audio recordings of all fifteen interviews conducted over the course of the project, in an easy to use interface, which will hopefully serve as a new and popular source for those looking for information on how to enter this industry. In addition, the team wrote an article that will be submitted to major video game related publications both in print and on the Internet, which will serve as a companion to the aforementioned website. Our aim for the article was for it to be approachable, humorous, and most of all informative and relevant to the problem.

In order to meet these goals, the team devised a process for soliciting interviews with game companies in the Northeast United States. This process has been documented and will be discussed in section four, titled "The Process". One major theme in this project and the paper as well, is the problem of approaching game companies and actually scheduling time to sit down with them to conduct the interview. The game industry is notoriously secretive and not forthcoming with their company details due to non-disclosure agreements (NDA) and the fast-paced nature of their work, which keeps them indoors and very focused on their current projects. Some companies have even taken on very ominous and almost mythical personas due to the tight-lipped nature of their work and the desire to control what gets released to the public. Said companies, such as Valve and Blizzard, have more in common with Willy Wonka's Chocolate Factory than a software company to the average person, and so a big challenge in

this project was being persistent and breaking through this façade to be able to sit down with real developers and find more specific, authentic answers than those that would be found on a job posting.

The possible benefits of such a project are staggering. Those that are confused as to what skills and traits are absolutely necessary for employment need only view our website or read the article produced at the end of the project, to find extremely valuable and concise information that will help guide them in their studies, research, and job applications. The team itself has also benefited greatly from this project, as we were able to meet face-to-face with many developers and establish contacts of our own. As will be apparent in the later sections and in the results of the data gathered, people-networking is paramount to success in landing a job in this field. The project itself was hugely beneficial to the team members as we built new contacts and friendships with the interviewees.

Team Information

Advisor, Joe Farbrook –

Professor of Art and Interactive Media and Game Development at WPI. Serving as an intermediary between the professional game industry and an academic institution that strives to train students who wish to enter this field, he has taken part in many conferences and discussions on this subject matter and has been interested in further investigative research of the game industry in general. His artistic research includes using video game engines to create

virtual art installations as well as exploring the intersections between video, video games, and sculpture.

Derrick Barth –

Computer Science 2012 - A transfer student with a wide range of work experience, including an internship in the video game industry. Has a strong interest and passion for the philosophy and social issues surrounding technology, specifically video games and human-computer interaction. Game-related interests include experimental game design, storytelling, and player immersion.

Andrew "AJ" Lindstrom –

Computer Science, Interactive Media & Game Development 2012 - A junior at Worcester Polytechnic Institute, has a love of video games and a passion for programming. Also has an interest in designing gameplay and AI elements.

Eric Prouty –

Computer Science 2012 - A junior at WPI, member of the varsity Swimming and Diving team, and interning for Juniper Networks. Currently working towards becoming a software engineer, and has an interest in AI and tool development. While not particularly working towards a job in the game industry, has always had an interest in video games and worked on a few game related projects.

Eric Walston –

Computer Science, Interactive Media & Game Development 2012 - A Senior Assistant for the Computer Science department at WPI and Tutor for the Academic Resource Center. I'm most interested in procedurally generated content and procedural game design but also enjoy graphics and network programming.

Section 2 - History

Despite the video game's fifty year history, the industry that has built around it is very young and untested when compared to other technology-based fields such as film, music, and the home computer. The technology started merely as a technical demonstration on a computer, and from then on the idea of playing simulated sports, board, and adventure games on a computer became ubiquitous and natural to the world of computer users. What began as a multiplayer tennis game used to create a more dynamic and exciting demonstration of an analog computer hooked up to an oscilloscope would usher in a new era in entertainment; It is this application, titled Tennis for Two, that is considered by many to be the first video game[2] which would lead to video arcades being a prominent business venture which dominated for years before games reach the home personal computer (PC).

What would follow is a technological revolution. Once personal computers were invented, companies released variants on these with a sole purpose: to facilitate playing video games. In addition to the arcade industry, these "consoles" ushered in a new hobby and way of life for many technophiles for the latter portions of the twentieth century. However, despite the popularity and exponential growth, the video games industry was in its infancy and still very

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[2] www.bnl.gov

much a hobbyist and niche pursuit and had certainly not permeated the mainstream culture as it has today.

It was during these times, namely the 1980's, that many young and technically savvy hobbyists could create games of their own, if they had access to the tools and had some assembly language experience. The technology was not uniform yet and many platforms existed for development, as the early operating systems were constantly in flux, the computer hardware itself was expanding and advancing at an exponential rate.

The remarkable thing about the video game itself at this time was that it could be developed with only a small group of people, and maybe not even necessarily more than one person. The paramount hurdle of the time was the programming, as the artistic elements were so limited that it did not take a studio comprised of classically trained artists, as it does today. One person could, theoretically, develop their own underlying code and do their own sprite (2-dimensional) art or have a friend do it, and the end product could be a finished, polished, video game ready for sale. Of course there were still other challenges to be surmounted such as distribution and mass producing the game, but the feat of developing the game itself was not an effort that required large teams, or studios, or hierarchies of employees; it was a hobbyist undertaking that was enjoyed by those with the technical know-how and a love for the medium.

Contrasting Histories

Such points of entry are evident in the stories of game industry veterans that entered the field when it was still young. Brian Moriarty, now a Professor of Practice at Worcester

Polytechnic Institute, has had an illustrious career as a game designer, working for such companies as Infocom and Lucasarts. Such names are buzzwords today in the gaming community; their games are staples of the industry. But how did they get their start, how did Moriarty enter their ranks, and how has the hiring climate changed since then? This is one of the central themes of the project. As we interviewed Moriarty and other veterans such as Kent Quirk, we saw how vastly different their experience was to that of the newer developers who entered the industry in the nineties and the last decade.

The key point of interest regarding such places as Infocom, is how they operated from their inception and how they recruited new talent. The people staffed there were hobbyists of their fields, proficient in low-level computer programming and garnering a passion for creating interactive fiction as was never possible with pen and paper. Their catalog is comprised of groundbreaking titles such as the Zork series and Moriarty's own trilogy of interactive adventures. Another interesting fact is that Infocom, and others like it, were labeled as 'software companies', not 'game developers' in their time. The game industry was not ubiquitous enough to warrant its own vocabulary just yet, and as such, it wasn't attracting legions of bright-eyed young game development students as it is today; the attraction was with passionate computer-savvy generalists such as Moriarty who forced their way in on willpower and technical prowess. Moriarty states in our interview with him that he answered a magazine ad looking for developers who were familiar with the technology they were using. A digression could be made here about the nature of the advertising, being print-based as they were before classifieds moved toward electronic spaces such as the Internet, and that a requirement for employment was familiarity with a very specific, very low-level technological area.

This required expertise in a small subset of the technology available at the time, making candidates highly specialized and sought after for their unique talents in various computing systems. An equivalent modern requirement would be for every developer to have extensive knowledge of specific game engines such as Unreal, and be well versed in all their sub-systems. Thankfully, the technology has abstracted enough such that young developers can learn the concepts rather than every particular engineering hurdle, and then apply these concepts to many different game platforms. That is not to say that technical challenges are not abound, if anything they have compounded due to the increased complexity and advancement of the underlining systems, but front-end tools are now common-place which allow for less technical-savvy users to create and design entire worlds without writing a line of code, which. However, whole teams of seasoned engineers must support these tools. In the days of Infocom, though, most everyone wore many "hats" and would often sit in positions that required creating writing, code, asset integration, and other roles that these days are whole fields in themselves.

For contrast, consider the story of another Professor of Practice in WPI's game development major, Britton ("Britt") Snyder, whose office is adjacent to Moriarty's. Britt was a music major at the Berklee School of Music, and decided to pursue his fine art interests. After studying at art studios such as Watts Atelier, learning traditional art techniques completely independent of game technologies, Britt was hired as an intern at the now legendary Blizzard Entertainment, a sort of modern-day Infocom. The remarkable facet of Britt's entry is that internships even existed in the first place. This shows how exponentially the industry had grown; to the point where they could actively look for college recruits and have them take on small, focused roles on large projects. This is in stark contrast to Brian Moriarty's roles as

designer, engineer, and producer on a small team making what was, at the time, a large project that needed a staff in the single digits rather than hundreds as Britt's did.

Britt's role entailed him applying his fine art training in a more technical environment, creating 3-dimensional models of game characters and environments. This required a lot of technical training on his part, using art theory and design techniques in a way that was applicable to video game technology. Yet, he was far removed from the lower level workings of the game engineers, as he was able to use graphical-based tools to create and integrate his work. Comparatively, Moriarty's work required him to be familiar with all aspects of the technology Infocom employed (and created) at every juncture. This shows how over a span of just ten years, developers have been able to abstract their roles and work on specific subsets of their fields, rather than being jack-of-all-trade programmers. Also of note, of course, is their entry, with one answering a paper ad looking for a technical and creative expert, and the other landing an internship looking for a fine artist.[34]

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[3] Snyder, Britt
[4] Moriarty, Brian

Section 3 - The Question

This leads to the question our project hopes to answer; how does one gain entry to the game industry today? Due to the relatively short age of the industry in comparison to other technologies such as film, the question is not easily answered. Compared to many other industries, the chief products of the trade have not been around for a significant amount of time like, say, the automobile or the computer itself. Video games as product have only become household items within the last couple decades and are still constantly evolving as computer hardware is upgraded and new input devices are invented.

With this relatively new industry, one would expect the hiring process to be not unlike similar fields where one needs only a proficiency in the underlying mechanics needed for production such as art, programming, or production, and to be granted employment based on skills alone. This theory is one that our research effort wishes to explore. One aspect our team kept in mind before pursuing the study is the dynamic nature in which games are created. Game projects require a sizable staff, which often includes teams comprised of disciplines such as concept artists, engineers, and creative designers which create the blueprints by which the project is made. Each one of these individuals bring an aspect of thinking that is seemingly worlds apart from their co-workers yet in many cases they are seated directly next to one another. An addition point worth noting are the myriad of other departments within any given game development company, such as quality assurance, production, management, information technology, and human resources. Once these are listed, it appears that at face value a game company is strikingly similar to other software-based businesses.

Those who make up the development team have integral roles in making the game entertaining and successful. Each one of these positions is vital in creating a marketable product that the end user will enjoy and play. So the question, and the point of this project, is how does one procure such a position? What steps are required to work for one of the "triple A" (AAA) studios which create the large scale games, or a member of a smaller independent studio that is exploring new untested ideas? How to become a part of an art-driven team that is expressing themselves through their video games and melding storytelling with gameplay?

Answering this question entailed visiting companies within a reasonable travel radius, interviewing those who have a hand in the hiring process, including those who perform some of the various tasks required for game production such as art, engineering, and quality assurance. Our aim was to discover what these interviewees may be looking for in college graduates, and what may help in the job interview process. Ultimately, we want to use this information to help the budding game developer achieve what they presumably desire most, a position in the video game industry, and to give them an advantage in joining the ranks of those we interviewed.

First, from a very general standpoint, we asked ourselves what our perceptions were regarding obtaining a game-related position. Here are some testimonies from the team members, which helped aid us in our preparation for interviews as well as direction for the project:

Derrick –

"I've taken a slightly more pessimistic view regarding video game employment, and the irony of me being one of the few students with a job in the industry is not lost. After obtaining my internship through what I would consider unconventional means compared to most entry-

level professional positions, my assumption that game job opportunities come more by luck than by established processes was solidified. I've always had a sneaking suspicion that obtaining such jobs was a matter of being at the right place at the right time, and saying the right thing to the right person, rather than simply being qualified and applying to a job posting. Oddly enough, my internship was gained by way of a mock interview, which eventually led to a real one, and I happened to obtain the mock interview by sheer stroke of luck in timing at the school's career development office."

Eric P –

"I have always felt that getting a job in the game industry meant that you just knew someone. Why I had this preconceived notion I am not completely sure, but I assumed it was a small industry and that the only viable way in was if you knew someone that could point you in the right direction. I also felt that the starting positions, at least for programmers, were always 'jack of all trades' positions; in which you are expected to be able to do a little bit of everything. As a result these lead me to the conclusion that the industry would be looking mainly at technical proficiency as their main point during the hiring process. Having the ability to discuss and show a lot of proficiency would be vital in the hiring process.

AJ –

"I expected the game industry, which is relatively young, to be more laid back in comparison to other similar fields, such as not focusing on a traditional business model but

more on a personality basis alongside an expectation of great skill. Those who are programmers have to know a lot about all aspects of computer science and mathematics, so there is already an expectation that you are knowledgeable of the fundamentals of these disciplines. I assume programmer applicants will need to complete a technical test to prove their knowledge and also show in a regular interview that they are able to work with other people and accept criticism, which is something I don't normally associate with engineers. I believe it is harder for artists to due to the difficulty in learning the concepts.   I also believe that the portfolio, the work you can show the employer, is worth much more than, say, your personality. Though I expect artists especially will also need to be able to demonstrate the ability to receive criticism."

Eric W –

"I believe that getting a job in the games industry will be a challenge due to the competitive nature of the field. I know the majority of game development is done in small teams of developers and there are not that many positions available in well established companies. I also know that the average salary for a game programmer is significantly less than the average for computer scientists outside of the games industry, supposedly due to the great demand for jobs. As a programmer it seems that some of the most difficult and intricate programs are games. With many different disciplines of computer science coming together and needing to all run simultaneously at thirty frames per second I have no doubt that to do this efficiently and effectively requires very strong technical abilities from the programmers. I

expect that to get and keep a job in the games industry will require strong technical skills and to be a better applicant that the rest of the potential employees."

Professor Farbrook –

"I have always believed that a strong portfolio (artistic, technological, or both) would be what would get the attention of those that are hiring in the Game Industry. I also think that personal contact is important. If one can get a face-to-face interview, then they can give an impression of who they are and what they are like. Game companies seem much like small communities, where people are very concerned with whether or not they will like the person sitting next to them."

In order to find real data to prove or disprove our own hypotheses, we devised a communication scheme that entailed a carefully drafted email message, which is detailed in section four. In attempting to schedule interviews, hundreds of emails were sent to known contacts as well as those that we found using the Internet and search engines, as well as phone calls and personal contacts. Receiving replies to our queries proved to be as difficult as obtaining employment, as we had to carefully navigate through Public Relations representatives, legal jargon, and a busy timetable for most developers around the holidays. In preparing the email correspondence, we had professors from the Interactive Media & Game Development department review the emails.

Over the course of B and C terms as well as the winter break, we received replies from a small fraction of those that we contacted, which still resulted in a favorable number of unique

game company representatives to interview. To facilitate getting successful responses, the email message was tailored to be quickly read and easily processed. Initial responses were received by local companies, whose members are on the advising board for WPI's IMGD program, many of them well known to the WPI and local gaming community who have given a lot of effort to improving the Boston area game development scene and continue to show support, such as Darius Kazemi and Kent Quirk. Our own professors as well as personnel from the WPI Career Development Center were instrumental in assuring a successful Interactive Qualifying Project, and we are immensely grateful for their support.

A question can be raised regarding why we were so successful in receiving replies from some game companies while not others. One obvious attribute to our success was our persistence with sending the email messages. This display of tenacity and passion for our work not only helped us in the project, but is also something that is highly respected in the industry, as we learned through our interviews. Still we wonder, "Why were we successful?" The answer, we found, was not only our drive but that we piqued the curiosity of those we emailed. It became apparent through the interviews that these developers are well aware of the passion that students in game-related majors and pursuits carry. One technique that we can recommend based on our study is to try and spark curiosity in those who are reviewing your work, and leave them something to make them wonder, such as a unique point of view or a novel take on some aspect of game development, such as this study. A good deal of those we met are very interested in the results of this project and want to see how much interest it gains in the game development community.

What we also discovered are the reasons why we could not get replies from many of the

developers we contacted. Being a very fast-paced industry, the prospective interviewees were

of course very busy. We surmised this was due to the "crunch time" that is prevalent in game

development, where a massive effort is made near the end of a milestone to meet deadlines

which results in very long work days. It was revealed that it was not crunch time, but that the

winter and early spring months are when many developers are on vacation or attending

conferences. During the duration of our project, The Game Developer's Conference (GDC) and

the Penny Arcade Expo (PAX) were underway which attracts many game developers to attend

and display their products and get feedback from the public. Some of the contacts instructed

us to wait until these conferences were over to initiate dialog about interviews. Our final

sampling of game companies included many more "small shop" independent studios than large

companies, but we found that the information gathered had a lot of similarities as well as the

expected differences between them, which will be evident in the breakdown of their responses

in section 5.

The most important piece of information we gleaned is that there is no standard for

skills or hiring in the industry. Each studio has different policies and varying ways of

approaching how to hire an individual. Some place priority on talent, others look for passion,

but all studios require a combination of both. Many of the companies print what they look for

in an employee on their website. As an example, Valve Software (the developer of such hit

titles as Half-Life, Left 4 Dead and Portal) has a job postings section on their website.[5] Being an

established and oft-revered staple in the games industry, they have a high standard for entering

employees. They start with generalized job titles and add more descriptive information in the

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[5] http://www.valvesoftware.com/jobs/

details, but what we as a project group found to be important for such positions is the human element and the understanding that not only do you have to excel at what you do and have a refined skill set, you have to be able to work in a team environment and understand the complexities of this new and exciting business.

Section 4 - Process

The process of obtaining our data for this project was an interesting experience in public relations. The first and foremost thing to take from this was that there are many individuals who want to talk to you. A trend that appeared very early in our project was the willingness of professionals, working for both companies large and small, to talk to those interested in their trade. While this is not to say that it was simple to get all of our data, there were many hardships that had to be overcome; overall it is true that if you are genuinely interested there are many people out there who are willing to talk to you about it.

To begin our research we focused on collecting information regarding general contact information for local companies, mainly within reasonable driving distance from Worcester, MA. Focusing on these local companies allowed us to narrow our scope so that we could focus on a discrete section of the game industry. While our research will most likely hold true to other sections of the country, this is a statement that would need to be studied later in more detail, and perhaps warrants a project of its own. Unfortunately, our search for contact information was not as prolific as we would have hoped. Company websites would rarely provide email addresses or phone numbers and when they were available they were intended as a generic email addresses for feedback and general questions, which confirms their secretive nature as outlined in section one. We attempted to contact them through these means but the

vast majority of those emails were left unanswered.

Initially, our best results for this were to look into their hiring process specifically. This generally provided us with a public email address that we could send questions regarding open positions at the company. This made websites like gamasutra.com invaluable early on, as they provide a vast collection of job postings. From there our team could pick out the studios that fit our selected criteria ensuring that it would reach someone with at least a small sway over the hiring process. In terms of the smaller companies this would often be a lead on the team, or someone who we would specifically want to talk to, as they often do not have a large human resources department to handle such inquiries. Those provided us with the best results. A reply from them meant that we now had a specific individual, and an email address, to correspond with. Emails to a public address within a larger company, approaching the AAA status, were most often left un-responsive or quickly shut down with a generic automated response.

This was the hardest step in our process of getting the data set, simply getting the first few companies to respond to us. Our first positive response, along with follow-through of setting up a time and place for an interview, was several weeks after the initial emails were sent out in B term. Within this time frame, a vast majority of the emails to larger companies came back with a simple default response. A minor few expressed their concern with talking to a group whose work would eventually be published in a paper, and as was stated before, the rest were simply left unanswered. For this portion of the process persistence was the key factor in getting a response. After a week of unresponsiveness the initial email was tweaked and re-sent in hopes that it would not go under the radar.

Once we managed to set up our first few interviews, the process became significantly more streamlined. The local community around Boston and the Massachusetts area is tight-knit in that many individuals know those working for different studios, or perhaps have worked with them in the past. This provided us with the essential foot in the door that we desperately needed. Through interviewing one person, we could often learn of others they have worked with who would be interested in helping out a project such as ours. The community spirit and eagerness to see the industry thrive was greatly beneficial to the success of this research. As a result, having a specific name and contact information to use proved vastly more effective than communication with the company in general. Having help from those within the industry proved to the most critical aspect of obtaining this data.

There were also several channels provided to us by Worcester Polytechnic Institute. Through our local career development center we were able to get someone who had personal contacts throughout the industry. This help was provided by David Ortendahl, who was willing to send emails on our behalf to several companies that the school maintained contact with. This provided us with an extra weight to our emails as it was coming from an already trusted source. This ensured quicker and more reliable responses. From there it was much simpler to determine if they could be of assistance to us and to set up a time for the interviews. Once we began talking to a specific individual it was often easy to go through the rest of the process. As can be said for a lot of things, getting your foot in the door was the hardest part.

The next channel provided to us by WPI was through the faculty. Some of our professors have worked in the games industry in the past. They often knew specific contacts that we could ask for help in getting things moving. Especially helpful were the contacts we

found on the Interactive Media and Game Development (IMGD) advisory board. These were often founders, or heads, of local companies that were eager to help out a student-run research effort. They were also beneficial in that they already understood what we were attempting to do and how the school functioned in respect to the IQP requirement. Almost all of those contacted on the board helped in some way, either offering interviews themselves, or sending us recommendations for whom else we could contact.

In the end the biggest thing to take from these initial contacts is persistence and realizing that getting the foot in the door is the most difficult part. It seems that there is a definite willingness to assist passion and dedication throughout the industry. It is also good to note that there are many connections to the game industry through schools and other experiences that can be used to facilitate this initial contact.

The email that we used to contact these companies went through several iterations before we found one that received generally good responses. Our first set of emails that we sent out to many companies remained formal and contained a good deal of information regarding what we were attempting to do, and how their particular help would fit into our project. The first email stated this:

"Hello,

We are a student research group from Worcester Polytechnic Institute, working under the supervision of Professor Joseph Farbrook.

Our group is collecting information on what game companies are looking for in job applicants. Our goal is to connect the needs of the game industry to potential employees.

This project will provide positive exposure for your company in a publication we intend to submit to major game magazines, in addition to a website which will host our results.

We would like to personally interview someone with hiring authority in your company. The interview will require no more than 30 minutes, and no prior preparation is needed.

Active World's participation in this informal study would be greatly appreciated.

If you are interested, please reply to this email or contact GIResearch@wpi.edu at your earliest convenience to make arrangements.

Sincerely,

Eric Walston,
Eric Prouty,
AJ Lindstrom,
Derrick Barth"

As one can see, the word count on this email is fairly high and it contains a lot of white space and appears to fill up a substantial "wall of text". This email resulted in only one company contacting us back looking for information as to what we would like to do. However, tour reply was left unanswered, which could be due to many factors, but it still shows that this email was highly ineffective as it resulted in no positive responses.

For our second iteration we condensed and shortened the email to contain fewer words and less white space. We also added a deadline to express that we had a time constraint and hopefully would elicit a faster response:

"Hello,

We are a student research group from Worcester Polytechnic Institute. We are collecting information on what game companies are looking for in job applicants. Our goal is to connect the needs of the game industry to potential employees.

We would like to personally interview someone with hiring authority in your company. The interview will require no more than 30 minutes, and no prior preparation is needed.
 [Company's] participation in this informal study would be greatly appreciated.

If you are willing to help, please reply to this email or contact GIResearch@wpi.edu soon to

make arrangements. We would like to interview you at some point before the 18th of February. Thank you for your time.

Sincerely,

Eric Walston,
Eric Prouty,
AJ Lindstrom,
Derrick Barth"

This set of emails also only generated one response but it was received quicker and contained an attempt at setting up a time for the interview, rather than simply a request for more information. This is most likely because subjects stopped reading the original long email before they got enough information to understand our project. This is later supported as we iterate towards a shorter opening email.

After this attempt, we approached the situation from a different angle by having someone with connections already established within the industry send the emails on our behalf. This is when David Ortendahl stepped in to help us with our project. He sent emails to his own contacts while we continued to attempt to contact the companies that we had researched. With our help he wrote an email as he saw fit based on his previous type of communication and experience. The resulting email is as follows:

"Hi [name],

I hope this email finds you well as February marches on by!

The Worcester Polytechnic Institute (WPI) Career Development Center continues to work with our employers and WPI student populations to facilitate conversations and recruiting efforts. WPI's Interactive Media & Game Development (IMGD) program has not only been rated Top 8 Game Design program in the US, it is now one of the Top 6 Game Development programs to watch!

Recently, a student group consisting of IMGD students has been in touch as they are collecting information from Game Development Companies and researching desirable attributes managers pursue as they review applicants. The students' goal is to gather a "pulse" and communicate the skill needs of the game industry with the WPI faculty and community. They would like to interview you or a colleague from [company] at some point before the end of the month. If you are willing to help, please contact GIResearch@wpi.edu soon to make arrangements.

As a reminder, the WPI Career Development Center will post your job descriptions FOR FREE online and we also have complimentary interview space on campus. If you have opportunities available for WPI students or alumni, we have a few tables left for our Summer Internship & Career Fair on February 17th- If your company is under 50 employees- please ask us about a small business discount! www.wpi.edu/+CDC

Thanks for your time and consideration-
-Dave Ortendahl"

This email garnered us a few responses, mainly due to the connections held by Mr. Ortendahl. Generally all of the responses were very short and to the point, and were responded to quickest if we replied with a few short sentences. It is for this reason that we came to the conclusion that without prior connections, a simple and short email was the most effective. However, as stated earlier in this paper, connections proved to be a much more substantial aid than any possible initial email we could send out.

From here we moved onto communicating with the members of the IMGD advisory board. Since we had determined that prior connections were the most effective way of garnering the interviews, we moved away from the longer first contact emails to more personal ones. In this situation, Professor Farbrook sent out the initial email as he had access to the email alias associated with the advisory board. He would then forward email addresses of those who expressed interest in communicating with us. A sample response, which is now much shorter and concise, is as follows:

"Hello Ian,

Professor Farbrook recently contacted you about our research project into what local game companies are looking for in new hires, and I was hoping we could arrange a time to come and talk to you. The interview will only take about 30 minutes. If you have some time soon that we could interview you it would be greatly appreciated.
Thank you,

Eric Prouty
Worcester Polytechnic Institute '12
Computer Science
WPI Swimming and Diving
EProuty08@wpi.edu"

All of these emails received responses, and resulted in the greatest number of

interviews for us. This is because we focused upon the fact that there were prior connections

and kept the emails short. This meant less reading and easier responses as the people we were

trying to contact were often very busy given their positions within their respective companies.

The actual interviews themselves were a fairly straightforward process. The vast

majority of them were done in person to help facilitate recording of the interviews and also to

get a feel for what it was like to visit different companies. These interviews were generally

done during the subject's own free time, mainly during their lunch breaks. As a result we would

generally meet at a local coffee shop or similar establishment. This provided for a casual and

relaxed environment in which the subject could talk openly about our questions. This relaxed

environment helps to keep conversation about the topic flowing well, and would often lead to

conversations outside of the regular interview. It was for this reason that holding them in

person provided the most benefit.

The in-person interviews also revealed smaller insights into the workings of the industry.

Some great tips, tricks, and hints about the interviewing process and how to make a good

impression were often the most informative and came to light through casual conversation during the interview. This information fit perfectly with our questions, and was generally just a smaller piece of information that helped elaborate larger and potentially more important topics.

The interviews in person also tended to run longer than those done over the phone. This can, in part, be attributed to the fact that it was often during lunchtime. However, the personal aspect of the interview meant that there was more opportunity to just discuss topics related to the field. Often times the subjects being interviewed were just as interested in what we were doing for schoolwork as we were in what they were doing. The beginnings of the interviews tended to start off with our team being questioned about the state of the program at WPI and what we were learning about in our classes. This goes on to further show the willingness of professionals from within the game development field to open up to students. Being able to talk about the program at your school is a great way to begin a conversation and to show your interest and how that applies to the industry.

In comparison we also did several phone interviews, these were often done because either the subject was too busy to schedule a time to meet in person, or if it was impractical for us to make the drive. This included our interview with Zynga New York, which was more than a three-hour drive to their offices. The benefits of a phone interview were that it was the easiest to setup and organize, and if the subject did not seem very willing to set aside time, it was simpler to convince them to talk to us over the phone. It also benefited us in that we tended to receive quicker more concise answers. While the subjects were more prone to becoming off topic in person as they tried to engage conversation, phone interviews tended to remain on

topic and attempted to quickly answer our questions.

This was a benefit in that we got denser answers, which would be easier and more compelling to listen to on our associated website. It also meant that we would often not receive as thorough of a response, as mentioned before; a lot of information came to us simply through the continuing conversations that went on surrounding our interviews.

Section 5 - The Questions

To get the information we are looking for and really achieve the goal of this IQP we had to ask professionals within the field what skills, knowledge, projects, and abilities they look for in applicants. To simply ask this question would have been far too general and it was important that we are able to be specific enough to actually provide useful advice to people trying to apply for a job. To get the answers we wanted, we would interview these professionals with a short list of questions that would cover as many aspects of the industry while still digging deep enough to get some concrete advice.

The games industry is relatively secretive and sometimes it is very hard to know exactly what to do if you want to become a part of it. Even within academia, where students are being taught the skills necessary to be successful programmers and artists for the field, it is not necessarily clear how much of the information being taught is truly relevant and applicable. With such rapidly changing practices and demands, any long believed truths about what applicants should do can be outdated and no longer valid within a short time. It is very important that we get the input straight from the people working within the companies and even if this information is only relevant for a year, it will be a snapshot of their needs for new

employees. This can also provide insight into what students should focus on in their academic careers.

Our first task in the development of this project was to design a short list of questions that we felt could best answer the pressing curiosities that every game industry applicant wants to know. Most importantly, what they should do to get their dream job. We soon realized this was no easy task with the many different disciplines that this industry hires. There are the predictable concerns for the programmers and the artists which would obviously be very different, but what about the aspiring designer, or technical artists, or the quality assurance tester? All have different skill sets and different abilities that are sought after. We discussed in length a set of questions that could answer as many of these concerns as possible while still diving deep enough into their individual skill sets to provide more meaningful concrete answers.

So we began discussing what we all really wanted to know; what should we do to get a job in the games industry. We realized that first we should understand the hiring process and what role the interviewee would have in that process. This lead to our first question: "what role do you have in the hiring process at your company?" Throughout the many interviews we have been fortunate enough to gain the perspective of many different professionals from hiring managers to lead engineers to artists to quality assurance managers. This range of perspectives is important to put all the other answers in context. This question also tended to reveal how the hiring process worked, which was very useful information.

The next two questions were the most obvious and most general; what do you like to see in applicants and what do you hate. This helps us get an understanding of some of the key

general elements that they look for during the hiring process. What we found almost universally is that having good social skills and the ability to get along well with the team you work with are absolutely essential.

Considering that the nature of the interviews is relatively informal and there is no concrete data, it seemed like a good idea to hear how our interviewee actually entered the industry. The stories were often interesting and gave good insight on how the advice they were giving has been applied to actually getting a job.

We believed it was important that we ask some specific questions about technical and artistic applicants, as these are the two main areas that students are equipped to enter. To come up with these questions we asked our peers and ourselves: what questions do you have about your specific skill set? We received a lot of good possible questions but in the end we narrowed it down to four to each category, focusing on questions that would hopefully reveal the most detail about what specific things these applicants should do, learn, or prepare.

We realized that the interviewee will probably have something that they would like to say about getting the job that we had not thought to ask about, so our last question was simple: is there anything else you would like to say on the topic of getting a job in the games industry? This became an open forum for all kinds of advice and hints and was a very successful ending question.

We were fortunate that the people who agreed to an interview were very willing to go into great detail at times. On each of these questions they often revealed much more than we would have ever thought to inquire about. The questions were more effective as initiators to a discussion of a subject within the industry, rather than simple "yes or no" answers.

After much deliberation we realized that to refine the list of questions, we would have

to first ask people who have experience as an applicant and as a member of the industry. For

this we approached two IMGD professors here at WPI who have significant experience in this

area; Professor Moriarty and Professor Snyder. Our original set of questions did not even

consider designers or technical artists and these were some of the first major changes they

were able to point out to us. After quite a few revisions, eliminating unnecessary or redundant

questions and adding ones on a broader range of topics, we settled on a set that we felt was

small enough to be a comfortable interview but extensive enough to really bring out the

important details.

In the end we had a well-revised list of nineteen questions that would hopefully shine a

light on some of the key concerns of the aspiring game industry employee.

Their Responses

When presented with these questions some answers were uniform across all

interviewees while some had a wide range of responses. While we do not claim these answers

to be concrete facts of how to get a job they are certainly interesting anecdotes and opinions

straight from the people making the hiring decisions.

When it comes to hiring new employees, what role would you have in making that decision?

Everyone that we interviewed had a say in the hiring process, but this varied greatly

depending on the size of the company. For the smaller companies we were generally talking to

a person with more hiring power, and generally, the one who had the final say on whether the individual being interviewed would get hired. In all cases, regardless of the size of the company, the interview process involved the entire team that the candidate would be working with. One of the major factors in the decision process, and something that brings a lot of different people into the hiring process, is the fact that the companies are looking to ensure that there is a good fit between personalities.

For the larger companies there were also a couple of instances that we interviewed members of the human resources (HR) department. In these cases the HR representatives tended to act as the first screen to all resumes coming in. They ensure that the candidate has at least the bare minimum technical requirements for the position being applied for. Often times this step only determines if your resume ends up moving along through the hiring pipeline. In the end these individuals had a good understanding of the process, but ultimately had no say beyond their initial screening in whether the candidate was hired.

When considering potential employees what qualities or abilities would impress you?

There are many qualities that different individuals were looking for, but perhaps the one overarching one that seemed to be relevant to everyone we talked to was the ability to work effectively within their team. It was a general consensus that the one defining trait that every new hire needed was the ability to work well with the other members of the team. Working for a game development company requires many long hours among a small group of people; so as a result, they are looking for people who are enjoyable to work with. This means that

communication skills and a positive attitude are always on the forefront of things that will impress.

Another piece that generally rang true throughout the smaller companies was the ability to do many different things. To be a "jack of all trades", this does not necessarily mean that the candidate looking for a job needs to be fluent in every aspect they may work on. It means that the interviewers are looking for someone who has some experience in many different fields. To add to this, they also expect to see a willingness and ability to learn new things. If they are in need of a new hire to work on something that they have never done before, then it is expected that the new hire will be able to learn about the situation and to ask for help when it's needed.

This leads to the third most prevalent response, the ability to know when you are wrong. For the vast majority of our interviews the response included some form of stating that they were looking for a candidate that is not overly cocky. A candidate that comes in claiming to be an expert or acting as though he knows everything there is to know showed them that the candidate felt there was nothing left for them to learn. In a situation where employees are expected to perform many roles, it is necessary for an individual to realize their own faults. To know when to keep trying and when to ask for help; and to be able to recognize your own strengths and weaknesses was a generally positive ability that impressed our selection of interviewees.

What are some things that will make you pass on a potential employee?

The most stereotypical answer to this question received was, of course, if the candidate smelt bad. While this was often said in jest, it still held some merit, mainly being that if the candidate was anti-social or didn't hold themselves to good standards then it reflected very

poorly. Following this was a standard pitfall for any job: mistakes in a resume. The resume is the first piece of information about a potential employee that a company sees. If there are mistakes within it then it reveals some bad traits in the applicant.

For the most part the responses to these questions were the antithesis of the responses to the previous question. An example of this is if a candidate is overly nervous to the point that it makes the interviewer feel uncomfortable. This makes it difficult to judge if that individual will work well within the team and handle work-related pressure.

Another common pitfall was if a candidate was not capable of fully expressing their ideas in a technical way. If there is a piece of technical work on a resume it is assumed that the individual can fully explain their work on the project and any positives and negatives that resulted from the project. This last part is especially important to many of our subjects, the ability to go over work and respond to its successes and failures are crucial within the game industry. If a candidate is incapable of doing this it proves that they will have a hard time fitting into the format that the company operates under. This is a huge problem as companies are generally looking to hire someone that can quickly integrate into a team.

The final piece of advice to come out of this question was that a candidate must take all of their interviews very seriously. This means that candidates should look into the work that the company has done. If they haven't played any of their games, or potentially not even knowing what they've developed, it shows that they are not as interested in this company and are just looking for a job rather than a place to truly be a part of. One would assume that a worker who is thoroughly interested in the games that he/she will be working on will outperform someone who is only there for the job. As a result, if a candidate is not prepared

for the interview or ready to talk about the company's games and ask questions about what they would be doing, and how they fit into the team, it shows a lack of interest and places a negative mark on the applicant's interview.

What is going to give someone an advantage when applying alongside an applicant with more industry experience?

While all of the things from the previous two questions can combine to give you a definite advantage over others applying for the same position, we were also looking to see if there was one particular thing that someone could do in order to get a proverbial leg up, that little extra advantage over the competition. As a result this question varied greatly depending on who was doing the interview. These responses tended to focus on something that the particular individual specifically liked to see in a candidate. So while these responses may not be as general as the last few, they are still all good things to consider, as other interviewers may be looking for one or more of these things eventually.

Before the other more interview specific topics are considered, there is still one piece of advice that will generally be looked upon favorably by most interviewers. That is having completed a project of your own, preferably one related to game development. Having something to show that a candidate is capable of following a project all the way through to completion shows determination and a good work ethic. This also ties into the previous questions and it provides a good technical project to talk about. Even if the project is not heavily refined or novel, it shows the dedication that a candidate could bring to the team. Taking on the responsibility of making your own project will give the company a confidence that you are capable of handling the workload that they will most likely place upon you.

The next piece of advice for getting a leg up on competition is further explained in the next question so not too much detail will be placed here, but a recommendation from someone else in the industry will give an extra bit of confidence to the employer. Another good quality is passion; a passionate candidate shows that it is important to them to become a part of the game industry. This in turns gives a good indication that the candidate will be a hard worker because they will enjoy and appreciate their job. Finally, the last thing that really stands out is if a candidate tailors their resume and portfolio to the specific position that they are applying to. Applying with a generic resume is generally ok, but tailoring it to a specific employer shows an extra level of dedication and may give the extra push that is needed to earn the position over someone else with equal or slightly better credentials.

What did you do to get into the games industry?

Most of the answers to this question on how the interviewees got in are actually very different from the advice that is given within the rest of this paper, but that gives a good understanding of how much the industry has changed over the years. The majority of people interviewed have all been in the industry for a substantial amount of time and seen a lot of changes as the market has evolved and become a major artistic medium. Many of the people we talked to had their entry into the industry through other technical jobs where the experience was relevant to the game industry. Some examples of this were IT jobs, commercial software development, and an Electrical and Computer Engineering (ECE) major, who managed to transfer his experience into a role within the industry.

The other way in that is still slightly more applicable in modern times is through either

an internship or a job working in Quality Assurance (QA). Internships, be it paid or unpaid, will

give a candidate not only experience, but also a good set of contacts within the company. The

same is true of a QA job; however, the benefit of a job working QA is that it gives you

opportunities to advance through the company. Many times we were informed that QA

workers who showed particular dedication and talent with a certain aspect of the game would

be given the opportunity to prove themselves in a different role within the company. By

working a job in QA it gives an individual the opportunity to prove their work ethic and show

that they can fit in with the development team.

All of these opportunities also lead into the next piece of this question; the fact that

having contacts within the industry can always be beneficial. While it was never stated that it

was necessary to have a contact to get in, it was always expressed as a good advantage to have.

 The industry, especially the Boston area which we were studying, tends to be very tight-knit,

given its size at the moment. Knowing someone within the industry generally means that a

good recommendation can be found. A recommendation from another industry professional

was almost always stated as holding a decent amount of weight in swaying an employer's

decision.

When trying to get into the games industry how important is it to know someone?

It was fairly unanimous amongst all those interviewed that it is very important, if not

integral, to have some sort of networking established or be connected to someone within the

industry. This was truly the heart of the project as we wanted to know how likely it is that an

applicant can apply to a job posting and be given a fair shot when competing against those who have friends or connections within any given company. The answers gave credence to the old saying, "it's not what you know, it's who you know", with the added caveat that the "what you know" part is equally important, as knowing someone may get you an interview, but being able to secure the job is reliant entirely on how well prepared and qualified you are for the position.

Most of the interviewees had interesting stories regarding their entry to the industry (see the above question) and it usually involved a chance encounter or conversation. Darius Kazemi, for example, happened to talk to someone at the Boston Post Mortem gathering and mentioned he was looking for a position. He was then informed of an opening at Turbine, which was not even posted yet. In this scenario, "knowing someone" enabled him to find a job before anyone else even know the position was open, thus bypassing the competition altogether.

Another common idea brought up in the interviews is that the game industry is one big social circle in itself, and most of the developers know each other, even across the country. Jamie Gotch from Subatomic Studios, for example, claims to know at least one person at every game development company in the country. It becomes clear, then, that once you establish contacts and meet developers, you are suddenly exposed to a large inner circle, which can be advantageous when seeking positions. Most industries are said to be like this, of course, but in the game industry where positions are few and highly sought after, knowing someone may make all the difference needed as opposed to applying to job postings without any contacts.

How do people get their names out there and get known by members of the industry?

A few very specific and very effective suggestions were given in response to this question. They fall under the category of game competitions, conventions, and local game developer gatherings.

Game competitions take many forms, namely game "jams" where developers meet over the course of a weekend and create a small game that fits a given theme, "modding" competitions where developers modify a commercial product, and the larger festivals where developers submit their games to be judged and win awards such as the Independent Games Festival, which also sponsors a student category. Kent Quirk was especially supportive of meeting people through game jams since working alongside people is a great way to network, not to mention that industry professionals typically attend such events to offer guidance and possibly participate as well.

Conventions are another great way to become known amongst the developer community. The Game Developer Conference (GDC) is the largest developer-focused conference in existence. It is a place where nearly every game company in the country converges to show off their games, technology, and recruit new hires. Attending these and meeting as many people as possible is a great way to become known and build a network of contacts. Other such conferences are the Penny Arcade Expo (PAX) and Electronic Entertainment Expo (E3).

Finally, local developer gatherings seem to be the easiest and possibly the most effective way to get known, at least in your local game industry community. Such gatherings include the Post Mortem, which as its name suggests is a place where a developer delivers a talk and critique about a recent project of theirs. This has the added benefit of seeing where

another developer succeeded and failed on a project, which can be crucial information to talk about in an interview. Another great gathering is the Independent Game Developers Association (IGDA), which is an organization that lobbies for better game developer working conditions and generally serves as an outlet for game developer concerns.

What types of jobs do you typically staff in house and what gets outsourced?

The answers to this question were mostly unanimous, surprising, and reassuring. The interviewees revealed that very little is outsourced due to the need and desire to have knowledgeable developers in house that they can quickly consult with which is especially important given a video game's erratic development schedule. It is especially important to have producers and lead developers in house, as they will be integral to the success and delivery of the end product, and being able to interface with them directly is critical. Other key members of the development team such as concept artists, engineers, and designers are kept in house as well for the same reasons.

The only time, it seemed, when outsourcing was prudent is when a game company needs Quality Assurance on a title that they do not have the staff for in-house. Occasionally art asset creation will be outsourced, though notably not concept art.

Overall it appears that developers choose to keep as much as they can in the office together so that as new developments arise, the whole team can react as a unit rather than being fragmented and separated by distance, or even time zones. Distributed game development where the developers are located in many different locations has shown to work in some cases, such as the game Tinkerbox developed by Subatomic Studios for Autodesk, but that is an exception and involved industry veterans who are self-sufficient.

Next we dedicated a section of the questions to programmer specific concerns. Hopefully these four questions will provide detailed insight into what programing applicants can do to be prepared to get a job.

Are programmers expected to have a portfolio of games or programming projects to show?

This was an area where the interviewees deemed it helpful but not always necessary. The point of the question is to gauge what the entering engineer should be able to demonstrate in their portfolio any past work. A working game demo is a very useful piece to have because, as a proof of concept, it shows you are capable of performing the tasks that the employer may ask of you. It seems to be obvious, but there is no better way of telling an employer what skills you can offer them than by showing them. Kent Quirk went the extra mile and said it's nice to see polished, finished demos completed in many different engines to show range and technical prowess.

Conversely, a couple interviewees claimed that having games in your portfolio is fairly optional, and that it is your code that is the most valuable. Having code samples is a nice and direct way of showing your ability, especially if they are game-related algorithms. Having said this, it seems as though many fresh engineering applicants will have games to show in their portfolios, so it may be wise to have at least one working prototype in addition to code samples.

How important is experience in a team programming environment? Such as peer programming or scrums?

Similar to the above question, this fell under the "nice, but not required" category as far as hiring bodies are concerned. The developers we interviewed all expressed an awareness of the fact that new applicants may only have had experience in a college environment, where some team programming is expected but not to the extent that you would get in an actual studio. It is because of this that having team programming experience can be helpful as it shows that you can work alongside other engineers, though if you do not have said experience, it will not count against you in the interview. They also went on to mention, that having knowledge was specific team programming styles was not necessary, as they would generally teach that kind of thing in house once a person is hired.

What types of code should a new programmer be expected to develop? Such as network code, engine code, scripting, etc.?

The point of this question was to try to understand what roles a new programmer might assume in a company and what they should know when applying for an entry level job. The responses tended to fall into two categories; either it was more important to be a generalist due to the tendency to help with multiple areas of the project, or that the focus of the programming was dependent on the type of position being filled. While this doesn't really give a good understanding of exactly what programmers should prepare for it does tell us that it is important to have a solid foundation of computer science techniques, experience in many areas of game programming, and to understand what type of position the potential employer is trying to fill.

For the most part, especially for the smaller companies, being a generalist is the most important trait. This allows an applicant to fill a wide variety of roles and shows adaptability for

new disciplines. Although as Damian Isla says; "When you say that you're a generalist, it really does mean that you are good at everything, not that you are not good at anything in particular." So it is important when applying for a generalist position to be prepared to show a wide range of computer science skills. Kevin Canciente of Zynga New York elaborated on this point by saying "I'm looking for good fundamentals, good sense of object-oriented principles, good sense of use of design patterns, and that kind of thing." But also he looks for game-programming oriented projects such as "path finding … collision detection, or physics, or AI, or 2D engines, or graphics, any of that stuff is a definite plus."

The larger companies tend to hire more specific positions and look for skill sets related to that field. For these positions the programmer would be integrated into that specific area of development working on that type of code. In this situation applicants are expected to have some detailed experience in the area they are applying for.

What game engine, if any, do you use? Is it necessary for an applicant to have experience in a game engine?

For this question almost every person we interviewed had the same opinion; it's not absolutely necessary, but it helps. It seemed no company uses a particular engine "straight out of the box" and either had made their own proprietary engine or has purchased the license for an engine and extended it to fit the needs of their development. Because of this trend, it is almost impossible for a new programmer to have experience working within the engine that the company uses. It is commonly accepted that any new programmers will need to go through a learning period with the company's engine. Having engine experience is not helpful to bypass

this step of the integration process but to make it quicker and easier by already knowing how

an engine fits into the development of a game. As Kent Quirk explained:

> I'd rather see that you've worked in twelve different game engines and done a project in each one, and what I'd love to be able to do in an interview is ask you, okay, what game engines have you used, what are you most familiar with, tell me about the important differences between them. Do you understand why the decisions that were made, were made? What's good about them? What's bad about them? Because that is really more practical.

This experience would show an understanding of how a game engine can be used to

expedite development and will improve the productivity of a new game developer on the team.

Many of the other developers agreed that it is more important to know how to work in an

engine rather than to know the specifics of any engine in particular.

In turn, the following four questions cover artist specific concerns. These responses give

insight into how artists should prepare their portfolios and present themselves successfully to

potential employers.

How important are traditional art skills vs. animation skills vs. modeling skills for artists?

Here we wanted to pinpoint any specific skills that an artist should focus on when

learning their craft. Above all else, it seems that to the game developers looking to hire artists,

the traditional art skills are essential. Many have the opinion that without the traditional art

skills an applicant will not be able to do the job. Concept art is a very important part of an

artist's job within a game company and this is almost always done quickly and efficiently

through pencil drawing. If an artist lacks the ability to draw then it will be very difficult to

quickly convey an idea about how something might look.

Additionally, it seems that with traditional art knowledge there are many techniques and skills that are necessary to make high quality game assets. Sergei Gourski from Subatomic Studios sums up the relationship between traditional art skills and modeling: "If you know how to draw very well, and you understand what you are looking at, you are not just copying it, you can iconize it, you can change it in ways you see fit, then you can learn to model. Modeling is just a software package that allows you to create that which you already envision in your mind."

But artists cannot just focus entirely on drawing; they must also have the knowledge of the tools to be able to translate their characters into a three-dimensional model. As Britt Snyder, a professor at WPI and previously an industry artist explains: "I think if you are a good traditional artist it will give you a huge leg up but at the same time it needs to translate to the digital as well".

Does the type of training the artists have affect your decision? Such as vocational schools (Gnomon), art schools (BFA, MFA degrees), studios/ateliers, general degree, etc.?

This question was intended to discover if game companies are biased towards certain schools or training styles when looking at artists. This can be a very stressful question for aspiring game artists considering the many types of higher education opportunities available. Thankfully the answer we got from almost everyone we interviewed was "no". Simply put by Darius Kazemi from Blue Fang; "Nobody cares where you learned to put together your awesome portfolio." Essentially the developers only care about artistic applicants' abilities and not where they learned them. This is good news for aspiring artists because it means that they can pursue their craft by whatever means they feel most comfortable.

Some developers did mention that there is a tendency to be biased towards certain schools, and while this in no way overrides the portfolio, they claimed that they may look at applicants from their favorite schools first. Of course this is completely dependent on the person hiring and their biases so it cannot be helped. The most important thing is that when it comes down to it, it's all about the portfolio.

How important is a portfolio in the artist's application? What types of art are you looking for in it? Concept? Environment? Models?

While the answers for this question were no big surprise, it was interesting to see the opinions that different developers had about an artist's portfolio. First of all, the portfolio is absolutely essential for an artist. Ichiro Lambe summed it up best by saying "an artist that doesn't have a solid portfolio really doesn't have anything. I cannot overstate the importance of that particular piece of the application." As far as types of art, this was less defined and generally dependent on the company or the project, although we did find some important details about what they look for in a portfolio. One surprising detail was that it is not necessarily beneficial to have a large portfolio. Most of the developers who commented on this explained that they would rather see a few really well done pieces rather than a pile of sketches or filler. Mat Williams, from ImaginEngine, stresses that; "I'd rather see a lean portfolio with all high quality work, than I would see a broad portfolio with mediocre work." It seems that when it comes to the art portfolio less can be more. Also important is a sense of diversity within the portfolio. If an artist can demonstrate a wide range of skills and the ability to create different styles of art then it shows that he or she is adaptable and skilled in many areas, which can be invaluable, especially in a small company.

It is important to have a web presence via some form of web portfolio. Not only does this make your art more accessible and make it easy for potential employers to check you out, but it also provides exposure and a nice familiar way to showcase your art. While this was not considered an absolute necessity, it clearly shows the commitment and dedication of the artist and is a great way to learn more about what they want to show off to the world. Although, just like the paper portfolio, it is better to have a few pieces of the artist's best work than every sketch they ever drew.

What is the role of the technical artist at your company and how does one typically get hired?

Professor Snyder from WPI stated that "He (the technical artist) is the bridge between the code and the art." Most of the interviewees echoed this sentiment. At most studios the technical artist is expected to be familiar with programming, art concepts, and how to integrate these into the game. At the smaller studios such as ImaginEngine, Large Animal Games, Zynga, and Blue Fang, the artists were expected to be both art-orientated and technically sound, because they had to be both artists and technical artists at the same time.   Randy Vasquez, who is currently a designer at 38 Studios but held the position of technical artist in the past, says that "They're expected to know some scripting, some rigging, they are expected to know how the body works… anything that moves you possibly could be animating it…jack of all trades when it comes to modeling." This quote rang true from independent studios to triple-A studios. If someone is interested in becoming a technical artist, they should become familiar with modern animation techniques, such as Inverse Kinematics and Forward Kinematics and by becoming well versed in such subjects as modeling, animation, shaders, and scripting. The

technical artist is, in a sense, the glue that brings the engineers and artists together, and so they need to be comfortable in both worlds.

As for how to get hired as a technical artist, this question is easy to answer for Blue Fang and the small companies; the technical artist position does not exist by itself. In these situations all artists are expected to know how to perform some technical tasks. For the larger companies, technical artists can be hired or made. "It is easier to make an artist into a technical artist, than vice versa," as one interviewee put it. Throughout the interviews, it was prevalent that technical artists are more likely to be converted from an artist who shows technical prowess than someone applying. People can be hired as a technical artist, though it is unlikely for them to be hired straight out of college. The technical artist is someone who has to "know the engine, Photoshop, 3d modeling etc. inside and out," stated Professor Brian Moriarty. The reason it is unlikely for someone to be hired out of college as a technical artist is because they will likely not have enough field experience to accomplish this. It should be noted that there are opportunities to intern as a technical artist, as one student on this project team is currently doing, and from there one could gain the abilities needed.

How do designers typically get hired and what types of skills do you look for?

Professor Brian Moriarty's answer provides all the details, "[Being an] interesting person, the ability to write… good writing style, ability to create dialogue… ability to read music, even play an instrument, well read, [and has] seen movies (other than the latest hits), the more you know the more you can bring to the writing process." They are the creators of the player's experience, they help develop a story and make sure gameplay flows well. It is unanimous throughout the interviews that designers have to have a plethora of knowledge and must be

well versed in the multitude of games out there, or at the very least plays a game from all the genres so that they can understand games from multiple views.

Randy Vasquez, using Dungeons and Dragons as an example, stated that the designer's first goal should be: Are the players having fun? Damian Isla said that "designers don't need to be coders but they need to think in almost algorithmic terms about how things work." All interviewees agreed that designers need great communication skills. They not only have to present their ideas to others and explain them, but present them to different groups of people who think differently. Talking to an engineer is much different from talking to an artist, which is often not like talking to a project manager, for example.

The designer, as well as technical artists, is a very difficult position to obtain coming straight out of college. Some skills that you should work on and adapt will be playing a variety of games, and not just playing them for pleasure, but analyzing the mechanics and figure why the designer chose to do what they did. Aspiring designers should become well versed on a multitude of topics, religion (all sorts), history, science fiction, fantasy and many others.

Some of the best advice that can be given to an aspiring designer is to practice. Like any craft, designing must be honed, refined, and iterated on. Some ways to do this entail writing design documents, creating campaigns for role-playing games such as Dungeons & Dragons, and always have a project going that requires you to tweak and balance the experience.

As previously stated, it is very rare that the designer is hired directly out of college. The majority of designers tend to start in Quality Assurance (QA) positions, or other areas already within the company. From a QA job a designer-to-be would get to test video games, see the designer's choices firsthand, and examine gameplay and game flow. They will see the

development process and how the games come to be. If a designer were transitioning between

companies, some advice to heed would be that "In general portfolios are very important."

According to Matt Williams, the designer is a position in which a contact within the industry

can make a huge difference. The best way to become a designer, which was suggested by the

majority of the interviewees, was to begin in QA. This allows you to participate in the

production process and understand design choices. It will be a long wait but once a design job

is kept and held, the industry experience and contacts will give you momentum.

How do testers typically get hired and what types of skills do you look for?

Britt Snyder claimed just simply, "…a Passion for Games." To go along with this as well,

according to Kent Quirk states, "A good QA person needs a high tolerance for repetition."

Testers need to be able to sit down with a game, play it exhaustively, and be able to reproduce

errors. The QA tester position can change drastically from studio to studio, such as at

Dejobaan, which is a small studio that contracts testers, or Zynga, another small studio where

the staff does all their own testing. Larger studios like Blizzard and Bungie have whole floors

and departments for their QA staff. Working as a junior QA tester is typically an entry-level

position or internship, and if a worker shows passions in something else such as design, then

they can prospectively transition to that job. Quality Assurance itself is taken very seriously, as

it is the last line of defense between a product and the end user. Finding bugs and errors, and

being able to communicate them properly in reports, are vital to the success of a game. Even

though some people plan on using QA as a springboard to another position, it should be noted

that it is itself a career and requires professionalism such as any other position. Consensus

showed that many of places that had testers wanted them to be well versed in games, so a

familiarity with many different game types and mechanics could be considered an essential skill.

Getting a job as QA is about timing. The junior QA position is dependent on the production schedule, meaning that the jobs open up when the companies are in need, and a new applicant simply needs to be ready and waiting for when this happens. It also helps to be very well versed in the specific genre you will be testing, so tailoring the resume to the company is another good tactic for getting hired. Like the designer, a tester will have to explain the bugs they find and how they produced that error and how it should be fixed in plain English so that anyone can understand what they are trying to communicate, meaning writing and spoken skills are integral.

Is there anything else you want to say on the topic of getting a job in the industry?

The game industry is full of stories and exaggerations about what goes on in the studios. For example, in regards to the film Grandma's Boy, Randy Vasquez makes this reference, "It's not always like Grandma's Boy...but sometimes it's close (laughing)."[6]

Frank Mitchell then added: "Know what it is you want to do, do your homework." They said to focus your resume on the job you want and let the company get to know you by getting your name out there and networking. This is one of the statements agreed upon by all the industry professionals; get known throughout the gaming community, let them see your work and talk about it. The more you are known in the world of games the more your name comes up, and the quicker and easier it is to get a resume through the door.

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[6] Grandma's Boy, 2006

Jay Piette, the QA lead from Turbine, wanted people to know that "QA is not playing video games all day, that's the number one myth, it's much different. It's methodically going through test plans, and it's infrequent that we tell people to just jump into the game." Christopher Spivey of Zynga said "Most people believe to get into the game industry you have to go through a dedicated program or game school, but, I disagree…It's a value to have an educational experience that is not as contained." Spivey believes that being a more rounded student is best because you can master a subset of skills later. On the other side of the spectrum, Damian Isla, who used to work as the AI lead at Bungie and now is at Moonshot Games, expects to see a "…really solid basis in math and CS (computer science), I would take someone with a super math and core CS skills far before someone who was less solid but had game experience." Damian Isla also prefers computer science knowledge and keen math skills for his programmers rather than a person with industry experience. This is a good contrast between Isla, who developed artificial intelligence on the Halo titles, to Spivey who works on social networking games; two different kinds of products but equal juggernauts of game types.

Andrew Burrows of Large Animal Games tackles the aspect of the work crunch. The crunch is a time before a major milestone of the game where the workers are expected to work long hours to have that working game that management demands. "I think the working crunch is something people think is a necessity and it is not. At Large Animal we don't do crunch, every now and then you'll have to work one evening, but it's very rare," he adds "if you are interviewing and they claim they will need extra hours from you, I would think hard about that company."

Common things everyone recommended are to make you own games, network and be patient. The first is emphasized repeatedly: make sure that your portfolio has working and finished games in it. A single finished game can go a long way and shows that you can complete your projects. It also keeps your skills sharp and can even help you learn how to make games better through refinement and iteration.   Networking can also help to get jobs. If someone knows that you are out of a job, are skilled, and a job opens up in your focus, you can get that critical email that gets your resume in ahead of the curb. Networking was preached by all those who were interviewed.

Finally they also emphasize patience. Some people search for years and send in resumes for months, or years, before they obtain their first job. Frank Mitchell of 38 Studios took six months to obtain his job, Darius Kazemi knows people that took over a year of trying before they obtained their first job. So his advice was to keep at it, keep trying and don't give up. In addition to this, Randy Vasquez says to be driven and have passion.

For students looking to break into the field these results can be extremely useful. The responses can give a vital advantage when applying alongside other applicants who lack this information. You can learn what to do and what not to do during an interview as well as how to prepare properly and impress a potential employer. Especially for applicants in New England, this information may be from people within the company they want to work for. Hopefully this information will be used to prepare better applicants for the games industry.

While we only received responses from a very small portion of the industry professionals that we contacted, it seemed that overall there was a significant interest in the

results of the project. Almost every person that we contacted was interested in a link to the eventual website and many were curious about the responses of their peers. In a small way, this response alone is a validation of the questions we compiled and the research we are conducting.

Section 6 - Conclusions and Observations

The results from this study were varied but infinitely useful and helpful. We cannot conclude on any one path to getting hired in a game company, but have gotten a sense for the general hiring climate at this time and what practices can help a prospective applicant get a great advantage when searching for a position in this competitive field. What we discovered is that the interviewing process and required credentials can vary greatly from company to company, and across disciplines such as art and engineering, but there are some general guidelines to help any candidate stand out.

The very first thing an applicant should have addressed is their circle of contacts and local networking. Many of those that we interviewed see little to no excuse for a prospective employee to not be attending monthly game developer gatherings, such as the Boston Post Mortem and "game jams". Although "knowing someone" is certainly not all there is to ensuring success when applying, it seems to be the first sure step in being at the forefront when competing for a position. Simply having had a conversation with your interviewer beforehand or with someone at the company you are applying to can make all the difference when you are competing against another applicant and all things are otherwise equal.

Another requirement that is fairly ubiquitous amongst all positions is the portfolio and a solid resume. The portfolio is your "face" to the hiring manager, human resource employee, or

anyone else that is considering you for a position and does not know you personally. The portfolio should follow the same strict quality standards as those found in the fine arts, such as neatness, fewer but higher quality work examples rather than numerous sub-par pieces, and of course an accurate representation of your skill set and what you can bring to the position you are applying for. Based on the responses from our interviews, it is safe to say that the portfolio is absolutely required and expected of all applicants, not just the art related ones. An engineering portfolio may contain full game demos or just code samples. A game design portfolio may contain game design documents and game critiques. More administrative positions such as producer may not be expected to have a portfolio due to the nature of their work, but this study focused more on development positions rather than operations. When submitting your application to any given game company, it is a good idea to tailor your resume and portfolio to the position in question to make sure the person hiring can get a good idea of your skills, personality, and qualifications with a short glance which is vastly important given the fast-paced nature of the industry and the busy schedules of the developers who are hiring.

Some common mistakes to avoid include, first and foremost, hygiene and other abrasive traits that will put off another human being on first contact. Though developers are gamers themselves, and gamers have a penchant for long hours enjoying their favorite hobby and possibly neglecting body odor issues, it must be remembered that these people are professionals and expect the same of their applicants. Wearing clean clothes, being freshly showered, and having good manners will go a long way in the hiring process.

Finally, and perhaps the most useful bit of information to be gleaned from this study is that determination and an absolute passion for game development are expected by anyone

that is in a hiring position in the video game industry. The positions are few, the hours are long, and only the most dedicated applicants will make it to the final rounds of the interview process, let alone being asked in for an interview in the first place. The idea of applying for game development positions is daunting and the wait for an interview can be a long one; our interviewees admitted that they get a lot of applications and resumes, and often only given them a glance before making a flash judgment before offering an interview. But if one is well-prepared, has a robust skill set in a given discipline, and can prove their enthusiasm and drive to the person doing the hiring, their chances of getting the proverbial foot in the door increase drastically.

The Website

In addition to this paper and the associated article, whose text can be found below as an appendix, a website was created in order to provide the public access to the audio interviews that we have been given permission to release. This website was designed simply to provide for ease of navigation as the user can listen to any particular interview that they want. This is currently being hosted at http://users.wpi.edu/~ajlinds/GameIndustryResearch/. This will be migrated over to a permanent home as the space becomes available. Submitted along with this article is also a zip file containing all of the content as it appears at time of submission, for use offline if the website should ever become unavailable to the public.

Next steps

After the submission of this project we plan to continue to finish interviews that did not manage to make it into our deadline for this paper. These interviews will appear on the

associated website for the public to hear, but will not be represented within our research. This

is simply being done as a service to the public. Our goals for the future of this project entail

submitting the companion website and article to game-related publications. We have begun

preliminary data collection on who to contact, how to contact them, and in what form they will

accept these materials.

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Appendix – The Article

The Project
Why won't they return my calls.

With the rise of the video games industry thanks to crafty consumers such as yourself, many gamers are suddenly realizing that there Is a workplace where their knowledge of loot tables and button combinations are not shunned, but welcomed! But as legions of people who were brought up playing games are now flocking to the industry that creates them, they are finding that it's not exactly like applying to Wal-Mart. The jobs are few, companies are opening and closing every day, and lightning fast development cycles are keeping developers' eyes on their computer screens with little time to hear about your zombie survival MMO.

As the aspiring developer may have noticed, the resurgence of the video games industry as an employment destination has yielded many new resources to help guide one in the right direction, and this article is no exception. Books are being written on the subject and many industry professionals are giving great "how to break into the industry" talks. If you aren't reading this, or attending those, you should.

We are a student team from Worcester Polytechnic Institute, which has a game development program and is home to many bright-eyed and bushy-tailed young game developers. While the school, as well as many other institutions, has been able to channel the ancient teaching magics to educate the passionate masses on how to make games, getting the interview for the job is still unknown territory. Interviewing for a game job is sort of like a unicorn; it doesn't seem to appear very often and it has a large deadly spike on its head.

Our mission was simple… so simple in fact, that we needed to make it a little bit more complicated so we'd feel good about ourselves. We wanted to speak to game developers directly and get a snapshot of what the industry is currently looking for in new applicants and hires. Specifically, we want to know what fresh college grads and new developers with little to no professional experience need to know to be prepared for that interview, how to get one in the first place, and the most important part: what are acceptable levels of body odor.

We interviewed developers from all of the major game development studios in the Boston area, which should provide a great contrast to the usual focus on West-coast (or West-siiiii-eeeed as the music televisions says it) studios. We got people from some big places such as Turbine and 38 Studios, smaller indies such as Subatomic Studios and Large Animal, some of our own esteemed professors that came from industry such as veteran game designer and GDC-posterboy Brian Moriarty, and everything in between.

We cornered them, lured them to locations of our (their) choosing with promises of candy and a 2-hour lunch break, and ran them through a grueling gamut of questions covering a range of subjects to get the info that you need when going on the job hunt. I've broken down some of the categories here so you can see concisely which areas we focused on and what the developers felt strongly about.

Networking and Preparation
It's not what you know, it's who you know… actually wait, it's both.

Game developers like to hang out. They do, you know, stuff. Monthly stuff. Big convention stuff. And you should be going to these. There's no excuse, really. I mean what else are you doing the first Wednesday night of every month? If you're too busy playing games, you may want to 1. Get out a little and 2. Realize that attending your local developer gatherings is one of the easiest and most effective ways of getting insider info and contacts. How important is networking in the games industry? Very important. Super important, even. Everyone in the industry knows each other. They have secret hideouts and secret handshakes, known as "the games industry" and "making games" respectively. If you get to know the developers in your nearest city, be it at a Post Mortem gathering or an IGDA meeting, you are now opening a door to the entire business. Note: it helps to not think of people as doors.

Are you stoked for PAX coming to town? Grabbed a ticket to this year's GDC? Some other acronym tickles your fancy that entails lots of game makers under one giant roof together? Great, now print some business cards, sharpen up that resume, and start talking to people. How to actually talk to people was a bit beyond the scope of this study, and

you should probably get some practice in that area. Generally, it's nice to show curiosity and a genuine interest in a company and you should convey this to their employees if you happen to meet them. It may not be helpful, however, to treat them like celebrities and start off immediately with all your ideas for games. Everyone has ideas. I have an idea for what to do with the curtains in my living room. You don't need to hear about it. Just go to the gatherings and have fun, enjoy yourself, don't stand in the corner of the room, and try not to look like you're really just there for networking. You should be at these events to genuinely get to know people, make friends, and come out of them with real connections, not just business contacts.

Why make this effort? You never know where a chance encounter or conversation is going to lead. Seriously, you don't. Unless you are clairvoyant, in which case what number am I thinking of? How did you know it was 23?! You are a cheater and good day to you.

One of our interviewees shared a great story about how he entered the industry. He'd been talking to a developer in the local community and expressed a desire to find a position. The developer happened to know that a position was opening up, and gave our interviewee the information *before the job posting was even put up*, meaning it was already filled before the public even knew about it. The power of networking, people. It is definitely worth it.

But, as I alluded to earlier, simply talking to the developers about your favorite games and what kind of crazy revolutionary ideas you have isn't enough. You need to be able to talk to them about something they'll understand and value greatly: the making of games. If you're trying to enter this industry, it is implicit that you have some kind of skill that you have to offer the company they work for, and this is what you should be focusing on. It will likely fall under one of these following areas, so pull up a chair and, well, keeping reading, I guess.

Engineering
I'm technically savvy. I use words like "savvy".

This is one of the main areas of game development, and the one which purportedly has the most openings due to the technical mastery one must have over these confounded metal machines.

Software engineers… programmers… you know, those kind of hooligans. They're highly sought after for some reason. I guess it's because they're usually pretty smart, good at math, and have the work ethic of the computers they hold dominion over. They are the ones making the game do game-y things, such as work in the first place.

As a prospective engineer, you've got some great options and here are some tips and suggestions from the developers we interviewed as well as some general knowledge that should get you on the right track.

First of all, a good ol' computer science degree is still very much relevant in the pursuit of video game programming. The interviewers giving you the technical test at your interview are likely computer science majors themselves, so you guys can be buddies and bond over such fascinating things like directed acyclic graphs and binary search trees and all that great stuff. A computer science degree isn't mandatory, however. Game development programs are popping up all the time, as well as books, and there is of course, the Almighty Internet. The best way to become a game programmer is to try it out! Look up some tutorials, take a class, and get coding.

Our interview subjects all thought it was a really cool idea to have a portfolio of projects to show. This can be in the form of games developed in many different engines, showing your prowess, one large game project where you had to learn and use many different concepts, or just some great code samples that demonstrate knowledge of game programming algorithms.

As far as specifics go, these change all the time. The best advice the interviewees could give regarding what kind of programming concepts to learn, which languages to use, and what engines to develop for, was to pick something and learn the fundamentals. Become a good generalist such that when you're applying for an entry-level job, they know that you can fit into the spot they have open. If you're doing a project on your own, you'll likely touch on many different areas and find what you are most passionate about, whether it be gameplay logic, networks, artificial intelligence, or graphics.

Grab a free game engine, learn it inside and out, read the documentation, and make something! Try out the different programming areas to get comfortable with the overall process, and learn programming concepts that you can apply to

different languages, such as object-oriented concepts and how to write clean, extensible code.

Art

I have no art yet I must draw.

Artsy stuff. This is where you tight pants-owning, newsie cap-sporting, mustache-having, sweater-covered-in-cat-fur-wearing types get to shine!

I'm going to get into the meat of this section right away because you need to learn this early: the developers we interviewed all put emphasis on traditional art skills, not just digital, and not just 3d. I'll let you process that for a moment… yes, video games are not made with pencil drawings because, well, real paper doesn't lend itself well to be played on your TV screen. But everything up until the point where the art is made digitally, usually entails some form of traditional art, by drawing what the characters and environments will look like, sketching out storyboards, and being the guy or girl at the brainstorming meetings who draws what everyone is saying.

As the hiring process is getting more competitive, and art related jobs are generally less common than engineering ones, game companies are looking for people with solid traditional art skills. The theory is that you can teach a fine artist how to use a 3d modeling package or a drawing program very easily, while someone whose skill set is entirely digital-based may have a hard time working backwards and learning how to draw a tree. The fine artist; the person who always has a sketchbook with them and is constantly drawing what they see or think about, is extremely versatile and a valuable commodity to game studios.

What was very interesting about our interviews is that none those we talked to cared where you developed your skill… you can do so however you want, whether it entails a fine arts degree, taking art classes at a museum, or just grabbing a pad of paper and drawing your heart out. All that matters is your portfolio.

Of all the game development areas, the artist is most reliant on their portfolio to get the job. And we're not talking all your Pokemon doodles here; we're talking highly polished pieces. When choosing between a collection of a few high quality pieces and a whole binder full of unfinished or non-impressive sketches, the smaller and more professional

portfolio wins every time. The takeaway here is to find your strengths, try different styles, and look up what other game artists are doing by visiting concept art forums and buying artbooks. Try to copy what they're doing, figure out their process, and be able to demonstrate this ability to your interviewer. By the way, sharing your art on online art forums and communities is another great form of networking! And it's free. And seriously, you're already at your computer. There are thousands of artists out there ready to critique your work and help get you where you need to be. Just don't pick an annoying username, keep your avatar PG-13, and get posting.

All this isn't supposed to dissuade you from learning 3d modeling or digital art. You will need to learn these in order to actually make the games, obviously, but since we're focusing on getting the interview and landing the job, the best advice is to work on your art skills in as many ways as possible and put together a highly polished portfolio to show these skills. How to put together a portfolio? Ask any fine artist or look around online. Artists have been preparing portfolios for years and it is integral to the craft. It is not an exact science, and it comes highly recommended that you have someone with more experience review your portfolio first. Finally, tailor your portfolio to the company where you are applying. If you know they are in the business of making huge 3d MMO's, then show your modeling ability, and your ability to capture their art style (being able to show a concept drawing, and then the 3d model of it is really cool. All made by you, of course). If you're applying to a smaller, social-games based company that targets mobile devices, then show some 2d art that matches their general style. Prove to them right away that when they hire you, you'll be on the same page as their team.

Finally, and I hate to break your heart on this, having only anime in your portfolio will not cut it. It is not because it is not a respected art form, it is because many hobbyist and beginning artists choose to only draw anime just because it is what they like. However, you will not always be drawing what you like. You will be drawing or creating what the art directory dictates, and I can *assure* you it will not always include disproportionately large eyes.

Quality Assurance
I want to do QA when I grow up.

Game tester. You get paid to play games. Kidding!

One of the most misunderstood jobs in the industry, the QA tester or QA engineer is a discipline in itself and has its own requirements just as any other job does. What you should realize and accept right away is that QA is a career in its own. It requires a problem solver, someone with a keen eye and ridiculous attention to detail, and the ability to reproduce weird bugs and write reports based on these freak occurrences in a way that an engineer can read what you wrote and immediately know what to do to fix it.

There are two facets that the budding game developer should know about QA. First, that as mentioned it is a real job and if you are the right kind of person and have an enormously high threshold for repetition, then this could actually be a viable long term choice for you. Secondly, QA truly is a fantastic way to enter the industry and learn the ins and outs of a company and their development process… and even figure out if this is something you want to do for a living in the first place!

Let's focus on QA as a job. You are not playing a game for fun, jotting down notes about what you like and dislike, and then dictating to the designer or other team members what you want to see changed. That would be playtesting, and is not your jurisdiction, though you may be asked to perform this task every once in a great while if you're at a smaller company and they want you wearing many, many hats. The QA job means someone will give you a very specific thing to test, such as the way the menu logo changes when certain menu items are selected; and you will try to break it. You will look at the logo for eight hours, turning off the device, turning it back on, changing options, rinsing, and repeating. You will hear the title screen music so many times that you'll start resembling A Clockwork Orange's Alex when he hears Beethoven after the brainwashing scene. And you will be doing this every single day. In order to endure this task which will seem tedious and trauma-inducing at first, you must be a patient person with a drive for perfection. You want your game to work, you want players to give it good reviews, and you are the last line of defense between the developers and when the game goes public.

When interviewing for this position, you'll likely be meeting with the QA lead who will be tossing you all kinds of curveball questions to see how you think through problems and how you handle the pressure of not knowing exactly what is going on, and how you plan to address this lack of knowing. QA is often a process of exploration, you are hunting for these bugs, seeking to put them out of their suffering and free the development team of their ugly wrath. You will seldom know exactly where a bug is or when it occurs, but with your keen eye and knowledge of games you will find them and document them.

The second part that is worth discussing is that it is very true that QA is a fantastic starting point for anyone's game development career. Most of the interviewees echoed this… and no, it wasn't because we were in a large chamber. I mean they all pretty much said the same thing; game companies often promote from within QA, and will often employ people in that department to see how they handle working at a game company.

And… in my opinion, based on the research… QA is a great starting point for two of the jobs that are hardest to land straight out of college with no experience: the technical artist, and the designer.

Design
I make worlds out of toothpicks.

I have an idea for a game. Seriously guys, hey! HEY!

Yes, hearing such things does get annoying, and I recommend you never open with such statements when doing your networking. However, if you DO have a lot of game ideas and feel that the designer position is right for you, then here are some pointers to help get you into the big, solid gold designer chair.

Getting hired as a designer with no industry experience is hard. As in… really hard. In fact, there is often never an entry-level position in design. But do not fret, there are avenues for you to show your design prowess. First of all, and this will seem similar to the engineering and art sections, you must practice your craft. As a designer, you should always be designing. That means writing game design documents, prototyping your ideas in game engines, and maybe having some side projects going where you are actively designing with a team. You do not need to be an expert coder or artist, but many of those we interviewed felt the designer *should* be

able to pick up some coding concepts, since they will have to think algorithmically in their design process.

Some things you should know regarding the design position: you are not telling other people what to do, sitting back in your seat dreaming up names for your elvish characters and dictating what goes in the game and what doesn't. The designer figures out how things in the game are to work and communicates this to the development team as an equal team member. You will often be working under very tight constraints and looking at the same things over and over again (see the QA section), and will be expected to still be able to find creative ways to make the game successful within these constraints.

Though companies rarely hire fresh designers, we found in the study that they frequently hire designers from the QA department. Why is this, you ask? Don't lie, I know you asked it. Well, in quality assurance you become intimately aware of a game's mechanics and the processes that produced it. There are a lot of parallels here between the QA tester and the designer, with the obvious difference being that the designer is deciding what happens in the game while the tester is making sure that it actually happens the way it was designed. They are like two majestic forest animals drinking from the same pond.

But look, here's the thing. It takes more than a love of games and all things game-related to be a designer. Our interviewees all expressed a desire to see well-rounded designers. Well-rounded in terms of what you know and, preferably, what you can do. Some things that were tossed out during the interviews were the ability to read music, being very well-read (and not just in manga or game magazines), and having hobbies you are passionate about that have nothing to do with games. Why would a game designer bother with such things? Surely a wealth of game knowledge is enough to help you design the next sandbox city environment. Well the philosophy behind this is that if all you know are games, you are creating worlds and mechanics based on what has already been done, and it is believed that good design is rooted in reality, not in other people's creations. Having a knowledge of classical literature will be helpful when you least expect it, such as writing the mythology for a fictional game world.

Gamers with extensive game knowledge may make great game historians, toiling away in a very tiny museum somewhere, but won't necessarily make the best game designers. The reverse, however, should be true.

Soft Skills
On hygiene, and being an adult.

This subject was so important, and brought up so often during the interviews, that it deserved its own heading and clever subtitle.

Look, we're all adults here. At least, we should be. Being a game developer is hard. It is a real job (despite some of the stigma regarding games as being "for kids") and the job is challenging. You will be expected to work long hours and often the thing you are working on does not even immediately resemble a video game. You have to be a dedicated engineer, artist, or other type and enjoy that sub-set of the video game making. If you wouldn't enjoy being a software engineer at a big computer company, the chances are only marginally better than you'd enjoy it at a game company. It is serious work and you are doing things that are just as difficult as their more traditional counterparts. This is especially true for artists: drawing is drawing, no matter where you are or what time period you are in. If you don't have drawing chops, a love of game art will not get you a coveted seat on the art team. You need to be a master of your craft and be able to demonstrate this mastery to your interviewer.

The other point that needs to be made is: don't be a jerk, and don't be annoying. It is pretty obvious as to what these mean, but in general, if you use the word "noob" in real life and are often identified by your loud obnoxious voice and fedora, you may want to consider some character development, and I don't mean tweaking your game character's stats. Being abrasive, cocky, and having a sense of entitlement will get you on the black list very fast. Yes, game developers are gamers themselves, but being a gamer and being a game developer are, at the end of the day, separate things. To be a developer you should have some humility, be able to take criticism, and admit when you are wrong. Showing these traits will give you a huge leg up because they are the traits of likable people.

As a game developer you will be in an enclosed area with hardworking, passionate people, and knowing when to be quiet, contemplative, and professional cannot be understated. You are not applying to be part of the LAN party, you are applying to be a

professional in the entertainment business and you will be judged based on your talent and how you present yourself; not your high scores. Discussing your gaming accomplishments and game-related interests are of course great ways to break the ice and loosen up in an interview, because every game developer probably started on their path with a love for games, right? But don't rely on games as a hobby to get you hired. Approach them from all avenues; as a player, as a creator, as a problem solver. And convey this approach in your interview.

And, finally, good hygiene is paramount. Seriously, I will repeat that this came up in nearly every interview. Yes, we're all gamers and we tend to spend long hours playing them which can lead to some musty smelling shirts and greasy hair… but don't let that carry over into the interview. Wash up and throw on some deodorant. It will show you have respect for yourself and those that will be working with you in close proximity. You'd be amazed by how fast an interview will go down the Mario pipe if your shirt is emitting some bodily-created smells.

Website

Hear their beautiful voices.

I hope these sections were of use to you, dear reader. But what if it wasn't enough? What if my impeccable prose failed to satisfy your ravenous hunger for game industry knowledge? Well, you're in luck. My team recorded every interview we conducted… you know, as in audio. We created a companion website to this article which has the recorded answers from every developer to every question we asked, which you can easily filter so you only hear the answers you are most interested in. Of course, every developer had amazing and informative things to say and came from a wide range of backgrounds, so I'd recommend hearing them all!

Check it out:
http://users.wpi.edu/~ajlinds/GameIndustryResearch/

If you have any questions regarding this study, you can reach my team at giresearch@wpi.edu

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