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The JanDY Survey System

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The JanDY Survey System Evan Altman, Michael Kiley, Mark Powers, and Dr. Ryan McFall Hope College Summer Research 2016

Introduction

The JanDY Survey System is Hope College's proprietary survey creation, editing, and completion software. It is currently used primarily in the administration of Hope's Student Assessment of Learning & Teaching (SALT) surveys. JanDY was created to allow potentially sensitive data regarding the college community to be stored on a Hope-owned database instead of being controlled by an outside company.

Summer 2016 Additions:

- New question types and new interface
- User interface for creating and editing
- surveys
- Improved test suite

Tools



AngularJS is a Javascript framework that allows the Model-View-Controller design pattern to be used with HTML and Javascript. This means that the program is divided in a way that allows the data, user interface, and data ANGULARJS manipulation logic to be independent from one another.

To apply consistent styling throughout JanDY, we used a language called Sass. Sass is compiled to CSS. It has many advantages over CSS, such as allowing for class inheritance, calculations in the style rules, and variables to track values.





JanDY uses Bower and Maven to manage the project's files. Bower is used for frontend Javascript dependencies, such as JQuery, Lodash, TinyMCE, and Bootstrap. Bower automatically downloads and organizes the files that JanDY needs to function.



Maven is a project manager that ensures that Java projects on the backend are properly linked to one another...

JanDY runs on a Tomcat server. The server-side code is written in Java and consists of numerous HTTP servlets. As users navigate JanDY, the browser sends requests to the server based on what the user is doing. Specific calls to the server are mapped to different HTTP servlets, which interact with the database in the necessary way and return the necessary information to the client.



We coordinated our work on PivotalTracker, which is a website that allows development teams to keep track of tasks that need to be completed and who is working on what. We used SourceTree to manage our code base, which allowed us to work on separate computers and push changes that we made to a central repository for the rest of the team to access.

Testing

While developing JanDY, we practiced test-driven development, meaning whenever possible, we wrote unit tests first and then the code that would be tested. This created a comprehensive suite of unit tests which allowed us to make changes to our code with confidence.





Front-end Testing

We used Karma to run tests written using the Jasmine testing framework to test our JavaScript. Jasmine's system for mocking HTTP calls and spying on functions allowed us to test our system even though it runs asynchronously.

Back-end Testing

We wrote JUnit tests to test our server-side Java code, taking advantage of the Mockito testing framework to mock database interactions. This allowed us to test our backend code without relying on the execution of database calls.

Continuous Integration

We implemented continuous integration on this project using CodeShip, allowing for all of our tests to be run each time we pushed new changes to the repository. This made sure we were always aware of any broken code and prevented it from being pushed to the live version. It also helped us catch any test failures not occurring on local versions of the project.

Question Types

JanDY allows for many different types of questions to be used for its surveys. There are five types of questions, each of which allows for numerous configurations to suit the survey creator's needs.

Multiple Choice:

A standard question type, where the user selects a choice from a list. The list can be displayed as either a set of choices or as a dropdown menu. Multiple choice questions can also allow more than one answer to be selected.

3 . Please indicate your class standing.
○ Freshman
O Sophomore
○ Junior
○ Senior
Other

i. What grade do you expension of the second sec	ect to receive in
	•
No response	
A	
A-	
B+	
В	
B-	
C+	
С	
C-	
D+	
D	
D-	

Please indicate your class standing elect up to 2)

Grid:

A question similar to multiple choice, but where many questions have the same choices.

	A great deal	Quite a bit	Somewhat	A little bit	Not at all	No respon
8. Make logical and relevant connections, weigh evidence.	0	0	0	0	0	0
9. Use mathematics to interpret, make inferences, and solve problems.	0	0	0	0	0	0
10. Better understand and appreciate what I read, listen to, or view	0	0	0	0	0	0
11. Make effective use of computer technology and library research facilities.	0	0	0	0	0	0
12. Use writing as a means to communicate clearly and effectively to varied readers.	0	0	0	0	0	0
13. Use effective oral communication.	0	0	0	0	0	0
14. Respect Ideas and cultures of the past, understand how the past influences the present	0	0	0	0	0	0
15. Be creative and innovative.	0	0	0	\bigcirc	\odot	\bigcirc

<u>Slider:</u>

A new question type that allows the user to indicate their response along a scale. The slider can be configured to snap to labels or allow continuous movement along the scale. There is also a numerical version. which includes an input box to enter a specific number.

1 . P legat	lease ii ively im	ndicate	the degree your learn	e to which ling	having this	class me	et at nigł	nt
t		4 litt b	4 tle it	Sor	newhat	Quite a bit	2	
			A non-n	umeric, co	ontinuous s	lider		
	41.F	Please	e indicate	your GF	PA			
	3.64		i	2		3		4
		A nur	meric, con	tinuous sl	ider with ar	n input bo	х	
	32	. Please ra	ank these chara	cteristics of yo	ur professor in o	rder of importa	ince to you.	
	C	Choices						
and	4	Structured	course activities (ind	luding time in clas	s, if any) effectively to	o enhance learnin	g	

A single list ranking question

A double list ranking question allowing up to three ranked answers

Structured course activities (including time in

ass, if any) effectively to enhance learning

Challenged me to go beyond my previous

Stimulated my interests in course materia

Presented material in a clear an organized manner

2. Please rank these characteristics of volume

ease choose and rank between 0 and 3 items.

Presented material in a clear an organized

ided helpful feedback on assigned wo

as available for timely help regarding stu

Related to me in ways that helped me succe

in learning (for example, had a personal interen me and treated me with respect)

Was open to alternate viewpoints

learning in this course

Had a clear and fair grading system

ept me well informed of my progre

Vas open to alternate viewpoints

ne with respect)

Ranking:

A question that allows users to drag and drop choices into an order they choose based on importance. The first type has a single list, where all the choices given allows limiting the amount of choices included in the ranked answer. This could be used for a 'pick your top 3' type question, for example.

are part of the answer. The other style

Free Response:

A question that allows the user to enter text. The text can be limited in length, and there is the option to allow for a rich text editor, where the user can style their response.

34 What did you find to be beneficial about this course?
54. What did you find to be beneficial about this course?

34 . What did you find	d to be benefic	ial about this o	course?
File ▼ Edit ▼ View ▼	Format 🕶		
S rormats -	Β Ι Ξ	≣ ≣ ≣	
р			

A plain text free response question

A rich text free response question

Sass



					Search
		. Z Done	Value	All Preset Choice Grou	ps: Choices in group:
Introduction -		Preview		Yes/No	Yes
Question Text:	Which ONE of the following best describes this course for you?	4 . Which ONE of the following best describes this		Gender	No
Default Choice:	No default choice currently selected	Course for you?		Class Standing	
Chalce Crews	No deladir choice currently selected	Core Requirement, not part of Major/Minor	-1	Grades A-F	
Choice Group.	None Add Choice Group Create New Choice Group	Elective, not required in any way		SALT Gen Ed Objectives	
Value	Text	C No response		Previous 1 2 Next	
			5	○Link question to choice group ●	Copy choices into question
	Major/Minor			umber	
		Delete	Minimum n	i i i i i i i i i i i i i i i i i i i	
	Core Requirement not part of Major/Minor	Delete	Minimum n Vertical		Apply Cance
	Core Requirement, not part of Major/Minor	Delete	Minimum n Vertical Required	iments	Apply Cance
	Core Requirement, not part of Major/Minor Elective, not required in any way	Delete	Minimum n Vertical Required Allow com	iments	Apply Cance
	Core Requirement, not part of Major/Minor Elective, not required in any way	Delete Delete	Minimum n Vertical Allow com	e 1. Add New	Apply Cancel Choice Group
	Core Requirement, not part of Major/Minor Elective, not required in any way No response	Delete Delete Delete Delete	Minimum n Vertical Allow com	e 1. Add New	Apply Cancel Choice Group
	Core Requirement, not part of Major/Minor Elective, not required in any way No response	Delete Delete Delete	Minimum n Vertical Allow com	e 1. Add New	Apply Cancel Choice Group
5	Core Requirement, not part of Major/Minor Elective, not required in any way No response	Delete Delete Delete Add	Minimum n Vertical Allow com Figure	e 1. Add New	Apply Cance Choice Group
5 Minimum number of selection	Core Requirement, not part of Major/Minor Elective, not required in any way No response	Delete Delete Delete Add	Minimum n Vertical Allow com Figure Introduct Question 1 Default Ch	Title:	Apply Cance Choice Group
5 Minimum number of selection Vertical	Core Requirement, not part of Major/Minor Elective, not required in any way No response ns: 1 Maximum number of selections: 1	Delete Delete Add	Minimum n Vertical Allow com Figure Introduct Question Default Ch Choice Gro	e 1. Add New Create a Choice Group: Title: Title: Value	Apply Cance Choice Group
5 Minimum number of selection Vertical Required	Core Requirement, not part of Major/Minor Elective, not required in any way No response Image: 1 Maximum number of selections: 1	Delete Delete Add	Minimum n Vertical Allow com Figure Introduct Question 1 Default Ch Choice Gre	e 1. Add New Create a Choice Group: Title: Value Value	Apply Cance Choice Group Text
5 Minimum number of selection Vertical Required Allow comments	Core Requirement, not part of Major/Minor Elective, not required in any way No response Image: 1 Maximum number of selections: 1	Delete Delete Delete	Minimum n Vertical Allow com Figure Introduct Question 1 Default Ch Choice Gro	e 1. Add New Create a Choice Group: Title: Value Value	Apply Cance Choice Group Text Major/Minor Delete Core Requirement, not part of Ma Delete
5 Minimum number of selection Vertical Required Allow comments Conclusion -	Core Requirement, not part of Major/Minor Elective, not required in any way No response Image: 1 Maximum number of selections: 1	Dekete Dekete Dekete	Minimum n Vertical Allow com Figure Introduct Question 1 Default Ch Choice Gra	e 1. Add New Create a Choice Group: Title: Value Value	Apply Cance Choice Group Text Major/Minor Delete Core Requirement, not part of Ma Delete
5 Minimum number of selection Vertical Required Allow comments Conclusion ~ File ~ Edit ~ View ~ F	Core Requirement, not part of Major/Minor Elective, not required in any way No response ns: 1 Maximum number of selections: 1	Delete Delete Delete Add	Minimum n Vertical Allow com Figure Introduct Question Default Ch Choice Gra	e 1. Add New Create a Choice Group: Title: Value Value	Apply Cance Choice Group Text Text Major/Minor Detete Core Requirement, not part of Ma Detete Etective, not required in any way Detete
5 Minimum number of selection Vertical Required Allow comments Conclusion ~ File * Edit * View * F * * Formats * B	Core Requirement, not part of Major/Minor Elective, not required in any way No response I Maximum number of selections: 1	Delete Delete Delete Add	Minimum n Vertical Allow com Figure Introduct Question 1 Default Ch Choice Gra	e 1. Add New Create a Choice Group: Title: Value Value	Apply Cance Choice Group Text Major/Minor Delete Core Requirement, not part of Ma Delete Elective, not required in any way Delete
5 Minimum number of selection Vertical Required Allow comments Conclusion • File • Edit • View • F • remains • B	Core Requirement, not part of Major/Minor Elective, not required in any way No response ns: 1 Maximum number of selections: 1	Desete Desete Desete Add .	Minimum Vertical Allow com Figure Introduct Question Defauit Ch Choice Gra	tion + Text: oice: Dup:	Apply Cance Chooice Group Text Major/Minor Detete Core Requirement, not part of Ma Detete Elective, not required in any way Detete No response Detete

A major goal of this project was to add an editing interface to allow survey owners to change the content of their surveys quickly and easily. When the user opens a survey in "Management" mode, each question now has an edit button which allows them to make changes to the question's data.

- Preview A live preview of the question as it will appear when the user takes the survey is shown to the right of the editing controls, and any changes made to the question are updated dynamically in this preview display.
- 2. Introductory/Closing Paragraphs In each question the user can edit the introductory and closing paragraphs for that question, with the option to add HTML styling to these paragraphs.
- **3.** Default Choice The user can specify a default choice that will be preselected when a survey-taker first logs in to the survey.
- 4. Choice Groups Each question can use a "choice group" instead of the choices entered individually by the survey's owner. A choice group is a collection of commonly used choices such as "Strongly Agree, Agree, Neither, Disagree, Strongly Disagree." Choice groups are stored in the system's database, enabling users to save time by applying a group instead of entering choices themselves.
- 5. Choice List The question's answer choices can be added, deleted, and reordered using a drag-and-drop list interface. Each choice can also take a numeric value specified by the user. This value can be used if the survey administrator wants to weight answer choices when calculating an average response for the question.
- **Question customization** Below the choice-editing interface are a series of controls specific to the question. For example, for a multiple choice question the user can chose the minimum and maximum number of selections required for the question to be complete and pick from between two different versions of the multiple choice question, one which uses radio buttons and one which uses a drop-down menu.
- . Requirement and Comments Finally, the user can then chose whether the question is required and if it allows comments.

Clicking the "Add Choice Group Button" displays the view shown in **Figure 1**, allowing the user to browse all public choice groups as well as private choice groups of which they are an owner. Once the user has selected a choice group, they have two options for its application- it can be linked into the question, meaning it is tied to the group in the database or it can be copied into the question, meaning the choices are inserted into the question's list of choices with no connection to the database.

If the user wants to create a new choice group, they can click the "Create New Choice Group" button, which brings up the display shown in Figure 2. This interface allows them to add new choices to a group, give it a title, a set its privacy. It can then be easily applied to any questions in their own survey.

Survey Creation Wizard

In past iterations of JanDY, there was no interface for creating a new survey. This summer, we created a wizard to walk users through the survey creation process.

Steps of the wizard include:

- Choosing a template survey to base the new survey on Setting basic information about the survey, such as its name, description, start and end dates, and whether or not users' responses are anonymous
- Setting messages that are displayed to the user, such as the login prompt and the message displayed upon completion of the survey
- Specifying who can take the survey and how they should log in

Advanced Options							
 ∕Use a template							
Link survey to template (changes to the template sur	rvey will change your survey)						
Search for			Search!				
Search By:							
Name ↓ ^A _Z	Title	Owner	Description				
Base Dining Questionnaire	Base Dining Questionnaire 2016	Dining Services	Base survey for Dining Services				
COMM SALT	COMM SALT 2016	Dr. McFall	This is SALT expanded for COMM courses				
CSCI 225 SALT	CSCI 225 SALT 2016	Dr. DeJongh	This is SALT with CSCI 225-specific questions				
CSCI SALT	CSCI SALT 2016	Dr. McFall	This is SALT expanded for CSCI courses				
SALT Base Survey	SALT 2016	Dr. McFall	This is the base SALT survey				
Previous 1 Next							

Figure 2. Create New Choice Group Popup

