A UML MODEL FOR AUTOMATION OF COUNSELING SYSTEM USING PURE OBJECT ORIENTED APPROCH

Mr. Sonar Sanjay Bhagwan

Ph. D   Scholar
[MCA, M. Phil-CS]
Rai University- Ahmedabad

Dr. Samrat O. Khanna

Professor and Head of ISTAR
Sardar Patel University
V.V. Nagar-Anand-Gujarat

ABSTRACT

In *present*, most institutes and universities facing the counseling problem to allocate the course and college (combination) to student from three choice preferences by entrance exam marks. Currently this is carried out by manually by the institutes/universities, the *current need* to get an automation model that **automatically** allocates the combination to the each student according to their given preferences by gained entrance exam marks. Using this paper authors proposed the automation system by **UML** model to solve the above problem, that automation system automatically allocates the course combination to the student by student's given three preferences and gained entrance marks and average rank. Using this automation system, seats automatically allocated. As well as UML based counseling automation system also supports to administrator to allocate (inserted) the payment seats into automation system, then automation counseling system manipulates payments seats students also with ranked students. The automation is designed Using Unified Modeling Language (UML) model. To design the automation system, authors proposed the UML Automation Process Diagram, Class Diagram, State Diagram and Sequence Diagram to acquire automation process because the UML models are directly supported to pure object oriented application development. We assume three courses and three institutes as nine combinations, for allocation.

Keywords: Unified Modeling Language, Counseling System, Domain, Automation, Pure Object Oriented System, Abstraction

INTRODUCTION

The Unified Modeling Language is an excellent and powerful leading diagrammatic modeling language, especially for the pure object oriented design. The Unified Modeling Language is commonly accepted by the all faculties for the designing the object oriented/ pure object oriented

systems. The Unified Modeling Language is essential part for the understanding the real time problem, it accept a vision of a real world system and describe in the form of picture and notation. In addition, The Unified Modeling Language is well defined modeling language which is the precise syntaxes and semantics that can be interpreted and altered by the computer. The basic nine notational diagrams in the UML system, as well as methods and techniques are accomplished
Interface to the UML notations.

The present needs in the institutes and universities that, the automation system of the counseling to that automatically allocation course combination as preferences to the students and gained entrance examination marks. The automation counseling system by the Unified Modeling Language through which seats in various courses are allocated to the students. The students need to gives its basic details and three preferences for acquires the combination in the specific course. The student has to give three priorities of the course and college combination. The UML based automation system automatically allocates the seats according to their given preferences by gained entrances exam marks and avarage rank, automation system also generates the list of the students with allocated college and course by the its own preferences, as well as UML based counseling automation system also supported to the administrator to allocate (inserted) a courses for the payment seats students into the counseling automation process.

The significance of the paper that the Unified Modeling Language gained the sequence of the counseling automations system process from the entered students preferences to acquires the combination in preferred choices by the automatically allocation system (automation) of the combination. Using this paper the authors proposed the automation of the counseling system by the UML model, as well as this automation system also supports to the administrator for insertion the particular seats of the payment seat students into the abstracted list of the allocated students acquired by the automation system as the based on the gained entranced examination marks,

MATERIALS AND METHODS

The significance of the study is based on the tools method and techniques are used for proceeds the automation system. The Unified Modeling Language has many model/diagrams, tools and methods to design and process the system; we have used the basic models of the UML to design and precede the modeling to interfaces with pure object oriented system development.

COUNSELING SYSTEM PROCESS DIAGRAM

To design of the counseling system process diagram, the examination of the system sequence and states of the proceeds of the automation system. The counseling system process diagram shows the various flow objects, connecting objects, swim lanes and artifacts which are analyzed from the problem statements. This understanding mainly comes from business domain analysis and is capturing business intelligence and representing it into computer system. In figure 1 there are three pools for the counseling system process. First pool acquires the student's details with preferences and gained entrance marks. The second pool is the hearts of the automation process; all automations are carried out by this pool. And third pool for admin process as insert or set the payments seat students into existing automation system.
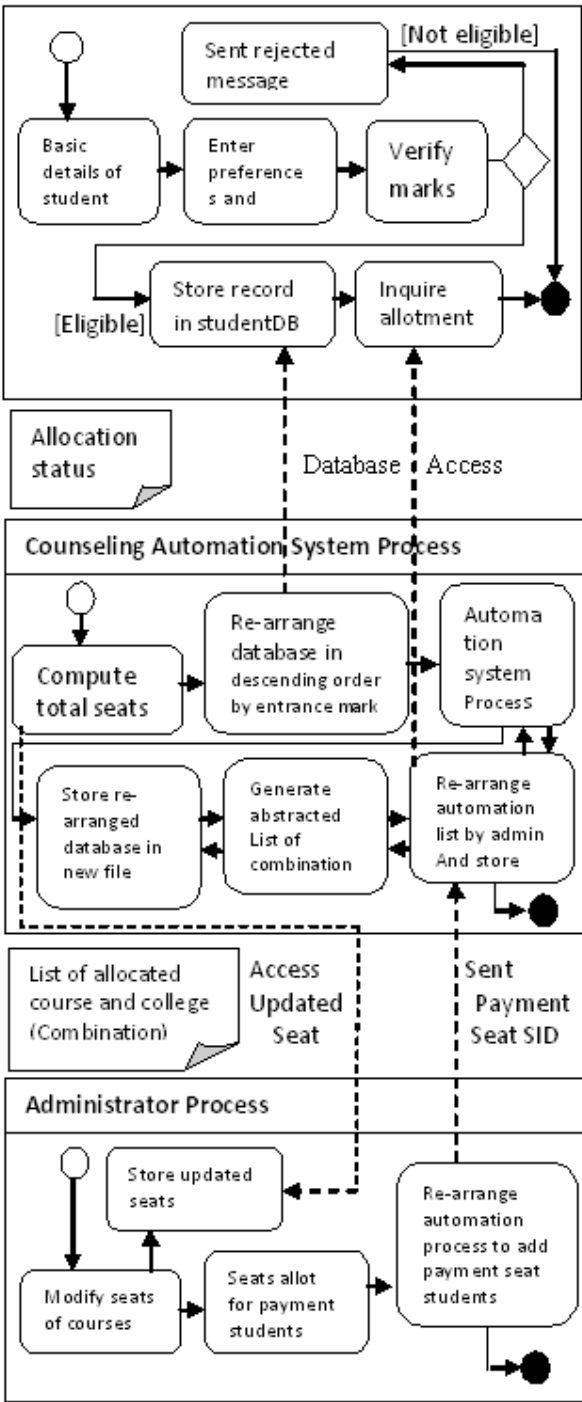
Figure. 1 UML counseling system process diagram

○   Symbol denote the start of the pool
●   Symbol denote the end of the pool

UML CLASS MODEL FOR DESIGN THE COUNSELING AUTOMATION SYSTEM

The UML class model shows the structural activities of the automation system, in which attributes and operations with access modes are designed. The associations are also designed in between classes. The access modes as (–) for private (+) for public and (#) for protected
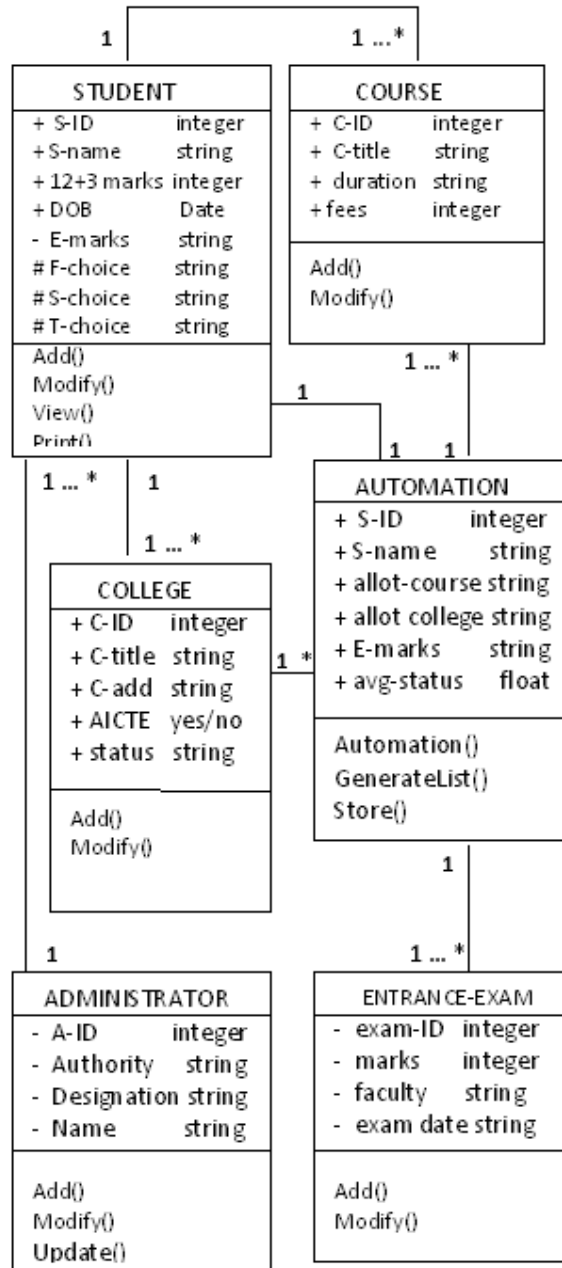

Figure. 2 UML class model for automation system

The UML class model has six major classes for the process of automation system from student preferences to automation operations, generated result and store in particular file, as well as admin modifications for payments seats students.

UML STATE DIAGRAM FOR DESIGN THE COUNSELING AUTOMATION PROCESS

A State is an abstraction of the attribute values and links of an object. Sets of the values are grouped together into a state according to properties that affect the gross behavior of the object. A state Diagram relates events and states, when an event is received the next state depends on the current states as well as the event; a change of state caused by an event is called a transaction. A state diagram is a graph whose nodes are states and whose directed arcs are transitions labeled by event name. A state is drawn as a rounded box containing as optional name, A transition is drawn as an arrow from the receiving state to target state.
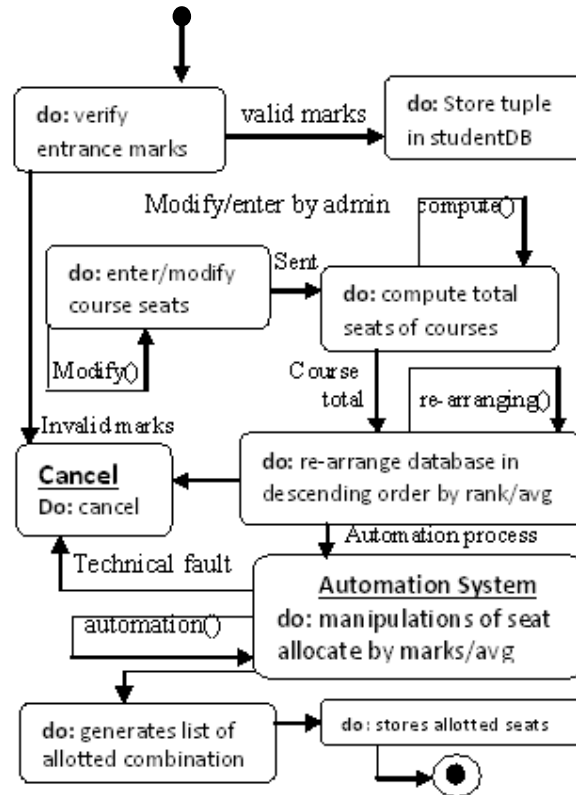

Fig. 3 UML State diagram for automation Process

UML SEQUENCE DIAGRAM FOR DESIGN THE COUNSELING AUTOMATION PROCESS

A sequence Diagram is a set of objects and messages that are used to express use-case realization. The above sequence diagram denotes the process sequence of the counseling automations system. The diagram has four object as student, administator, automation and student database, Using automation system process, student fill the preferences and admin proceeds the filled database to automation process. The automation system manipulate automatically operated and produce the desired allocated list of the seat to the student of course by the gained entrance examination marks Sequence diagram are used to model the flow logic within the system enabling both documentation and validation logic.
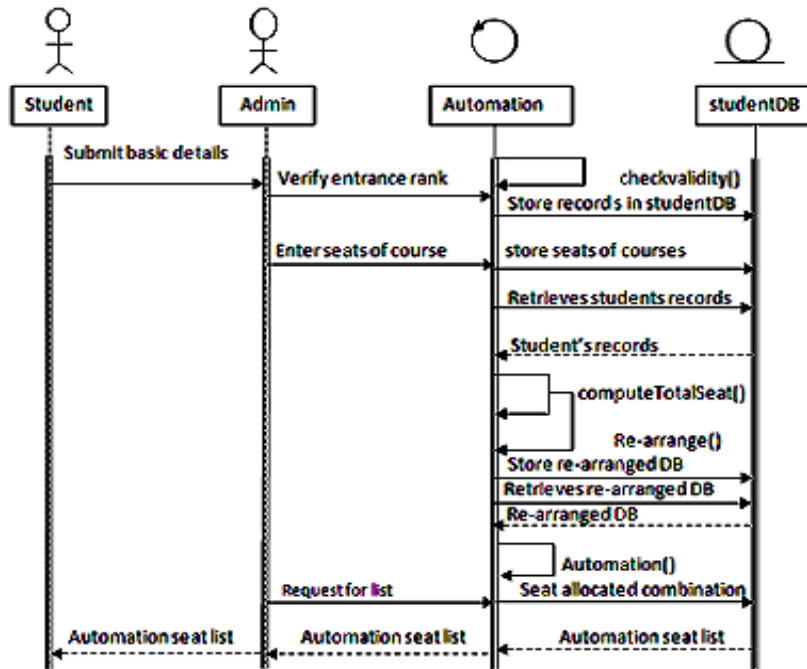
Figure. 4 UML Sequence Diagram for automation system Process

The main purpose of the sequences the results in some desired outcomes. The focus is less on the messages on the time order in which messages occurs.. the diagram conveys this information along the horizontal and vertical dimensions. The vertical dimension shows top-down, the time sequence of the messages/calls as they occur, and the horizontal dimension shows, left to right, the object instances that the message are sent. The symbol denotes like users, control and database.

EXPERIMENTAL STUDY

The manipulation and measuring the the student selection is based on the its given preferences for choice of the course and college combination. the student have to select three preferences of combination of course and college and also give the gained entrance exam marks and avg status, The automation counseling system manipulates the student database and automate the allocation combinastion to the perticuler students by the gained entrance exam marks and avarage rank. The automation system generate automatically list of the students which are allocated combination as its preferences (choices). And also automation counseling system mainatin the re-arrange the allocation list by inserting the payment seats students by the administrator in the process of automation system. The counseling automation system automatically manipulates the payments seats students with entrance rank students and arrange autometically in automation system process, then generates final allocation list of the selected students.

ALGORITHAM FOR PROPOSED MODEL

STEP 1: Read SID, details, preferences, marks, and seats
     of Course and college (combination).
STEP 2: IF [E-rank < specified by admin] THEN
     Not eligible for apply
     ELSE
     Store record in studentDB
     END IF

STEP 3: compute total seats of course designed by admin
STEP 4: re-arrange studentDB in decending order and
        Order by entrance-marks status and avg status.
STEP 5: manipulats of automation process for allotment
        Courses and college (combination) by marks/avg.
STEP 6: IF [payment seat = true] THEN
        Enter student SID(s), course, college by admin.
        REPEAT STEP 5
        ELSE
        GO TO STEP 7
        END IF
STEP 7: generates abstracted combination allocated list of
        Students by the entrance exam status and average
        Status.
STEP 8: Exit

The Above algorithm denote the design steps of the automation system process to be genereted automatically list of the selected students by the given preferences, entrance examination marks status and average status.

RESULTS AND DISCUSSION

The proposed model is tested with different institute's current data are obtained based on the experimental result, It is found that proposed UML model more accurate and appropriate than manual counseling manipulations for the selection and allocation the course and college combination to the students by its preferences of the choices of the combination (course & college) and entrance exam marks obtained. The above experimental result dipicted in figure 5 as result that automatically generated by the our model of counseling automation system.

Figure. 5 Automatically generated combination list of automation system

After the generated the result in grid from student preference of combination by gained entrance marks and average. After then admin also re-change the counseling automation process by inserting the payment seat student(s) for allocation of combination.
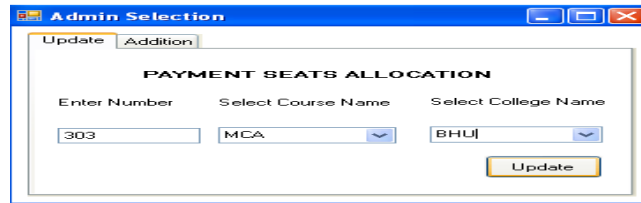
Figure. 6 Insert Payment seat allocation systems by administrator (update automation system process)

the automation process re-arrange the allocated list and generats the newly list. In figure 6 denote the admin screen for allocate the combination for the payments seat student. Each student also can check personally its own status to allcation of the course and college (combination) by entering SID.

CONCLUSION

Unified Modeling Language is the strong and powerful to slove and design the any pure object base system, as well as solution of scientific or commecial applications. Here The counseling automation system is fully pure object based system and therefore UML Models are the essential part for the design of object modeling. As well as the model has the different method and proof for design the sequence of process, state of the process and object pools for proceed the system from Unified Modeling Language to Pure Object Oriented Languages developent. The above experimantal study is designed in microsoft vosual studio 2010 built language VB.NET as front-and and SQL server as back-end tool.

REFERENCES

[1]. Ambler SW, Nelborn J, Vizdons MJ. The Enterprise *Unified Process: Extending the Rational Unified Process,* Addition- Wesley, 2008

[2]. James J, Odell, publication year 1998, *Advanced Object Oriented Analysis and Design by UML*, ISBN- 9780521648196

[3]. K. Baclawski, *extending the Unified Modeling Language for Ontology development*. Software and System modeling – SoSym 1 (2), pp 142-156 (2002)

[4]. Bernd Bruegge, Allen H. Dutoit. *Object Oriented Software Engineering*, Using UML, Patterns, and Java, Second Edition, Pearson Education

[5]. James Rumbhaugh, Michael Blaha, William Premerlani, Frederick Eddy, William Lorensen, *Object Oriented Modeling and Design*, Prentice- Hall India Edition

[6]. Evangelos Petroutsos, *Mastering Visual Basic Dot Net* , BPB publications

[7]. J. Runbaugh, I. Jacobson and G. Booch, The *Unified Modeling Language Reference Manual,* Addison-Wesley, 1999.

[8]. Wirfs-Brock, R. and Wilkerson, B. *Object Oriented Design*: A Responsibility-Driven Approach. In Proceedings of OOPSLA '89 Conference. SIGPLAN Not. (ACM) 24, 10, (New Orleans, Louisiana, October 1989),71-76.

[9]. Dragan Milicev, *Model Driven Development with Executable UML*, wrox publication.

[10] Dr. Vipin Saxena and Manish Shrivastava, *UML Design for Performince Evaluation of Object Oriented Programs on Dual Core Processor.*

[11]. Anand Handa and Ganesh Wayal, "Software Quality Enhancement using Fuzzy Logic with Object Oriented Metrics in Design", International Journal of Computer Engineering & Technology (IJCET), Volume 3, Issue 1, 2012, pp. 169 - 179, ISSN Print: 0976 – 6367, ISSN Online: 0976 – 6375.

[12]. Arup Kumar Bhattacharjee and Soumen Mukherjee,, "Object Oriented Design for Sequential and Parallel Software Components", International Journal of Information Technology and Management Information Systems (IJITMIS), Volume 1, Issue 1, 2010, pp. 32 - 44, ISSN Print: 0976 – 6405, ISSN Online: 0976 – 6413.