
e-Academia System
Software Requirement Specification

Team Name: ***RedApple***

Version 1.0

Guided by

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Software Requirements Specification	Date: 15/SEP/08
Team Name: RedApple	

Revision History

Date	Version	Description	Author
15/SEP/08	1.0	e-Academia System is supposed to automate the routine teaching-learning support activities so the academics authority can monitor it and control the things.	Affan Pathan Jignasa Prajapati Mohsin Mansur Sharanya Nair Guide: Lal Bihari Barik

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1. Introduction

e-Academia System is supposed to automate the routine teaching-learning support activities so the academics authority can monitor it and control the things.

1.1 Purpose

e-Academia System will provide to automate the routine teaching-learning support activities so that academics authority can monitor it and control the things. There are number of functionalities in this system like time-table generation that helpful on available resources like programs, courses, subjects, teachers, lecture room and lab preferences. System also help in upload Assignments lecture notes, track daily class attendance, take student feedback & exams marks, and manage students and faculty profile. e-academia System will also provide best possible services to student/trainer, teacher/tutor for learning and improvement in various courses, subjects and topics. Design, development and implementation of cost-effective ITS to teach procedural knowledge as well as facilitating the acquisition of conceptual knowledge, in multiple subject disciplines.

1.2 Scope

- The e-academia System will provide Functionality to give online Examination, feedback and suggestions.
- The e-academia System will generate schedule/time-table without any of clashes among teachers, day, time and room that will be visible to all.
- The e-academia System will provide facility to the Faculty to put lecture plan, teaching slides/exercise for their lectures that'd be accessible to students.
- The e-academia System will provide facility to the Faculty to upload Attendance and day-to-day student performance.
- The e-academia System will also perform secure registration and profile management facilities for different users.
- The e-academia System will also provide various Graphical and Statistical Report to the Authorized Person.
- The e-academia System will also help for backup and recovery of data.

1.3 Definitions, Acronyms and Abbreviations

ADL	Advanced Distributed Learning
AICC	Aviation Industry CBT Consortium
ASP	Application Service Provider
B2B	Business to Business
B2C	Business to Consumer
B2G	Business to Government
CAI	Computer Aided Instructions
CAL	Computer Aided Learning
CBT	Computer Based Training
CGM	Course Generator Manager
CMI	Computer Managed Instruction
CRM	Customer Relationship Management

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DB2	DataBase2
DTD	Document Type Definition
ERPS	Enterprise Resource Planning System
EGM	Exam Generator Manager
EM	Event Manager
HTML	HyperText Markup Language
ITS	Intelligent Tutoring System
IEEE	Institute of Electronic & Electrical Engineering
J2EE	Java 2 Enterprise Edition
JMS	Java Messaging Service API
JPA	Java Persistence API
JTA	Java Transaction API
LMS	Learning Management System
QM	Query Manager
RM	Resource Manager
RLO	Reusable Learning Object
TM	Timetable Manager
UM	User Manager
VLE	Virtual Learning Environment
W3C	World Wide Web Consortium
WASCE	Websphere Application Server Community Edition
XML	eXtensible Markup Language

1.4 References

- <http://www-128.ibm.com/developerworks>
- <http://cse.yeditepe.edu.tr/~eozcan/research/papers/PATAT2002.pdf>
- <http://forums.sun.com/thread.jspa?messageID=4467005>
- <http://nearestniladri2003.googlepages.com/techlife>
- JDBC API Tutorial and Reference, Third Edition: Universal Data Access for the Java 2 Platform by Bruce, Fisher, Ellis
- Database Programming with JDBC and Java by George Reese
- Developing JavaBeans by Robert Englander
- Web Security, Privacy, & Commerce by Garfinkel and Spafford
- Java and XML by McLaughlin and Loukides
- XML: Extensible Markup Language by Elliotte Rusty Harold
- Core J2EE Patterns: Best Practices and Design Strategies by Deepak Alur
- Ajax: The Definitive Guide by Anthony T. Holdener III
- .SOA Using Java(TM) Web Services by Mark D. Hansen
- .Java Web Services in a Nutshell by Kim Topley

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- DB2 9 Fundamentals Certification Study Guide by Roger E. Sanders
- DB2 9 for Linux, UNIX, and Windows: DBA Guide, Reference, and Exam Prep (6th Edition) by George Baklarz and Paul C. Zikopoulos

1.5 Technologies to be used

Front-end: Java J2EE- Servlet, JSP, AJAX
 Database: DB2
 Web server: WASCE
 EJB3.0
 Eclipse
 Web Services
 SOA
 JPA
 HTML
 XML
 Java Script
 Jasper Report Tool

2. Overall Description

The e-Academia System aims to automate the daily routine work of institute or university. The timetable generation, daily attendance, feedback, etc. are some of the daily activities that occur in every institute. Apart from these activities of an institute, the university has to maintain the details of courses, details of institutes working under particular university. Accordingly different types of users are maintained.

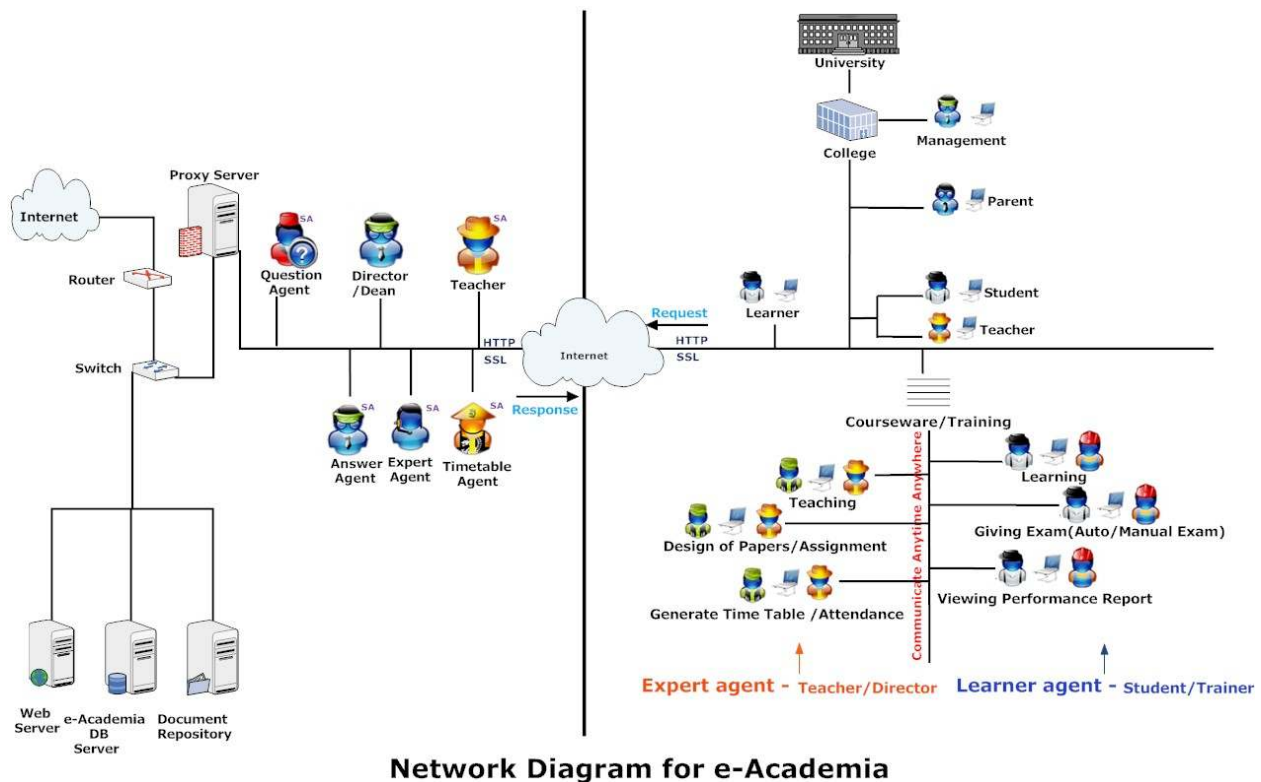
2.1 Use-Case Model Survey

All the users in e-Academia can do the registration online and can maintain and manage their profile details. e-Academia System having following users:

- A) End User/Student/Trainer
 This level of user can give the online exam & Feedback, they can view the Lecture plan, teaching slides & exercise,
- B) Teacher/Tutor
 This Level of User will be responsible for generate time-table. They can put lecture plan, teaching slides & exercise. They can configure online examination like generating paper, schedule it etc. They can view the Result of online examination, feedback & suggestion of student.
- C) Administrator
 This level of user will be able to view the Graphical & statistical report of Student performance, Attendance & Resources Used.
- D) Data Manager
 This level of user will manage the database of the system, and monitors other users while their transaction with the database. The following are the sub-users included in Data Manager:
 - I. Course Generator Manager (CGM)
 - II. User Manager (UM)
 - III. Exam Generator Manager (EGM)
 - IV. Timetable Manager (TM)
 - V. Query Manger (QM)
 - VI. Resource Manager (RM)
 - VII. Event Manger (EM)

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2.2 Architecture diagram



2.3 Database Design

1.	Name	Details related to any Area or Location
	Alias	AreaMaster
	Where used/ how used	Use to store information related to location of institute or university
	Content Description	CategoryId + AreaId + AreaName + Description + Status + MemberId
	Supplementary information	AreaId must be unique

2.	Name	Details related to Attendance
	Alias	AttendanceMaster
	Where used/ how used	Use to store information related to attendance of student
	Content Description	Lectureid + Studid + Status
	Supplementary information	The combination of Lectureid, Studid must be unique

3.	Name	Details related to Category of user
	Alias	CategoryMaster
	Where used/ how used	Use to store category information of user
	Content Description	CategoryId + CategoryName + Description + Status + MemberId
	Supplementary information	CategoryId must be unique

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4.	Name	Details related to City
	Alias	CityMaster
	Where used/ how used	Use to store information related to city
	Content Description	Countryid + Stateid + Cityid + CityName + Description
	Supplementary information	The combination of Countryid, Stateid, Cityid must be unique

5.	Name	Details related to Country
	Alias	CountryMaster
	Where used/ how used	Use to store information related to country
	Content Description	Countryid + CountryName + Description
	Supplementary information	Countryid has unique value

6.	Name	Details related to Course
	Alias	CourseMaster
	Where used/ how used	Use to store information related to course
	Content Description	UniversityId + InstituteId + CourseId + CourseName + Description + Aliase + Type + StartYear + Ctype + Total + Status + Flag + Memberid
	Supplementary information	Courseid has unique value

7.	Name	Details related to Subject on basis of Course
	Alias	CourseWiseSubjectMaster
	Where used/ how used	Use to store information of Subjects related to particular course
	Content Description	UniversityId + InstituteId + CourseId + SubjectCode + CsubjectName + Description + GroupId + SemOrYear + CategoryId + AreaId + SubjectId + Status + Memberid
	Supplementary information	The combination of UniversityId, InstituteId, CourseId, SubjectId must be unique

8.	Name	Details specifying Current Semester or Year
	Alias	CurrentRunSemoryear
	Where used/ how used	Use to store information of Current Semester or Year
	Content Description	CourseId + SemOrYear + Fdate + Tdate
	Supplementary information	--

9.	Name	Details related to Department
	Alias	DeptMaster
	Where used/ how used	Use to store information about department
	Content Description	Deptid + Deptname + Desc + Flag
	Supplementary information	Deptid must be unique

10.	Name	Details specifying Announcements of Faculty
	Alias	FacAnnouncement
	Where used/ how used	Use to store information related to Announcement (of quiz, assignment, etc.) provided by Faculty
	Content Description	Facultyid + Courseid + SemOryear + Desc + Link + Flag

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	Supplementary information	Faculty could provide any type of notification to student of particular course
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11.	Name	Details related to leave of Faculty
	Alias	FacLeave
	Where used/ how used	Use to store leave information of Faculty
	Content Description	Facultyid + FDate + FTime + TDate + TTime
	Supplementary information	Facultyid relates this table with FacultyMaster

12.	Name	Details specifying Tutorials provided by Faculty
	Alias	FacMaterial
	Where used/ how used	Use to store tutorials provided by Faculty
	Content Description	Facultyid + Materialid + Materialname + Filename + Path
	Supplementary information	The materials provided by faculty is maintained in this table

13.	Name	Details related to Test
	Alias	FacStudTest
	Where used/ how used	Use to store information related to Test
	Content Description	Testid + Courseid + Semoryear + Facultyid + Subjectid + Tdate + TimeDuration + TotalMarks + PassingMarks
	Supplementary information	

14.	Name	Details related to Marks scored by Student in a Test
	Alias	FacStudTestMarks
	Where used/ how used	Use to store Marks information scored by Student in a Test
	Content Description	Testid + Courseid + Semoryear + Facultyid + Subjectid + Tdate + Marks
	Supplementary information	The combination of Testid, Courseid, Semoryear, Facultyid, Subjectid, Tdate must be unique

15.	Name	Details of Student on basis of Group
	Alias	GroupCourseWiseStudent
	Where used/ how used	Use to store Student information on basis of Group
	Content Description	Courseid + Semoryear + Studid + Groupid + Fdate + Tdate
	Supplementary information	The Group of particular student could be determined

16.	Name	Details of Group
	Alias	GroupMaster
	Where used/ how used	Use to store Group information
	Content Description	UniversityId + InstituteId + CourseId + SemOrYear + GroupId + GroupName + Status + Memberid
	Supplementary information	GroupId must be unique

17.	Name	Details of Course on basis of Group
	Alias	GroupWiseSemoryear
	Where used/ how used	Use to store Course information on basis of Group
	Content Description	Courseid + SemOrYear + GroupId
	Supplementary information	The Group is related to which Course could be determined

18.	Name	Details related to Holiday
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	Alias	HolidayMgtMaster
	Where used/ how used	Use to store Holiday information
	Content Description	UniversityId + InstituteId + Id + Sdate + Edate + Desc
	Supplementary information	Id must be unique

19.	Name	Details related to Institute
	Alias	InstituteMaster
	Where used/ how used	Use to store information related to Institute
	Content Description	UniversityId + InstituteId + InstituteName + Address + ContactNo1 + ContactNo2 + FaxNo1 + FaxNo2 + Email1 + Email2 + EstablishYear + Status + Flag + Memberid
	Supplementary information	InstituteId must be unique

20.	Name	Details related to Lecture
	Alias	LectureMgtMaster
	Where used/ how used	Use to store information related to Lecture
	Content Description	Ldate + Lectureid + Courseid + Semoryear + Subjectid + Topicid + Stime + Etime
	Supplementary information	Lectureid must be unique

21.	Name	Details related to News or Events
	Alias	NewsEvents
	Where used/ how used	Use to store information related to News or Events
	Content Description	Newsid + Desc + Link + Flag
	Supplementary information	Newsid must be unique

22.	Name	Details related to Question Bank
	Alias	QBank
	Where used/ how used	Use to store Questions, Answers and other information related to Question Bank
	Content Description	CategoryId + AreaId + SubjectId + TopicId + SubTopicId + Qtype + LevelId + QuestionId + Question + TotalOpt + Options + Answer + MemberId
	Supplementary information	QuestionId must be unique

23.	Name	Details related to Resources
	Alias	ResourceMaster
	Where used/ how used	Use to store information of resources available in institute or university
	Content Description	UniversityId + InstituteId + ResourceId + ResourceName + Capacity + Type
	Supplementary information	ResourceId must be unique

24.	Name	Details related to State
	Alias	StateMaster
	Where used/ how used	Use to store information related to State
	Content Description	CountryId + StateId + StateName + Description
	Supplementary information	StateId must be unique

25.	Name	Details related to leave of Student
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	Alias	StudentLeave
	Where used/ how used	Use to store information related to leave of Student
	Content Description	StudentId + Fdate + FTime + TDate + Ttime
	Supplementary information	StudentId is referenced from StudentMaster table

26.	Name	Details related to Student
	Alias	StudentMaster
	Where used/ how used	Use to store details about Student
	Content Description	Studid + Name + Gender + Bdate + Jdate + Paddress + Taddress + Phoneno + Mobileno + email1 + email2 + qualification + caste + Category + Type + userid + Courseid
	Supplementary information	Studid must be unique

27.	Name	Details showing Subject assigned to Faculty
	Alias	SubjectAllocation
	Where used/ how used	Use to store information about subjects assigned to faculty for particular course
	Content Description	Courseid + Subjectid + Semoryear + Facultyid + Fdate + TDate + Flag
	Supplementary information	The combination Courseid, Subjectid, Facultyid must be unique

28.	Name	Details related to Subject
	Alias	SubjectMaster
	Where used/ how used	Use to store information related to Subject
	Content Description	CategoryId + AreaId + SubjectId + SubjectName + Description + Status + MemberId
	Supplementary information	The combination CategoryId, AreaId, SubjectId must be unique

29.	Name	Details related to Topics of a Subject
	Alias	SubTopicMaster
	Where used/ how used	Use to store information related to Topic of particular Subject
	Content Description	CategoryId + AreaId + SubjectId + TopicId + SubTopicId + SubTopicName + Description + Status + MemberId
	Supplementary information	The combination of CategoryId, AreaId, SubjectId, TopicId, SubTopicId, must be unique

30.	Name	Details related to Schedule allocated for Teaching
	Alias	TeachingSchedule
	Where used/ how used	Use to store information related to Schedule allocated for teaching particular Subject
	Content Description	Courseid + Semoryear + Subjectid + Topicid + Topicname + HasSubTopic + IsSubTopic + ParentTopicid
	Supplementary information	The combination of Courseid, Semoryear, Subjectid, Topicid must be unique

31.	Name	Details related to Topic
	Alias	TopicMaster
	Where used/ how used	Use to store information related to Topic
	Content Description	CategoryId + AreaId + SubjectId + TopicId + TopicName + Description + Status + MemberId

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	Supplementary information	The combination of CategoryId, AreaId, SubjectId, TopicId must be unique
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32.	Name	Details related to University
	Alias	UniversityMaster
	Where used/ how used	Use to store information related to University
	Content Description	UniversityId + UniversityName + Address + StateId + CountryId + ContactNo1 + ContactNo2 + FaxNo1 + FaxNo2 + Email1 + Email2 + EstablishYear + Status + Flag + Memberid
	Supplementary information	UniversityId must be unique

33.	Name	Details related to Login of User
	Alias	UserLogin
	Where used/ how used	Use to store login information of User
	Content Description	Userid(pk) + Pwd + secretquestion + Secretanswe + Themeid + Flag
	Supplementary information	Userid must be unique

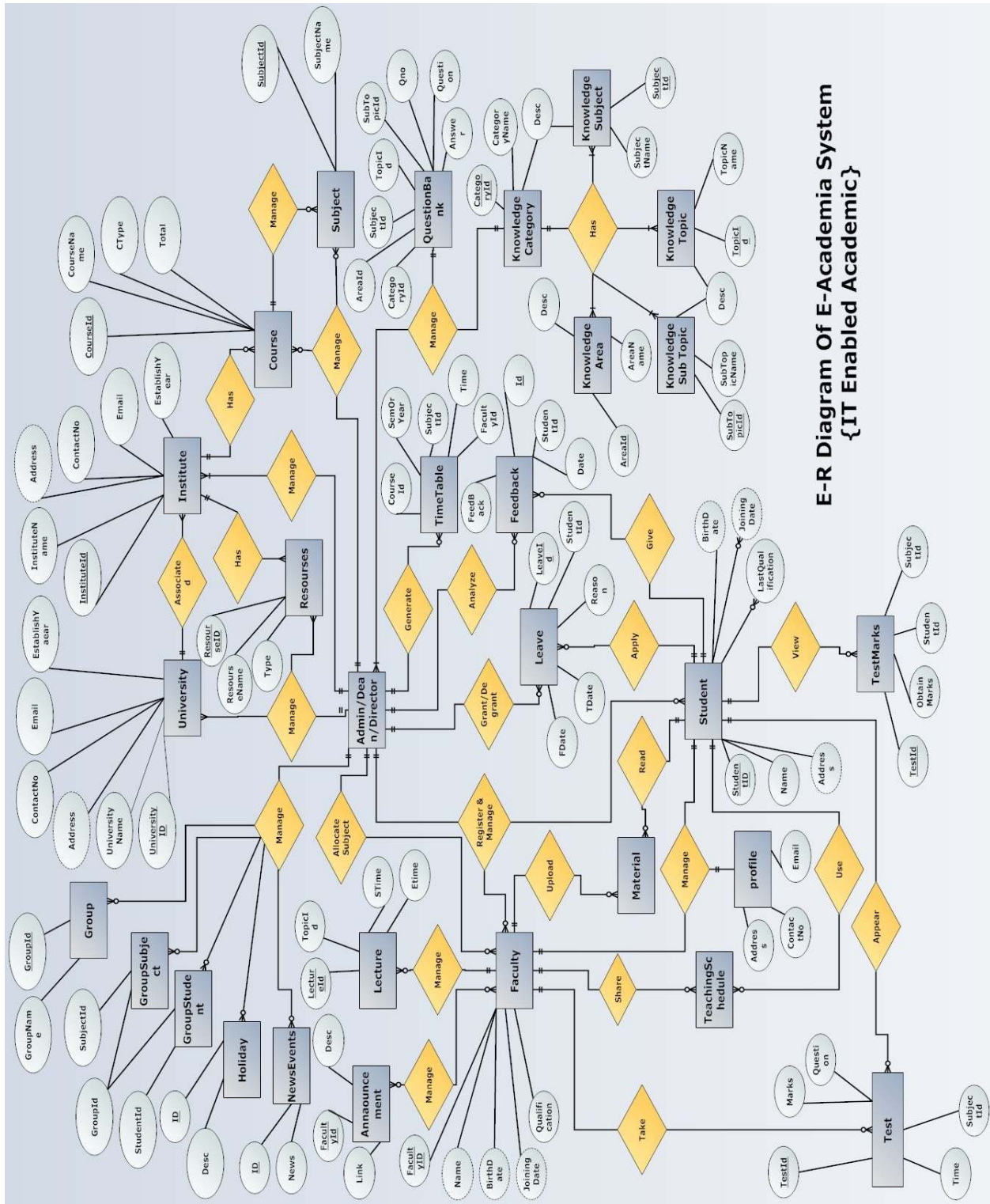
34.	Name	Details related to User
	Alias	UserMaster
	Where used/ how used	Use to store information related to user
	Content Description	Id(pk) + Name + Gender + Bdate + Jdate + paddress + taddress + phoneno + mobileno + email1 + email2 + qualification + designation + caste + Category + Type + userid
	Supplementary information	Id must be unique

2.4 Assumptions and Dependencies

Before generating time table the system should have information like subjects, subject teacher, Days of week for each subjects, no of lecture per day for each subject etc. This information will be used to determine the preference of faculty.

3. Specific Requirements

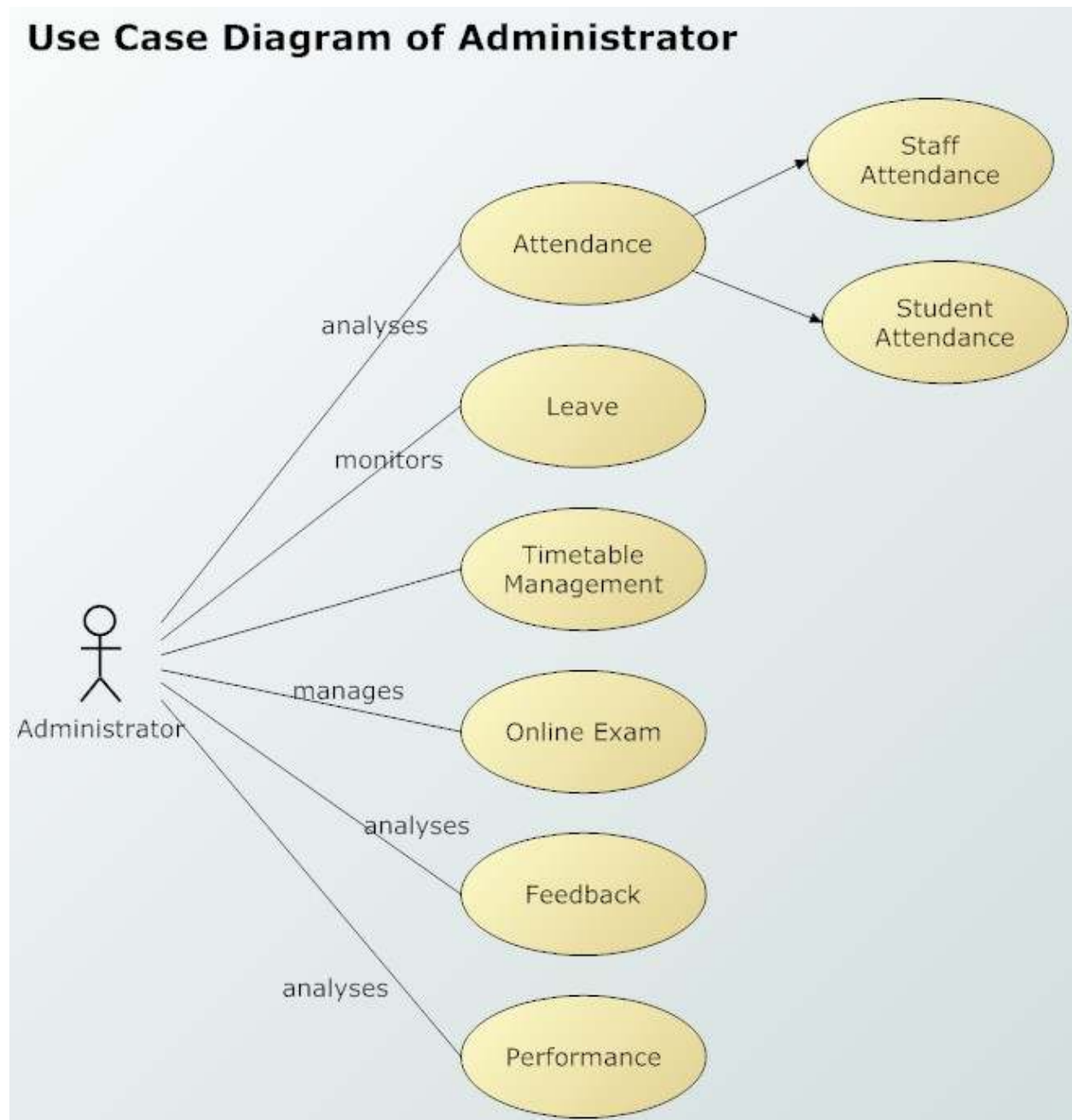
3.1 Entity Relationship Diagram



This ER Diagram specifies the overall database tables relationships maintained in our system.

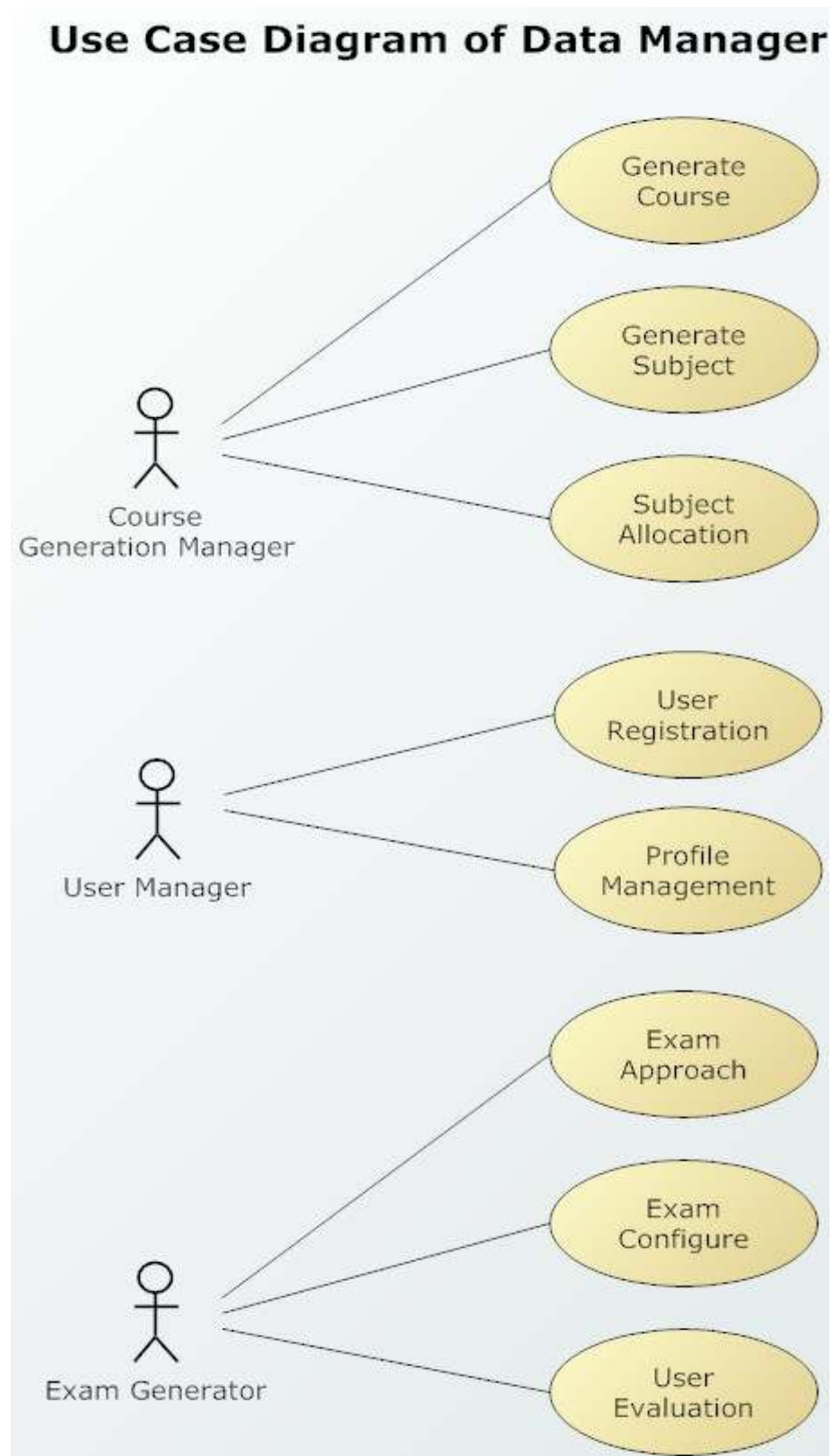
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3.2 Use-Case Reports



The use case diagram of Administrator specifies main activities of administrator. Other activities of an administrator will be viewing and controlling the activities of all components of Data Manager (namely, Course Generation Manager, User Manager, Exam Generator).

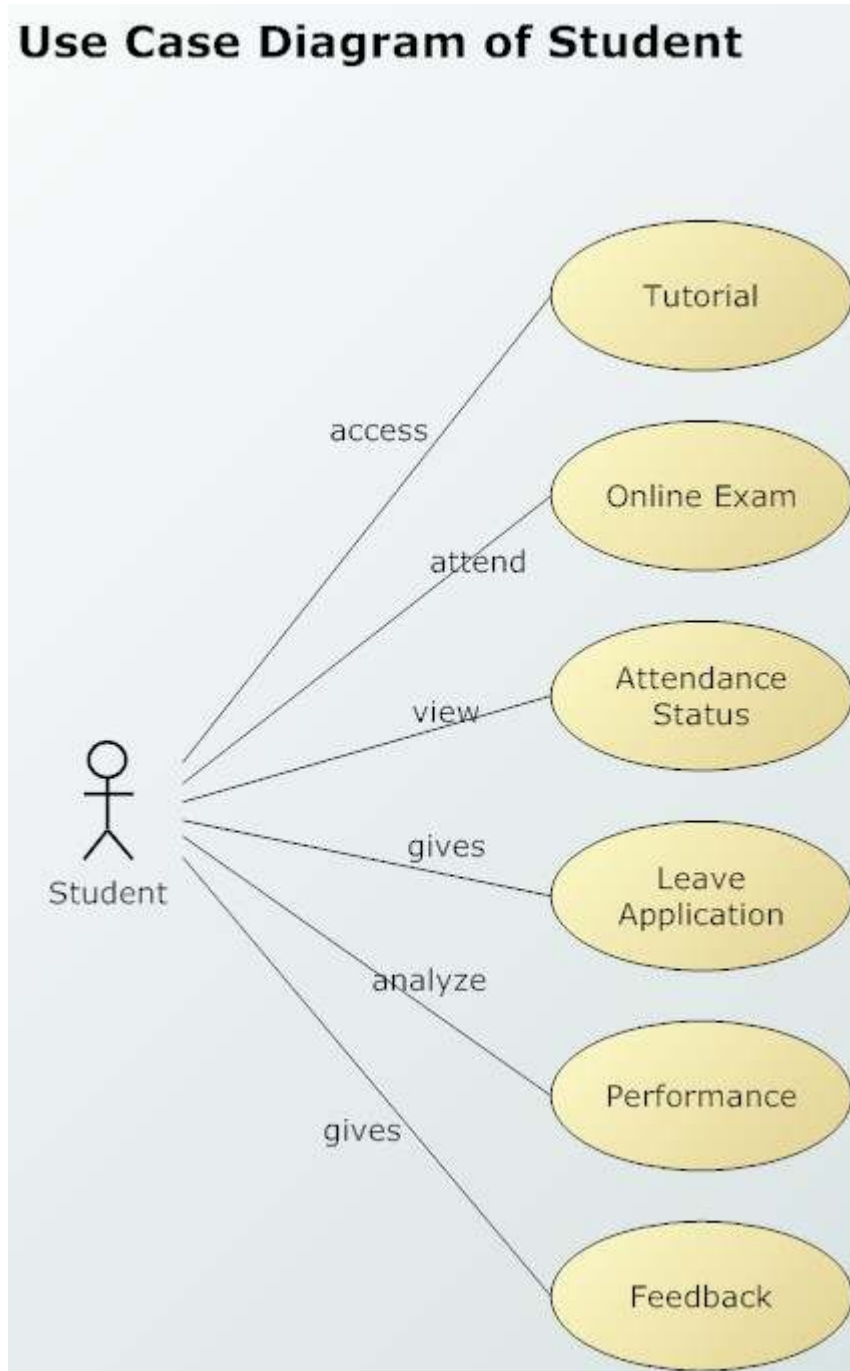
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The Data Manager consists of Course Generation Manager, User Manager and Exam Generator, which could

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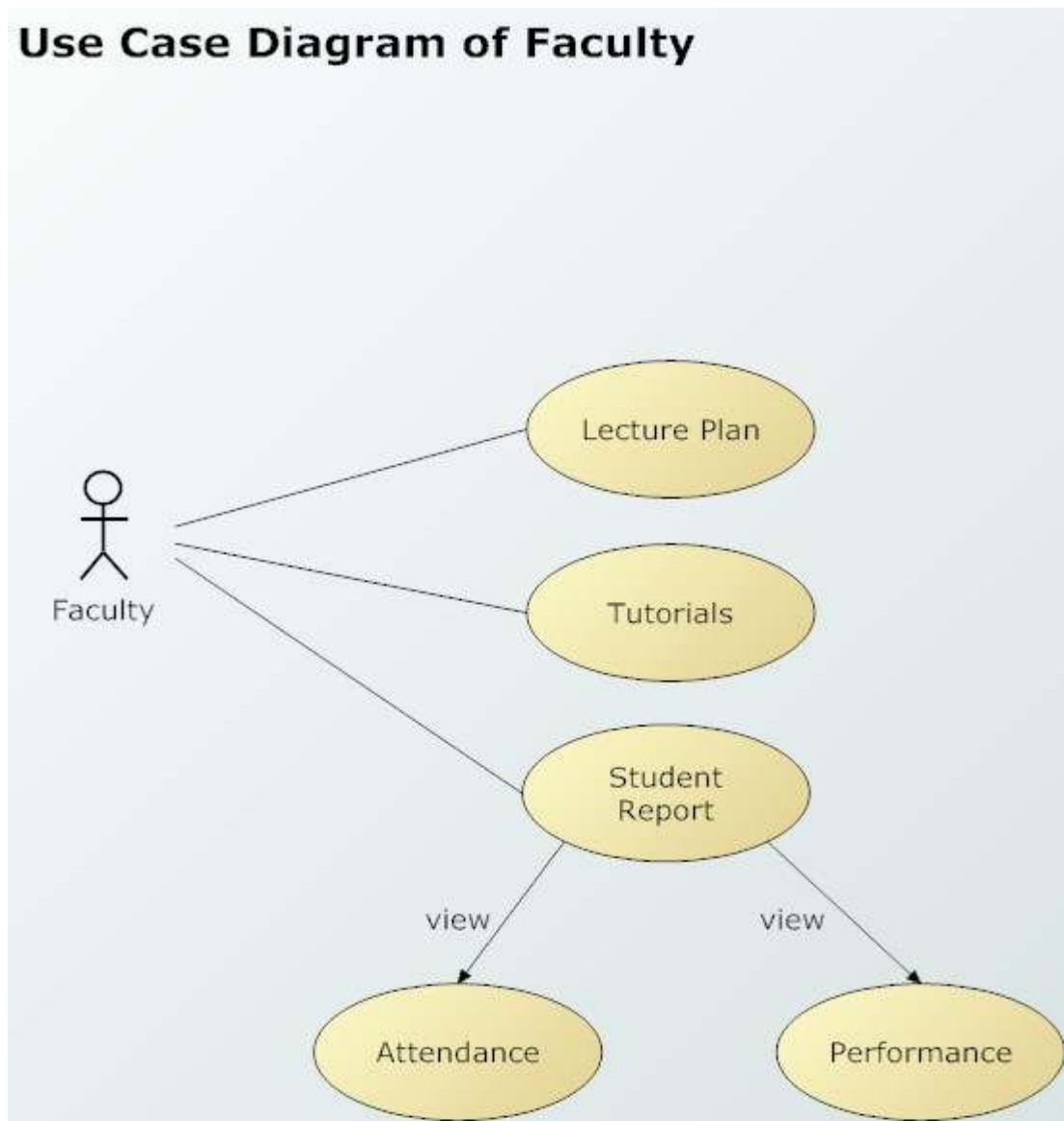
separately manage the tasks as shown above. Apart from these tasks the Data Manager manages the time table, institute information, etc.



The user of the category student could view reports related to him/her. The student could give feedback and can analyze his own performance.

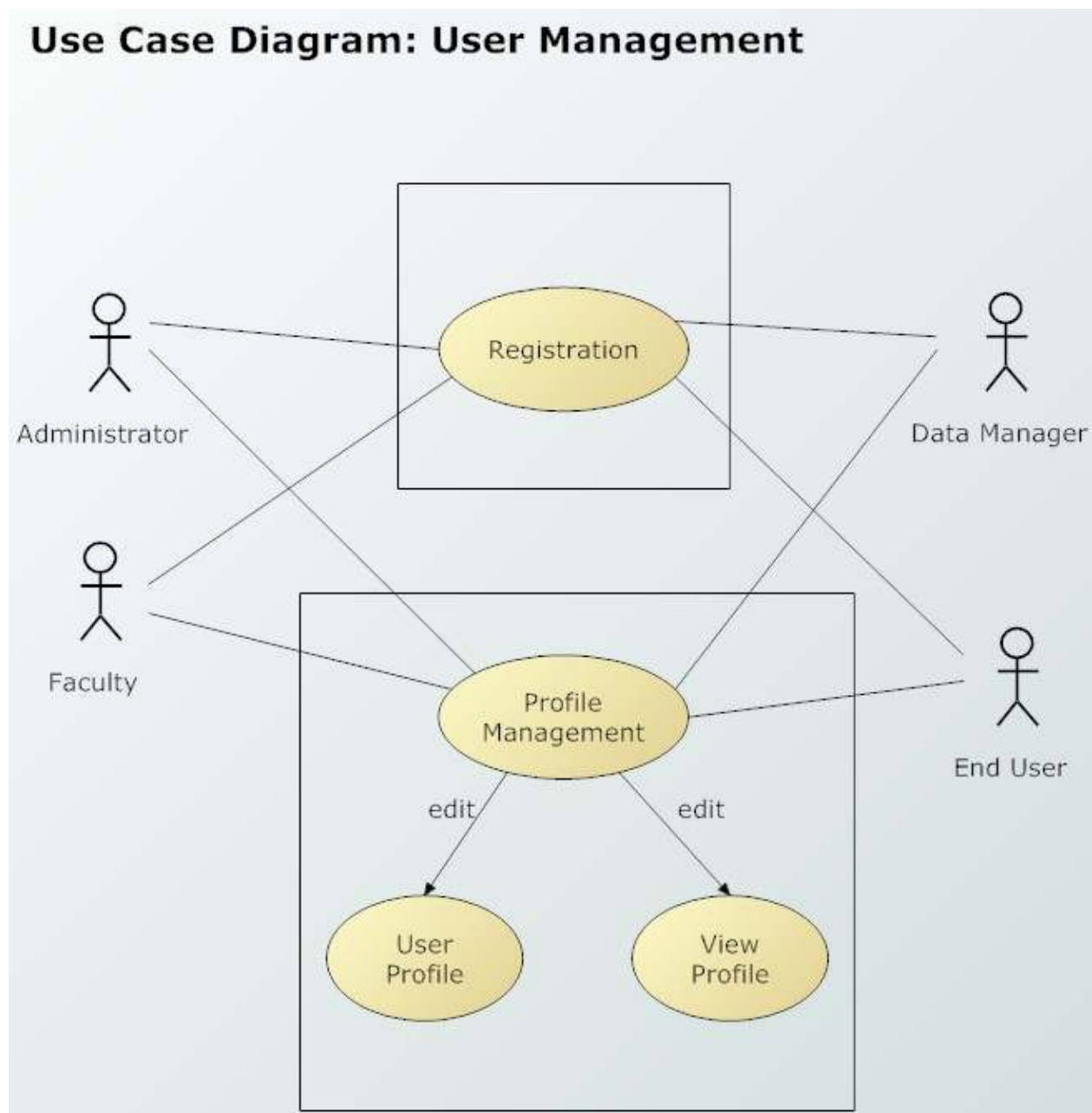
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Use Case Diagram of Faculty



The user as a faculty could submit the lecture plan based on the subjects allocated to him, could upload tutorial related to particular subject and could view reports of student.

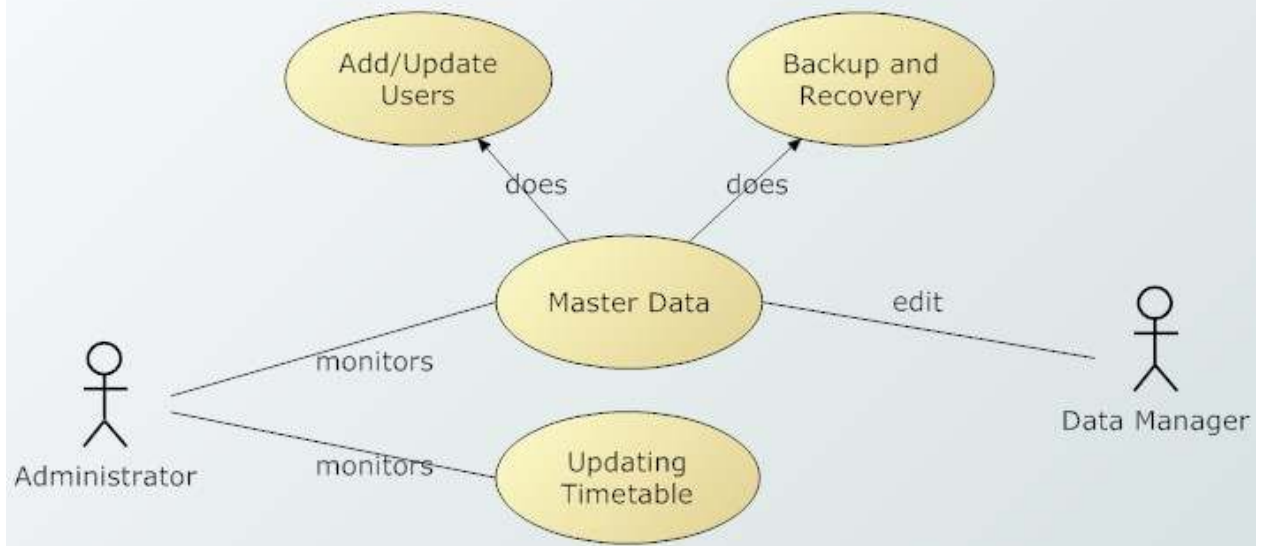
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The above use case diagram shows that how each type of user could do their registration and could manage their own profile. In the task of registration, essential security measures are taken.

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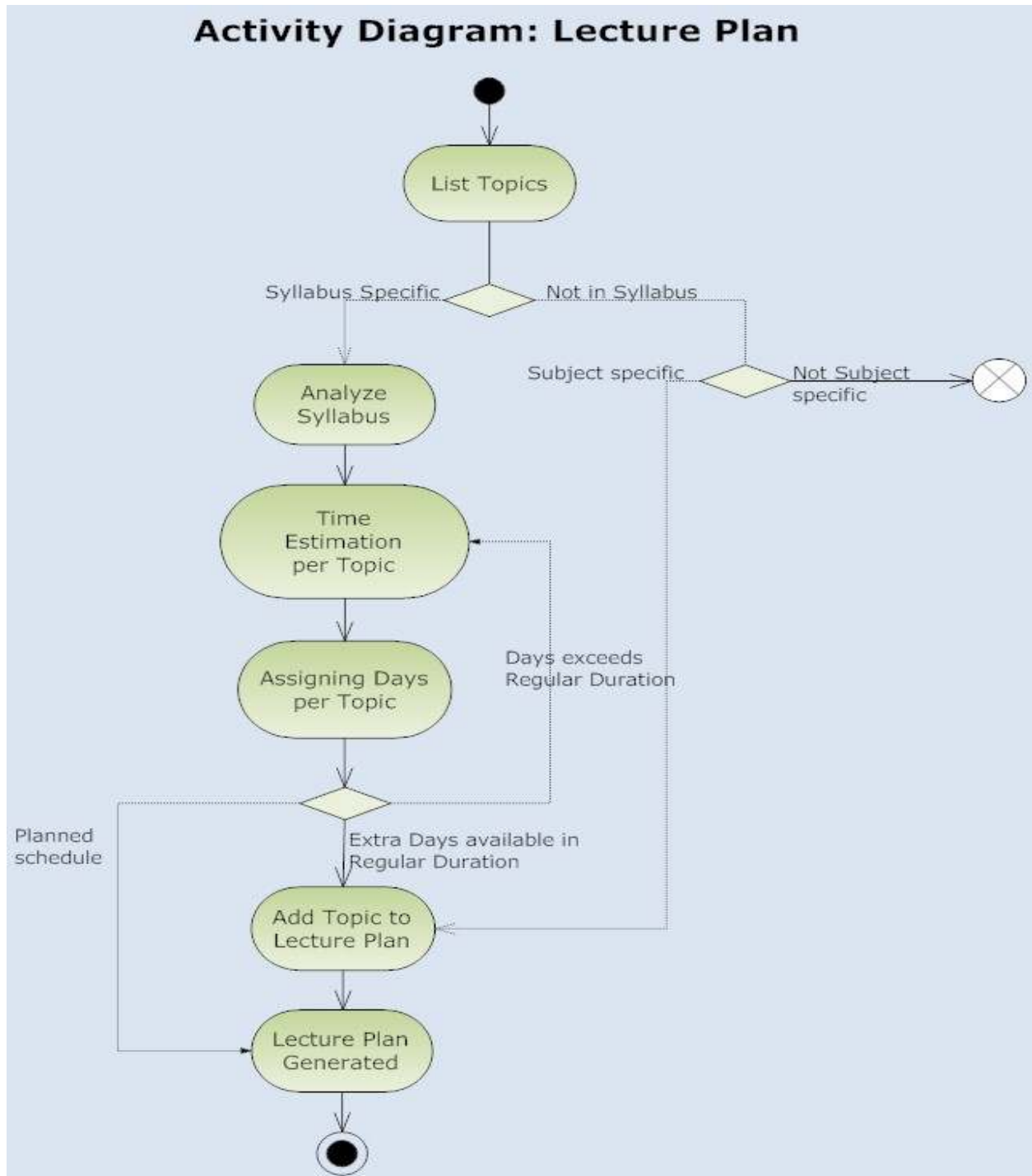
Use Case Diagram for Administrator and Data Manager



The above use case diagram shows that the data manager could edit the master data or could update any database information only as per the permission of Administrator.

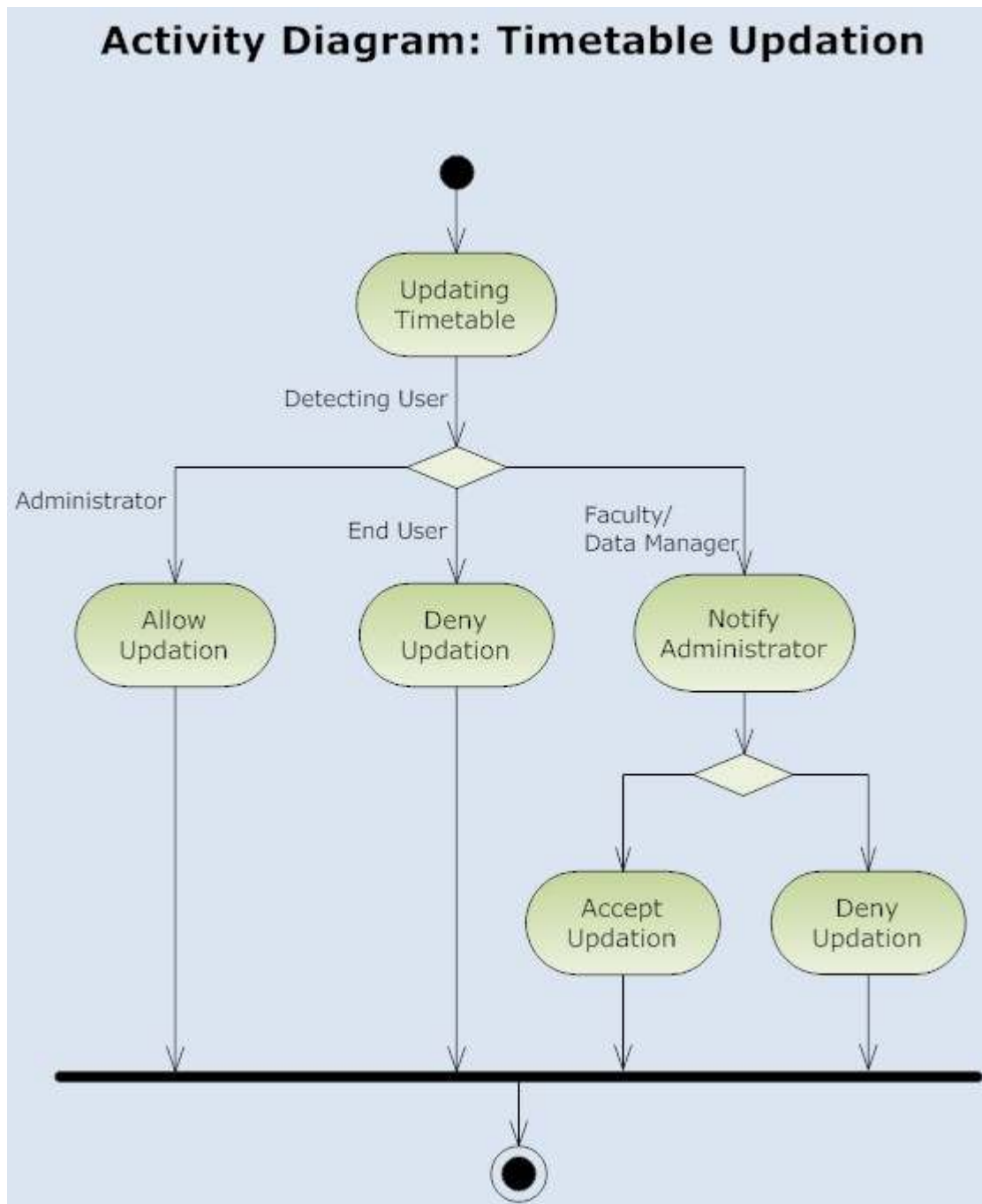
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3.3 Activity Diagram



The above activity diagram shows how the lecturer could plan out their lecture based on the syllabus of university as well as he could be able to add more topics as per the time allocated to him.

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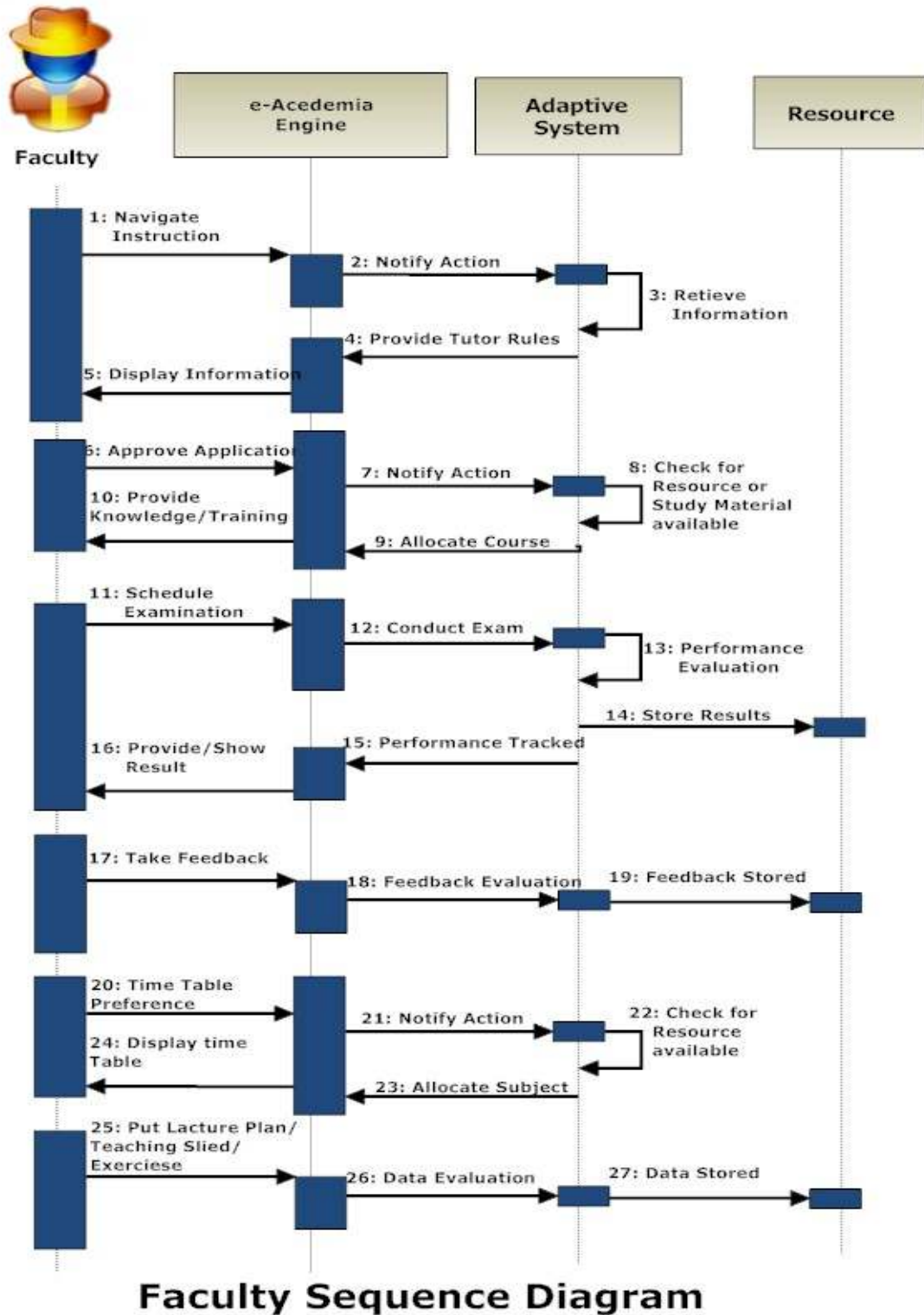


The above activity diagram shows the procedure that system follows when timetable is required to get updated as per the requirement of any user.

Similarly, the other activities of the e-Academia system could be specified such as online examination, feedback form, generating courses, subjects, etc.

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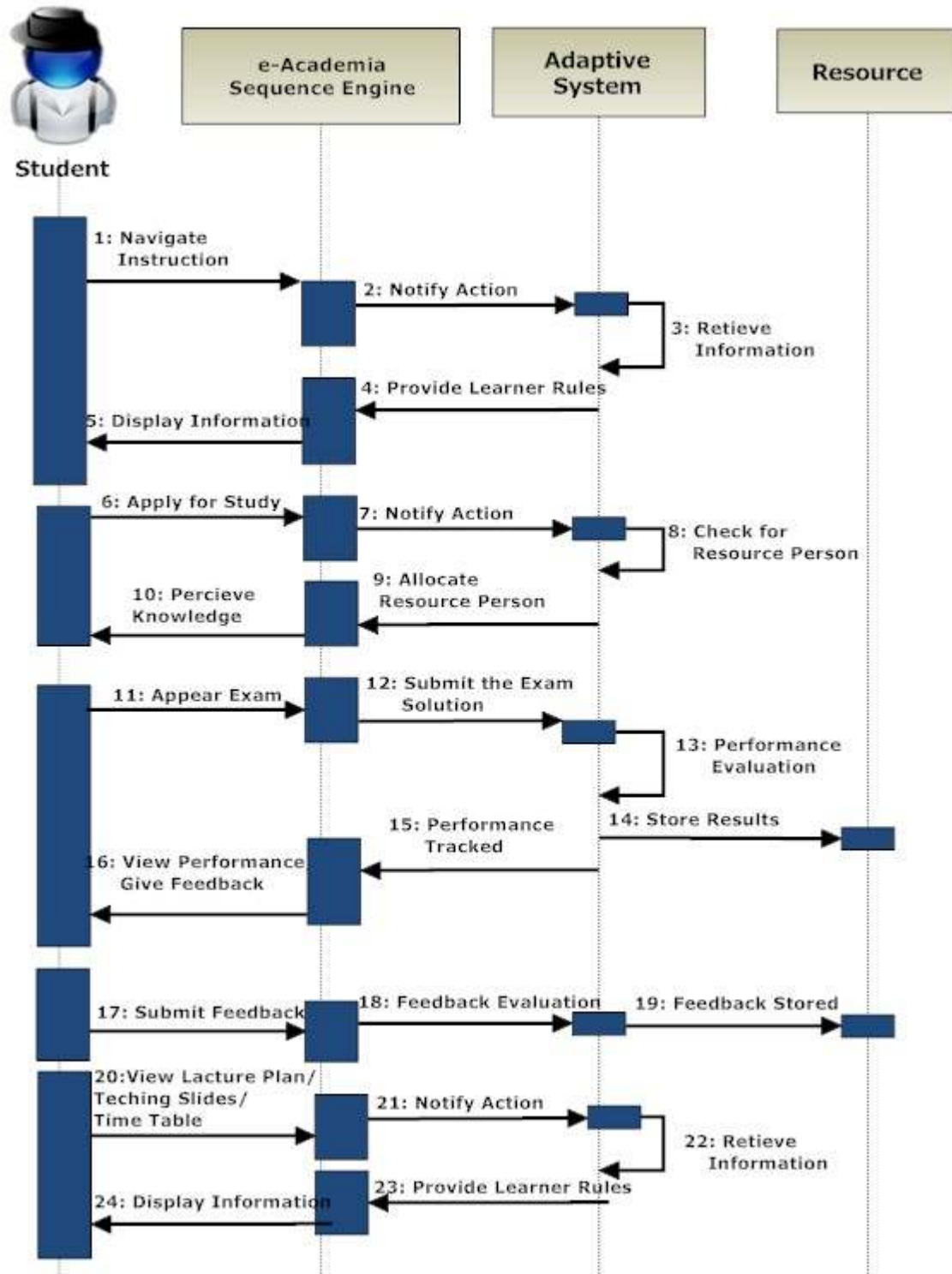
3.4 Sequence Diagram



Faculty Sequence Diagram

The above is the faculty sequence diagram, which aims to specify the sequence for the faculty performing tasks such as lecture plan, scheduling examination, taking feedback, analyzing timetable.

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Student Sequence Diagram

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The above sequence diagram shows the sequence related to student performing tasks such as accessing tutorial, attend exam, view performance and feedback, submit feedback, view information related to lecture plan, timetable, etc.

3.5 Collaboration Diagram

The collaboration Diagram could be build on the basis of the sequence diagram specified above.

3.6 Test Cases

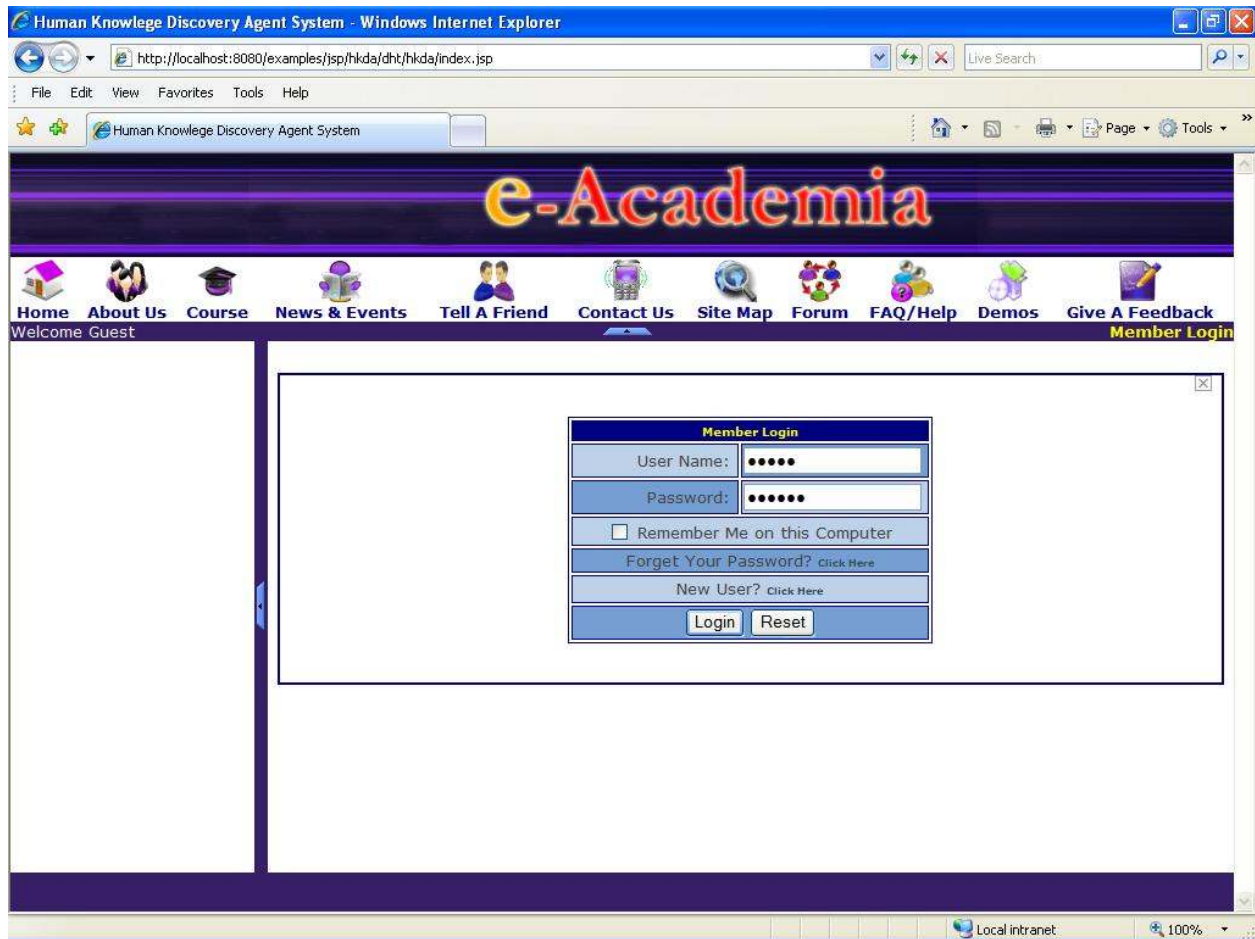
Test no	Scenario	Input	Expected Result
1	Enter incorrect User name	Aasddd, 12, 12	Login Failed
2	Select Incorrect User Type	-	Login Failed
3	Click on Submit button without filling username and password		Login Failed
4	Direct type the URL in address bar without login		Display index page
5	After successful login		Display index page
6	Submitting Form		Validate All Elements
7	Add Course Name	MCA	Valid
8	Add Course Description	,,,	Again Display Form
9	Add subject	-, ,	Again Display Form
10	Add Student	987,1243	Again Display Form
11	Add Faculty	123,132	Again Display Form

Test case guarantees the following Criteria

- Field Value Tests
- Zeros where appropriate and printed in correct format
- Minimum positive and negative values
- Maximum field sizes
- Pick lists available and display description
- Field level help
- Range Tests
- One less than lower/upper limit
- Equal to lower/upper limit
- One higher than lower/upper limit
- Middle of range
- Maximum field's value equal or greater than minimum field's value
- Maximum field's value not less than minimum field's value

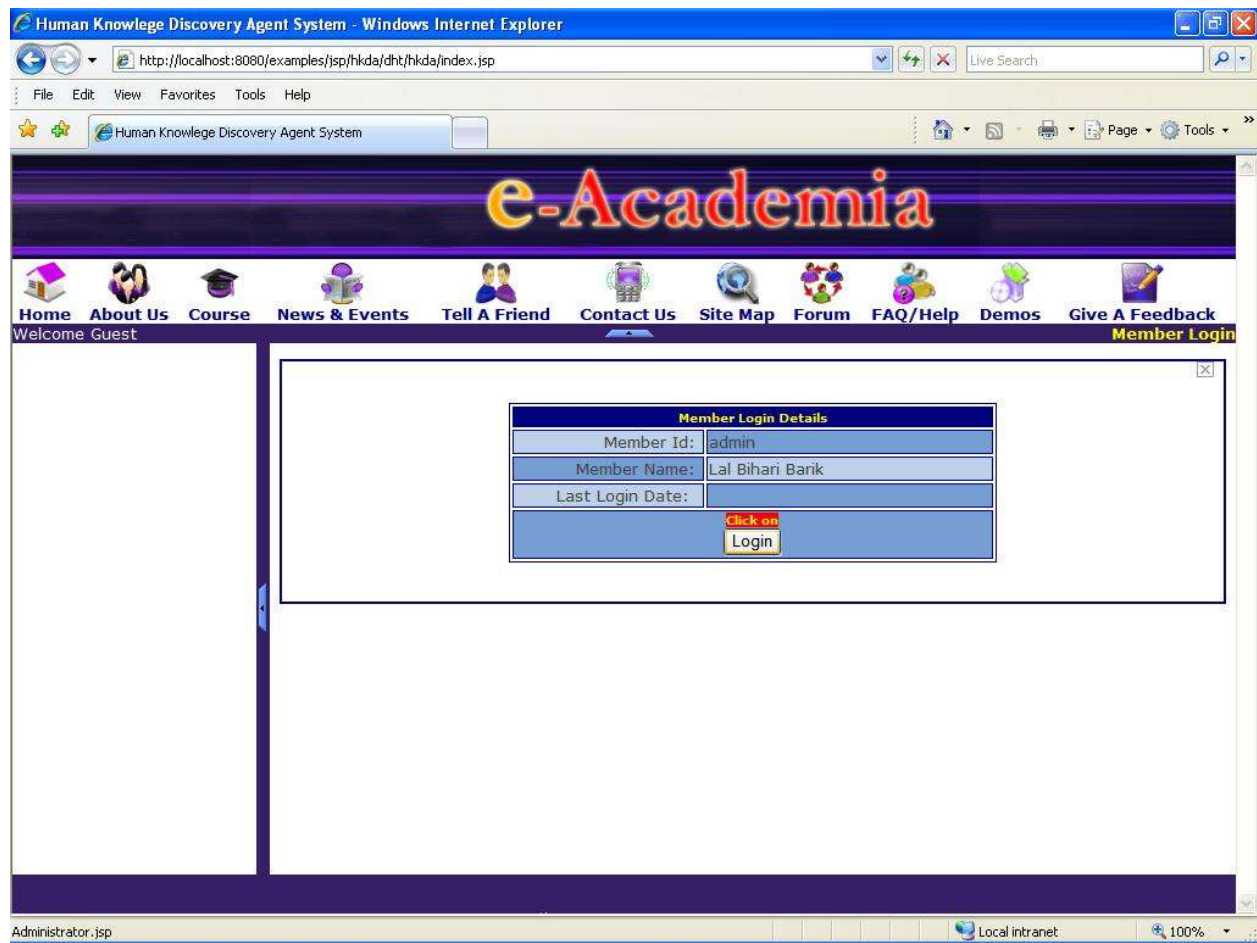
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4. User Interface



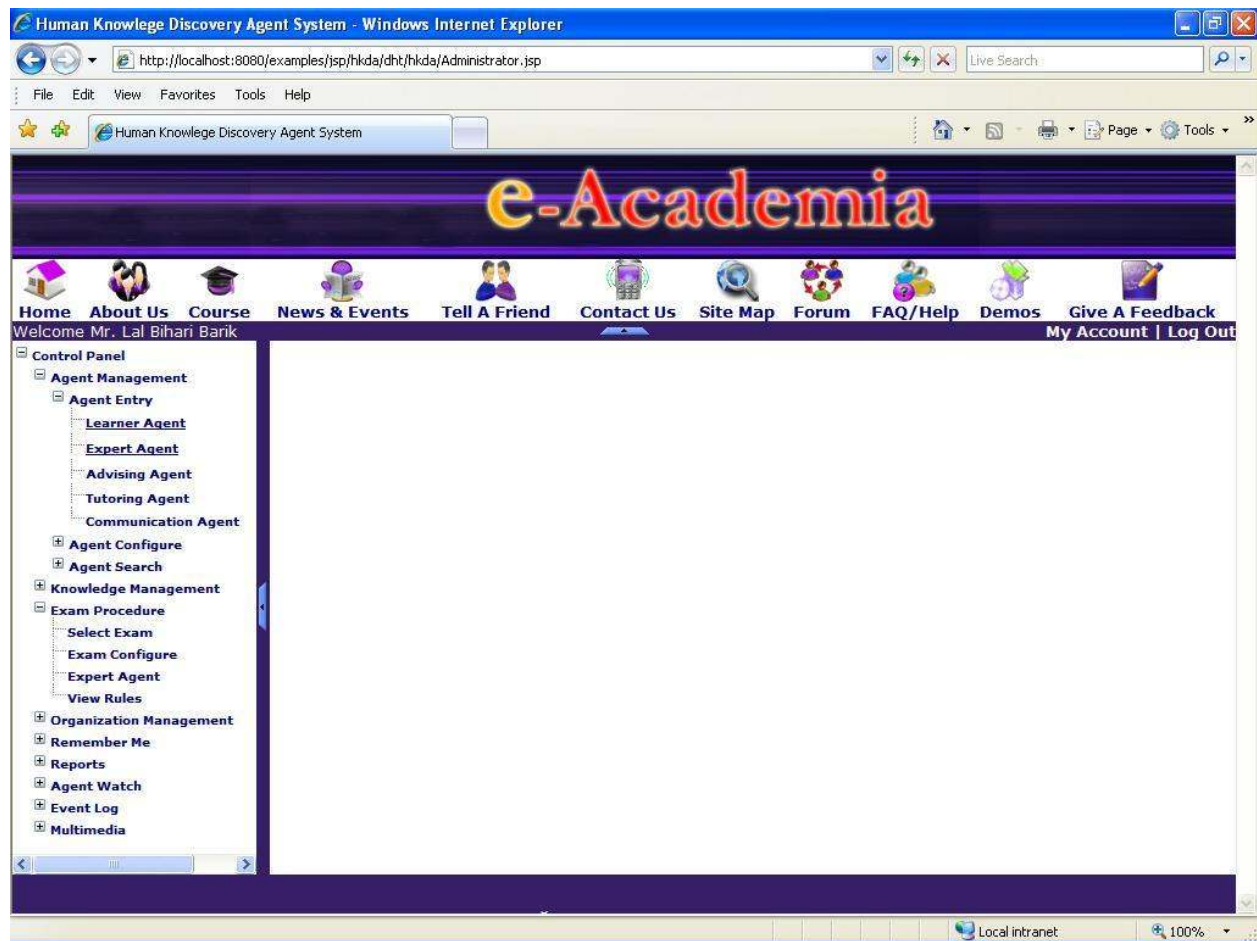
This is the login screen of e-Academia system, which is viewable by all users of the system.

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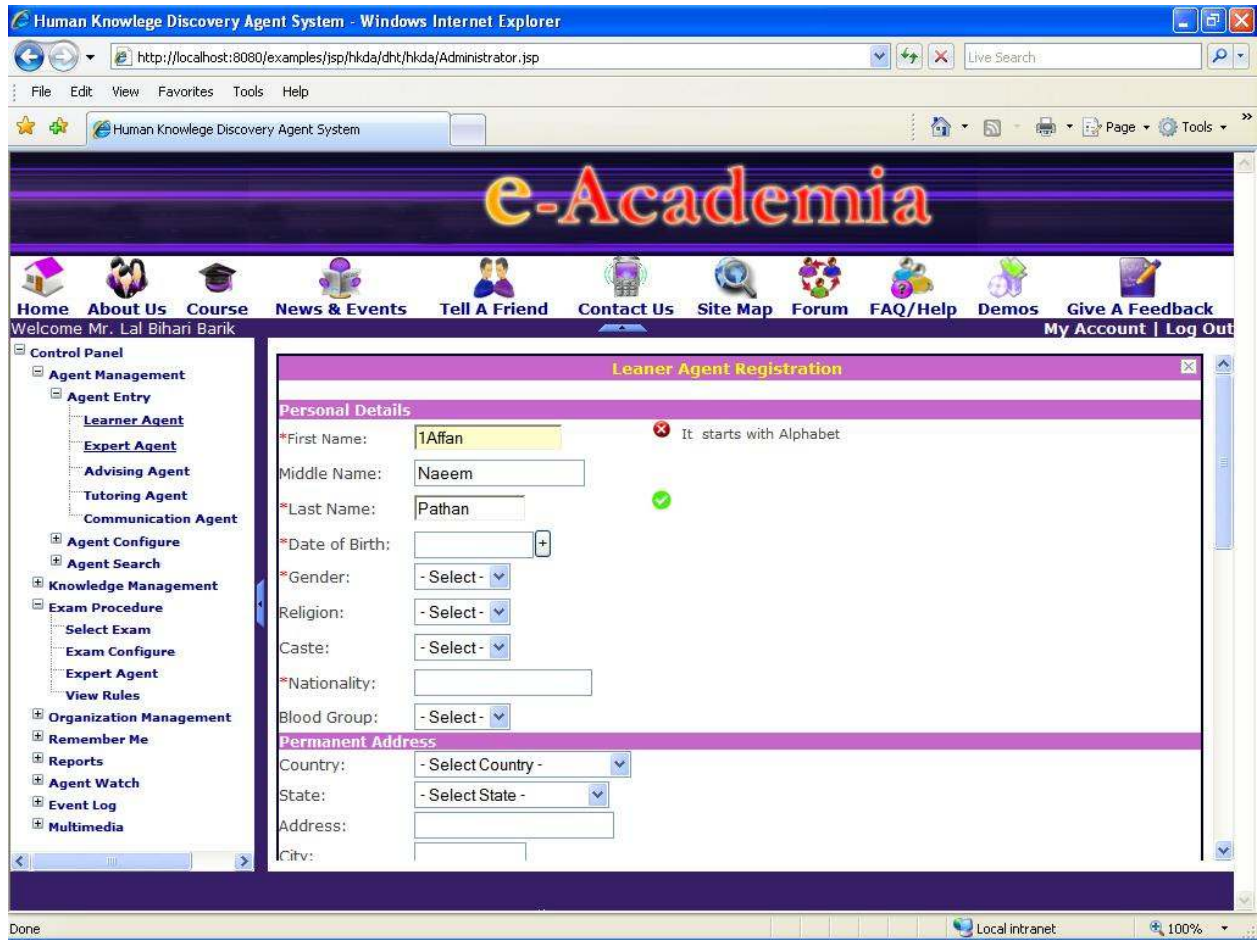
This screen appears after login of a user has completed, the user could view his login details. The **AJAX** is used to load login page in detail section of home page.

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This is home page of an administrator. The related tasks are specified in menu pane at left section of administrator home page.

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This is the user registration form of student/learner. This form is **AJAX** enabled