

**Computer Science and Engineering**

**Integrated University Department Information System**

**Software Analysis Specification**

**Version 1.0**

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Team Number: **A6**

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**REVISION LEVEL**

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**1. INTRODUCTION**

**1.1. Purpose**

This Software Project Management Plan (SPMP) will be given to the Software Assurance group (SQA), the development team, and the client. The SQA group will use this document as a means to tests the product through its life cycle while the development team uses the Software Requirements Specifications (SRS) to aid in implementing their product. The client will confirm that the his/her demands are met.

**2. SCOPE**

**2.1. Identification**

Integrated University Department Information System, A6, SAS Version 1.0, 11/19/2014

**2.2. Bounds**

The Integrated University Department Information System is expected to be used by university administrators, who will have complete access, and professors and students who will have limited access to the system. The university’s system may interact with the IUDIS as necessary. Unique to administrators, they can add and delete users. Professors may submit/change students’ grade and request lab materials and other items or personnel which may alter the budget of the university, as a result of extensive research and testing done by PHD student. Professor’s salary will be taken to account. Students may view grades and financial information. Students may make payments to their tuition and lab fees. Third party companies may access the IUDIS if they are a mundane part of the system in which they continuously provide goods/services, therefore building a tab for the university to monitor. The IUDIS will feature a departmental registrar. Ultimately, the IUDIS will only facilitate users of a specific department in a specific university and third party goods/services.

**2.3. Objectives**

Project Priority: The Integrated University Departmental Information System is an organized approach intended to help universities regulate student records, laboratory administration, the ordering of goods and services, and the management of account receivable and payable. It should be linked to a wider University system responsible for staff salaries, student transcripts, etc. The IUDIS structure provides a new information system that is faster with a slicker user interface then the outdated and archaic systems, which makes it easier for students to access their records. Simultaneously, it will be effortless for staff and faculty to use the system for submitting grades and financial information. The new user interface allows for users to interact with the system seamlessly while being aesthetically pleasing, accommodating a broader spectrum of users. The structure of the information system will be rigorously secure to protect the confidentiality, integrity and availability of the individual user.

Life Cycle: Waterfall (incremental)

Deliverables: Due Date:

Project Proposal 10/7/2014

Software Requirements Specification (SRS) 10/13/2014

Software Project Management Plan (SPMP) 11/15/2014

Software Analysis Specification (SAS) 11/19/2014

Software Design Document (SDD) 12/1/2014

**2.4. System Overview**

The Integrated University Departmental Information System is a smaller part of the larger university system that will interact with the budget system and the database system for the computer science department. The IUDIS is concerned with the users of the IUDIS, such as students, professors, advisors, other officials, and third party goods/service providers. The goal of the IUDIS is to please the user by having fast loading, easy to read, clearly arranged, and seamless navigation to all pages. Other factors that may affect the system is the load, the hard disk space, and the amount of down time the server faces. This product may be appear to be a combination of NYU’s Albert and Bursar systems.

**2.5. Document Overview**

This Software Project Management Plan (SPMP) will describe the business requirements while revisiting the functional and nonfunctional requirements from the Software Requirements Specifications (SRS). There are also details on requirements traceability and document evolution over this project’s lifecycle. Furthermore, this document will keep track of any progress in development.

**3. REFERENCE DOCUMENTS**

Integrated University Department Information System, A6, Project Proposal Version 1.1

Integrated University Department Information System, A6, SRS Version 1.1

Integrated University Department Information System, A6, SPMP Version 1.0

4. **BUSINESS REQUIREMENTS**

**4.1 Technology**

We will be using technology to make managing school grades and tuitions easier. It will be simplified and faster as a result.

**4.2 Economics**

This project is funded by the universities that have chosen to purchase a subscription. The cost of the product will depend on the features that the client desires to include in the overall product. Project will use as much open source materials as possible to minimize cost.

**4.3 Regulatory and Legal**

Regulatory and Legal requirements will not be discussed.

**4.4 Market Considerations**

There will be no market drivers for this system. This system is made for very populated universities and these universities may choose to purchase the rights via subscription if it works with their larger university system.

**4.5 Risks and Alternatives**

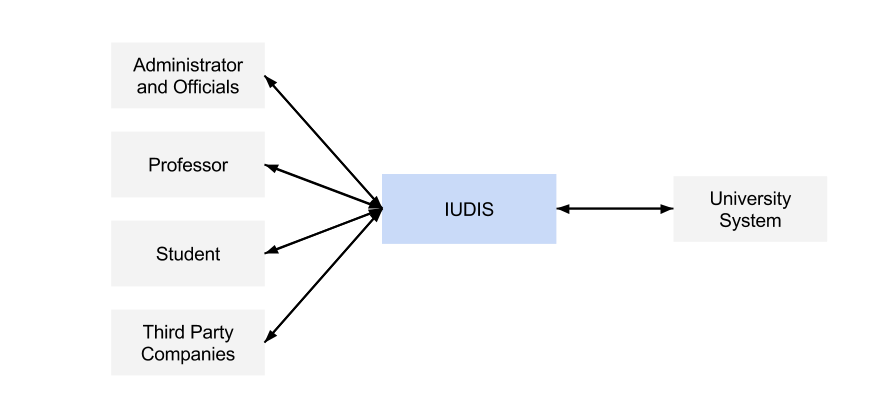
Unexpected functionality may occur. To prevent this, administrators must rigorously test the system for flaws and fix it throughout the system’s lifecycle. Since this system can be accessed through the internet, hackers might be able to hack the database. To prevent this, a firewall and/or an intranet can be use.

**4.6 Human Resources and Training**

Priority is placed heavily on training individuals in object oriented design. This is especially needed for information hiding. All members must have knowledge on Databases. A course in Databases is necessary. All members must have intermediate coding skills in Java which can be obtained by taking a course. All members must be familiar with Maven which can be attained by text and/or online resources. All members must have familiarity with web applications. This includes familiarity with HTML5/CSS3 which can be learned through text and/or online resources.

**5. LOGICAL ARCHITECTURAL SPECIFICATION**

**5.1. Context Diagram**



**5.2. System Capability Requirements**

**5.2.1. Capabilities**

There must be a method to handle the Management of Registrar.

1. Administrators/Officials must be able to create/modify/delete/view class.

1.1. Professors may vote for a prerequisite for a class.

1.2. Professors may vote on credit level for a class.

1.3. Officials must be able to set time for class.

1.4. Professors may to vote and associate a lab and/or recitation to class.

2. Administrators/Officials must be able to create/modify/delete/view any user account.

2.1. Administrators must be able to assign user permissions.

2.2. Administrators must have absolute control.

2.3. University’s system’s administrators must have absolute control.

2.4. Hold can depend on user financial status.

2.5. Hold can depend on student prerequisite.

2.6. Hold can depend on other predefined reasons by officials.

2.7. Professor must be able request to teach a class.

2.8. Students must be able request to take a class.

2.9. Professors must be able post grade for students in given class(es).

3. There must be a way to update student transcript and public them.

3.1. Student must be able to request Unofficial Transcript.

3.2. Student must be able to request Official Transcript.

3.3. Officials must be able to sign Official Transcript.

3.4. Grades and courses must be reflected on the student’s transcript.

There must be a method to handle the Management of Finance.

4. Officials from university system must be able to handle all expenses.

4.1. Professors must be able to request research funds.

4.2. Officials must be able to approve/disapprove professor’s request for fund.

4.3. Professors must be able to request goods and services.

4.4. Officials must be able to approve/disapprove professor request.

5. There must be a payable and receivable system.

5.1. Officials may make payments.

5.2. University’s system’s officials may handle payments.

5.3. Students must be able make payments via their means of paying.

5.4. Officials must be able allow third party company to allow student scholarship/grant/payments.

5.5. A direct deposit system may be used from university system.

5.6. A check mailing system may be used if direct deposit not used.

There must be a method of Communication.

6. The use of the integrated university’s emailing and mailing system will be used.

6.1. Emails will primarily be notifications from user account changes.

6.2. Officials may choose to quickly send an email from user interface to the person of whom s/he is currently viewing.

There must be a method to handle the Maintenance of IUDIS.

7. Administrators must have access to entire IUDIS and its database.

7.1. Administrators must be able to debug the entire system.

7.2. Integrated permissions depend on larger university system.

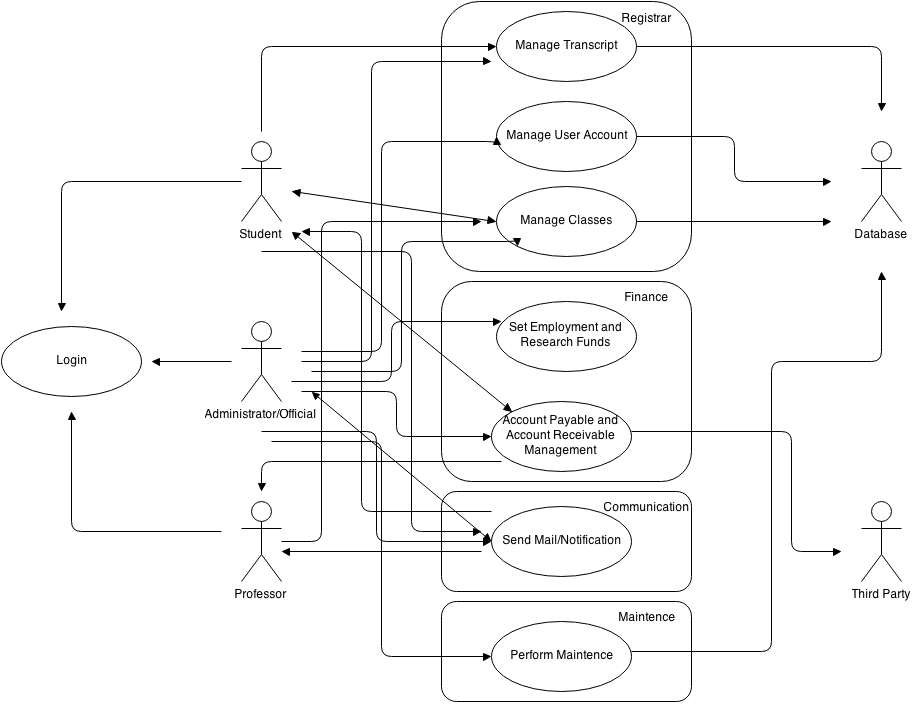
Credentials

8. There must be a way for users to login and logout.

8.1 User enters username and password to login.

8.2 User requests to logout if signed in.

**5.2.2. Use Case Diagram**



**5.2.3. Use Case Descriptions**

|  |  |  |
| --- | --- | --- |
| Login | | |
| Description | Admins, Officials, Professors and Students can use their credentials to log into the system with permissions suited based on their status. Incorrect credentials does not allow access. | |
| Pre-Conditions | User must be a part of university’s department that uses this software. User must have their account created by admin/official. | |
| Flows | Basic or Normal Flows | 1 User enters username and password.  2 System checks database for correct login credentials.  3 User now have access to their account. |
|  | Alternative Flows | 1 From step 1 above, if user enters wrong credentials, prompt error. Use case ends.  2 Use case ends if user quits/log out. |
| Post Conditions | Depending on who the user is, they will be able to make different transactions within the IUDIS. | |
| Special Requirements | Only one log in per device permitted. | |
| Extension Points |  | |

|  |  |  |
| --- | --- | --- |
| Manage Student Transcript | | |
| Description | Based on person that is logged into the system, user will either be able to edit and/or view transcript. | |
| Pre-Conditions | User must be logged in. | |
| Flows | Basic or Normal Flows | 1 Officials make and view students’ transcript.  2 Professor will then be able to edit grades.  3 Students will lastly be able to view grades on a transcript. |
|  | Alternative Flows | 1 Student may request a copy.  2 Transcript not available: present nothing to show or edit until Official makes it for student. |
| Post Conditions | There must always be an existing student transcript stored in the database, even if the student is no longer in the University. | |
| Special Requirements |  | |
| Extension Points |  | |

|  |  |  |
| --- | --- | --- |
| Management of Classes | | |
| Description | This is how the registrar’s classes are created and filled with students and associated to a professor that will teach the class. Based on user permissions, user will be able to do different things. | |
| Pre-Conditions | User must be logged in. | |
| Flows | Basic or Normal Flows | 1 Official creates (opens) a class  2 Professor may request teaching it  3 Professor may vote on class’s credit level and prerequisites.  4 Student may choose to register for class or remove themselves from class. |
|  | Alternative Flows | 1 Block student from registering for class if s/he does not have prerequisites.  2 Block professor from teaching if s/he is not fit to teach it.  3 Block student if his/her financial side is not taken care of; create an account hold in the Management of User Accounts used case. |
| Post Conditions | Either student is registered for classes or professor given a class. | |
| Special Requirements |  | |
| Extension Points |  | |

|  |  |  |
| --- | --- | --- |
| Management of User Accounts | | |
| Description | This is how administrators/officials will create and edit user accounts. Students and Professors will be able to view their account. | |
| Pre-Conditions | User must be logged in. | |
| Flows | Basic or Normal Flows | 1 Admins/officials can create user account, which user will be able to use in the department.  2 Professor will be able to view their account information  3 Student will be able to view their account information |
|  | Alternative Flows | 1 Account hold created if user’s financial side has not been taken care of. Access will be blocked to registrar until they handle their financial side in the Account Receivable and Payment Management used case.  2 Students may be restricted to prerequisites. |
| Post Conditions | There must be an existing account if creation or editing of user account is done. There must be no existing account if admin/official deletes account. | |
| Special Requirements |  | |
| Extension Points | Usability of account may be blocked and/or refer to Receivable and Payable use case. | |

|  |  |  |
| --- | --- | --- |
| Set Departmental Equipment and Research Fund | | |
| Description | This is where budget that is set aside for other things get taken into consideration. | |
| Pre-Conditions | User must be an Administrator or Official to access this used case. | |
| Flows | Basic or Normal Flows | 1 Tally fund from university necessities such as equipment.  2 Tally any requested research fund.  3 Admin/Official may view this resulting sum. |
|  | Alternative Flows |  |
| Post Conditions | The sum of fund must reflect on wider university system. | |
| Special Requirements |  | |
| Extension Points |  | |

|  |  |  |
| --- | --- | --- |
| Account Receivable and Payable Management | | |
| Description | This is where students pay their tuition, employees receive their payments, and Officials pay third party for their services. | |
| Pre-Conditions |  | |
| Flows | Basic or Normal Flows | 1 If student, s/he will view his/her balance. If official, view third party’s bill or view all employees pending paychecks. If professor, view paycheck.  2 Student may enter account s/he wishes to pay. If official, enter payment amount for third party transaction or send out employee paychecks.  3 If student, send student notification. If official, log transaction. |
|  | Alternative Flows | 1 Invalid amount: re-prompt student or official to enter amount from step 2 above.  2 Invalid date: Officials may only send paychecks out on certain dates (step 2 above). |
| Post Conditions | System logs and/or notifies via email of any transaction. | |
| Special Requirements |  | |
| Extension Points |  | |

|  |  |  |
| --- | --- | --- |
| Communicate | | |
| Description | Mailing and notifications will be handled here. | |
| Pre-Conditions | Depending on reason for mail or notification, this action might be invoked by another used case. | |
| Flows | Basic or Normal Flows | 1 If any used case perform an action, mail recipient (or the user that that action was performed on).  2 Officials may access emailing directly and send out emails to whoever they wish to send to. |
|  | Alternative Flows | 1 Account does not exist: send an error email back to the sender. |
| Post Conditions | A user gets a mail. | |
| Special Requirements |  | |
| Extension Points | Used cases from Registrar or Financial categories may access this use case at step 1. | |

|  |  |  |
| --- | --- | --- |
| Perform Maintenance | | |
| Description | Administrator will be allowed to shut system down and debug system or perform updates as necessary. | |
| Pre-Conditions | User must be Administrator. | |
| Flows | Basic or Normal Flows | 1 User can debug entire system |
|  | Alternative Flows | 1 Restart system. |
| Post Conditions | System must be up and running. | |
| Special Requirements | System must be shut down or unavailable to other users. | |
| Extension Points |  | |

**5.3. User Interface Requirements**

The IUDIS satisfies all user requirements set forth by the client. Administrator/Officials will be able to manage a larger user base of professors and students once the IUDIS connects the individual departments to the overall system. Professors will have to be provided a friendly user interface that performs many functions to manage a variety of their classes. This includes publishing final grades, requesting materials for labs/classes, and management of departmental budget (done by the head of the department). The Students on the other hand will have a much simpler requirements for they will only need to be able to review their final grades, register for courses, and manage their tuition.

Administrator/Officials

This user should have the most technical expertise. He or she will need to have experience with server maintenance and be able to manage a large user base of professors and students. It will be this user’s responsibility to make sure the IUDIS is running and that other users are being given the correct credentials.

Professor

This user needs to understand how to operate the website interface that will be provided by IUDIS. He or she will need minimal technical experience since they will be provided a user friendly interface. However, it will be necessary for them to perform more functions than the user as they will have to manage their classes. This includes publishing final grades and requesting materials for labs/classes. As a part of the department and university budget, a counter will be kept of the professor’s salary and research funds.

Student

This user is similar to the professor. They will have minimal technical experience as they will be provided an easy to use interface. Their level of technical ability will be lower than that of professors since students only need to be able to review their final grades, register for courses, and manage their tuition.

**5.4. Component (Component/Package/Subsystem) Architecture**

**5.4.1. Component Descriptions**

Search: Search for a user account either in Financial section or Registrar.

Communication: send an email to other users on system, and/or receive updates and notification status

Manage Financial Accounts: Handle charges and budget, and will be tallied for the larger university system.

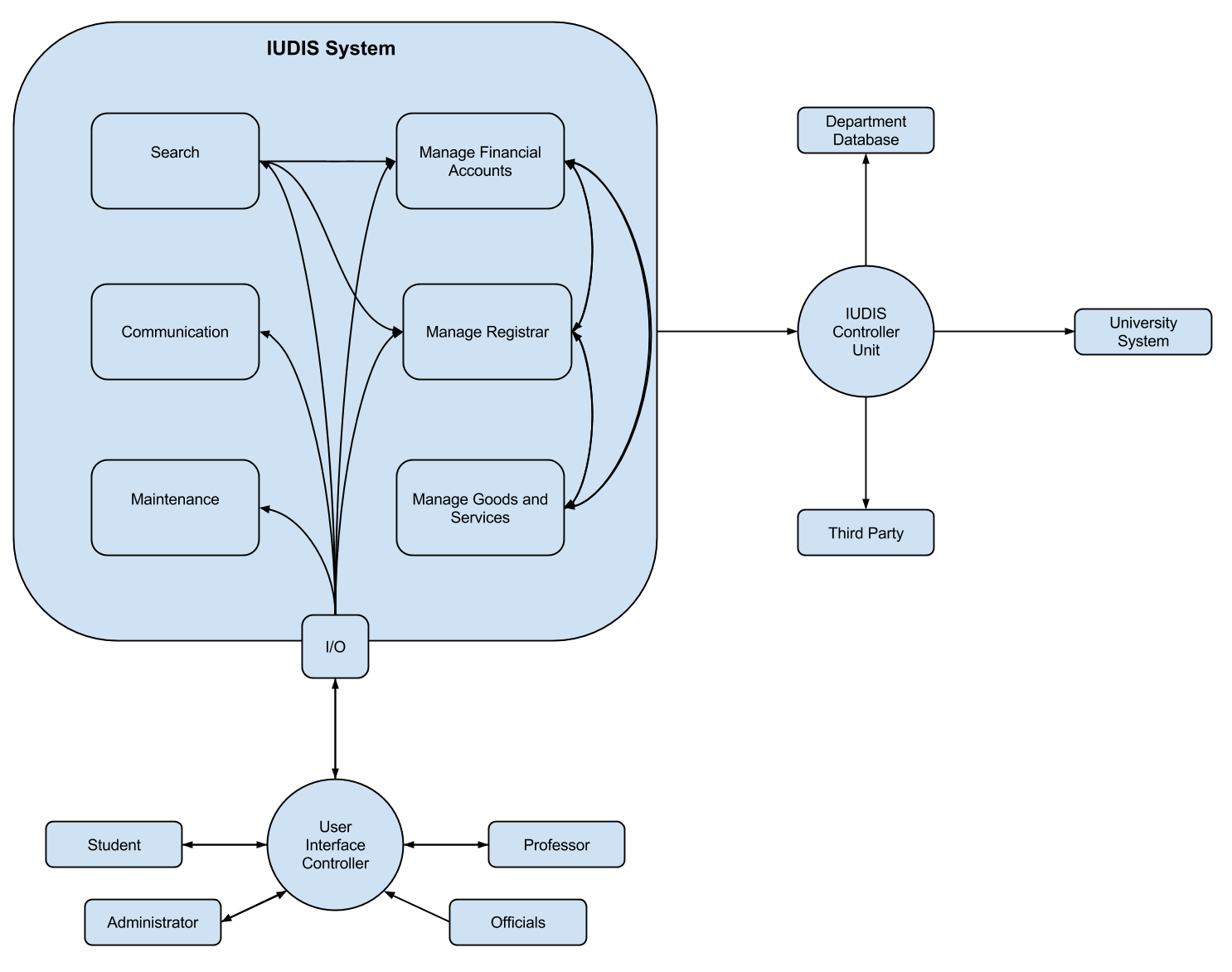
Manage Registrar: Create/Modify/Delete/View/ Enroll/Drop classes (permissions depend on user). Student records will be made available to larger university system.

Manage Goods and Services: Commission Third party clients for products and assistance

Maintenance: Admin may access this when system is in debugging process.

I/O: Receive a user input. Display output to user.

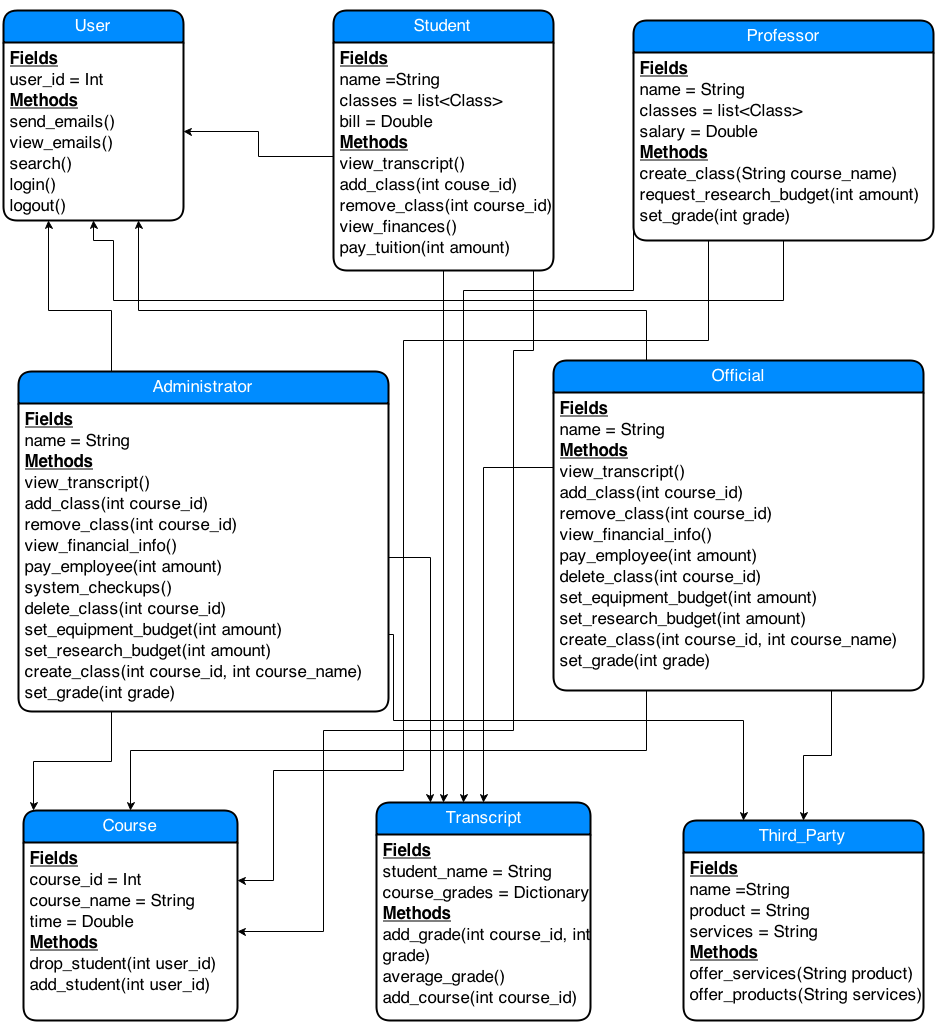
**5.4.2. Component Architecture Diagram**



**5.5. Class Diagrams**



**5.6. Class Relationship/Interaction Diagrams**



**5.7. Events**

**5.7.1. Motives**

Consumers demand for a cutting-edge, richer and more personalized connected experience between the overall systems and subsystems between departments since gathering information from smaller systems might be difficult. With their own personal dashboard users are able to get work done faster, and meet their deadline in a suitable fashion. The IUDIS gratifies all of the end user’s basic needs and conveniences, with a smooth interaction between larger systems and the smaller subsystems system**.**

**5.7.2. Event Diagrams**

Refer to the sequence diagrams in section 5.10.1.

**5.8. Activity/State (Scenario) Section**

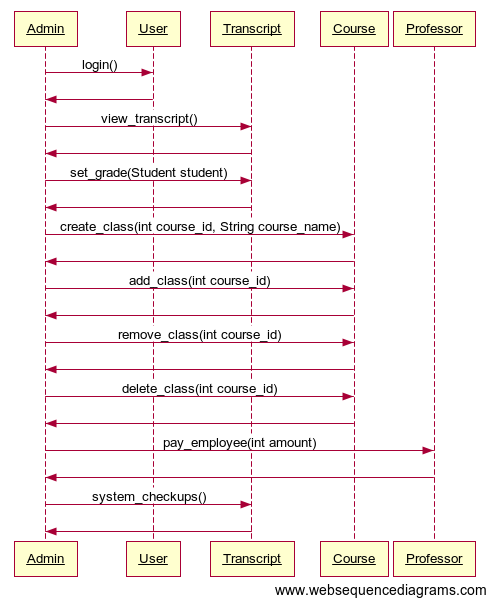
Activity/State (Scenario) Section will not be discussed. However, this will be discussed during design.

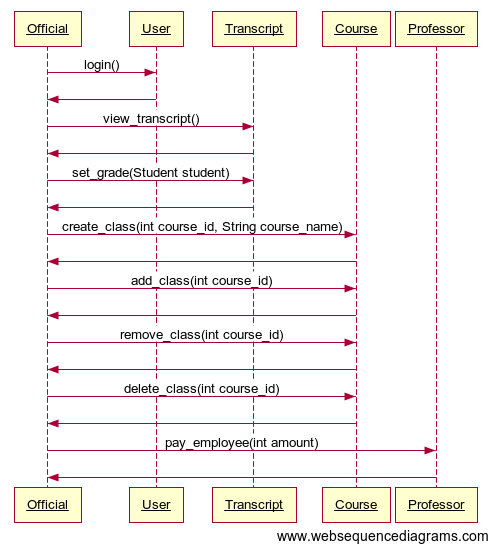
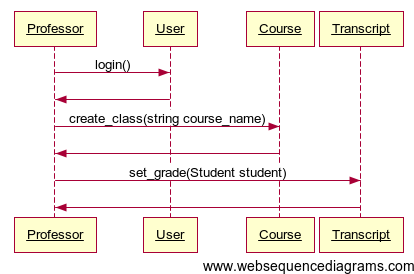
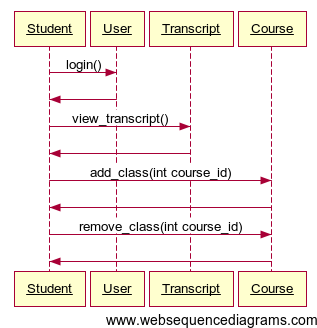
**5.9. State Logic**

State Logic will not be discussed. However, this will be discussed during design.

**5.10. Behavior**

**5.10.1. Sequence Diagrams**

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**5.10.2. Collaboration Diagrams**

Collaboration Diagrams will not be discussed. However, this will be discussed during design.

**5.11. Dictionaries**

Refer to the dictionaries in section 12.1.

**6. NON-FUNCTIONAL/OPERATIONAL SPECIFICATIONS**

**6.1. System External Interface Requirements**

**6.2. Safety Requirements**

Anyone who uses the back-end of the system must be trained for operating electrical equipment along with its safety measures.

**6.3. Security and Privacy Requirements**

Database must have authorized persons accessing it. A firewall must be in place to protect external attacks from potential hackers.

**6.4. System Environment Requirements**

An indoor environment is required as it is the most suitable environment for electronics and safety.

**6.5. Computer Resource Requirements**

**6.5.1. Computer Hardware Requirements**

The server hardware must be able to support a user base of around 50,000, the average size of a large university.

The minimum server specs are: 4 CPUs 2.6 GHZ and 4GB of RAM and 10TB disk space.

**6.5.2. Computer Hardware Resource Requirements**

The IUDIS should be accessible from any personal or business computer. It is mandatory that each administrator have a computer for this system.

**6.5.3. Computer Software Requirements**

Computer Software Requirements will not be discussed. However, this will be discussed during design.

**6.5.4. Computer Communications Requirements**

Computers and servers will be networked with at least a bandwidth of 50Mb/s.

**6.6. System Quality Factors**

Reliability, functionality, and usability are most important.

**6.7. Design and Construction Constraints**

Design and Construction Constraints will not be discussed. However, this will be discussed during design.

**6.8. Personnel-Related Requirements**

It is mandatory that personnel are experts at programming. Specific requirements for personnel will be discussed later in development.

**6.9. Training-Related Requirements**

The IUDIS must be user-friendly to basic users. Administrators, Officials, Professors, and students are all from different realms of knowledge. Ideally, the IUDIS should be intuitive to use for everyone.

**6.10. Logistics-Related Requirements**

Logistics-Related Requirements will not be discussed.

**6.11. Packaging Requirements**

Packaging Requirements will not be discussed.

**6.12. Precedence and Criticality Requirements**

Precedence and Criticality Requirements will not be discussed.

**6.13. Other Requirements**

Other Requirements will not be discussed.

**7. SYSTEM TEST PLAN REQUIREMENTS**

SQA will be responsible for ensuring that these documents fulfill the system’s requirements. To do this, the SQA team will generate test cases for our system and run them through the documentation to see if they can be worked through. SQA team will continue to generate test cases for our system as well as review the documentation to ensure it fulfills the client’s needs. The SQA may require a sample database to run their test cases on all processes. Then, a set non-programmers will test the user interface.

**8. QUALIFICATIONS PROVISIONS**

Documents will be maintained by using a specific outline provided by the advisor.

Quality is of utmost importance for this system and its reliability will be what separates it from existing systems. The SQA group will handle Quality Control. They will test using plan that they have developed and report to the development team with defects/faults that they have found.

There will be weekly meeting amongst the developers and the clients/client representatives. Work will be verified by tracing back to the SRS. Self-reviews will be done. This is only done by authors of each artifact. Peer reviews are also done similarly. Walkthroughs are done for faults. Inspections are done for detailed reasons and are documented.

**9. REQUIREMENTS TRACEABILITY**

All requirements can be traced to SRS section 7 and project proposal. The requirements for this system have been outlined by the software development team. A document of requirements that have been fulfilled and ones that are currently in progress will be sent with each version release. The interval in which this happens will increase or decrease depending on how on track the system is with what is desired by our buyers. This way the requirement control and its traceability will be documented every step of the way and will be effectively communicated between the developer and the client.

**10. RATIONALE**

The rationale behind the Integrated University Department Information System is to allow a seamless integration between huge university systems and the department system. The computer science department may have many small and independent functions from the main university system and so it should prove to be easy if the department handles its budget by itself while the larger university system tallies the department’s budget into its own budget. Furthermore, students’ grades and registration should be handled likewise.

**11. NOTES**

**12. APPENDICES**

**12.1. Dictionaries**

|  |  |  |
| --- | --- | --- |
| **Class** | **User** |  |
| **Parent** | None |  |
|  | **Name** | **Description** |
| **Methods** | send\_emails | send an email to another user |
|  | view\_emails | view an email that has been received |
|  | search() | search for a name or course on the registrar |
|  | login() | log into the system |
|  | logout() | log out of the system |
| **Attributes** | user\_id | int |

|  |  |  |
| --- | --- | --- |
| **Class** | **Student** |  |
| **Parent** | User |  |
|  | **Name** | **Description** |
| **Methods** | view\_transcript | view the student's transcript |
|  | add\_class | add a class to a student's schedule |
|  | remove\_class | remove a class from student's schedule |
|  | view\_finances | view bills |
|  | pay\_tuition | pay some or all of the tuition |
| **Attributes** | name | string |
|  | bill | double |
|  | courses | list<Courses> |

|  |  |  |
| --- | --- | --- |
| **Class** | **Professor** |  |
| **Parent** | User |  |
|  | **Name** | **Description** |
| **Methods** | create\_class | creates a class for students to enroll in |
|  | request\_research\_budget | ask the university for research funds |
|  | set\_grade | give a student from a class a grade |
| **Attributes** | name | string |
|  | courses | list<Course> |
|  | salary | double |

|  |  |  |
| --- | --- | --- |
| **Class** | **Administrator** |  |
| **Parent** | User |  |
|  | **Name** | **Description** |
| **Methods** | view\_transcript | view a transcript |
|  | add\_class | add a class for students to enroll in |
|  | remove\_Class | remove a class |
|  | view\_financial\_info | view finances of any user |
|  | pay\_employee | pay a faculty member their salary |
|  | system\_checkups | perform a check on system for any faults |
|  | delete\_class | remove a class from registrar |
|  | set\_equipment\_budget | set the amounts of funds allocated to school equipment |
|  | set\_research\_budget | set the amount of funds allocated to research |
|  | create\_class | add a class to registrar |
|  | set\_grade | change or set grade for a student |
| **Attributes** | name | string |

|  |  |  |
| --- | --- | --- |
| **Class** | **Official** |  |
| **Parent** | User |  |
|  | **Name** | **Description** |
| **Methods** | view\_transcript | view a transcript |
|  | add\_class | add a class for students to enroll in |
|  | remove\_Class | remove a class |
|  | view\_financial\_info | view finances of any user |
|  | pay\_employee | pay a faculty member their salary |
|  | system\_checkups | perform a check on system for any faults |
|  | delete\_class | remove a class from registrar |
|  | set\_equipment\_budget | set the amounts of funds allocated to school equipment |
|  | set\_research\_budget | set the amount of funds allocated to research |
|  | create\_class | add a class to registrar |
|  | set\_grade | change or set grade for a student |
| **Attributes** | name | string |

|  |  |  |
| --- | --- | --- |
| **Class** | **Course** |  |
| **Parent** | None |  |
|  | **Name** | **Description** |
| **Methods** | add\_student | adds student to the course registrar |
|  | drop\_student | removes student from course registrar |
| **Attributes** | course\_id | int |
|  | course\_name | string |

|  |  |  |
| --- | --- | --- |
| **Class** | **Transcript** |  |
| **Parent** | None |  |
|  | **Name** | **Description** |
| **Methods** | add\_grade | add a grade to transcript |
|  | average\_grade | calculate the gpa on a transcript |
|  | add\_course | add a course to a transcript |
| **Attributes** | student\_id | int |
|  | student\_name | string |
|  | course\_grades | dictionary |

|  |  |  |
| --- | --- | --- |
| **Class** | **Third\_Party** |  |
| **Parent** | None |  |
|  | **Name** | **Description** |
| **Methods** | offer\_services | offer additional services to university members |
|  | offer\_products | offer additional products to university members |
| **Attributes** | name | string |
|  | product | string |
|  | services | string |

**12.2. UML Diagrams**

UML Diagrams are shown in their respective sections.

**12.3. Schedule Tracking**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Artifact or Deliverable** | **Who** | **Estimated** | **Actual** | **Difference** |
| Initial SRS | Munieshwar Ramdass | 5 | 6 | 1 |
| Initial SRS | Ajay Shenoy | 6 | 5.5 | 0.5 |
| Initial SRS | August Tan | 4 | 5 | 1 |
| Initial SRS | Summary | 15 | 16.5 | 1.5 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Artifact or Deliverable** | **Who** | **Estimated** | **Actual** | **Difference** |
| Final SRS | Munieshwar Ramdass | 3 | 3 | 0 |
| Final SRS | Ajay Shenoy | 4 | 3 | 1 |
| Final SRS | August Tan | 3 | 3 | 0 |
| Final SRS | Summary | 10 | 9 | 1 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Artifact or Deliverable** | **Who** | **Estimated** | **Actual** | **Difference** |
| SPMP | Munieshwar Ramdass | 5 | 5 | 0 |
| SPMP | Ajay Shenoy | 4 | 3 | 1 |
| SPMP | August Tan | 4 | 4 | 0 |
| SPMP | Summary | 13 | 12 | 1 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Artifact or Deliverable** | **Who** | **Estimated** | **Actual** | **Difference** |
| SAS | Munieshwar Ramdass | 6 | 7 | 1 |
| SAS | Ajay Shenoy | 7 | 7 | 0 |
| SAS | August Tan | 6 | 4 | 2 |
| SAS | Summary | 19 | 18 | 1 |

**Cumulative**

|  |  |  |  |
| --- | --- | --- | --- |
| **Who** | **Estimated** | **Actual** | **Difference** |
| Munieshwar Ramdass | 19 | 21 | 2 |
| Ajay Shenoy | 21 | 18.5 | 3.5 |
| August Tan | 17 | 16 | 1 |
| Summary | 57 | 55.5 | 2.5 |

**12.4. Defective Tracking**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Artifact or Deliverable** | **Who** | **Estimated** | **Actual** | **Difference** |
| Initial SRS | Munieshwar Ramdass | 16 | 10 | 6 |
| Initial SRS | Ajay Shenoy | 10 | 10 | 0 |
| Initial SRS | August Tan | 15 | 10 | 5 |
| Initial SRS | Summary | 41 | 30 | 11 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Artifact or Deliverable** | **Who** | **Estimated** | **Actual** | **Difference** |
| Final SRS | Munieshwar Ramdass | 5 | 5 | 0 |
| Final SRS | Ajay Shenoy | 2 | 5 | 3 |
| Final SRS | August Tan | 4 | 5 | 1 |
| Final SRS | Summary | 11 | 15 | 4 |

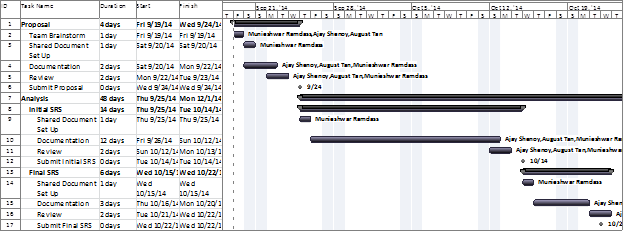
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Artifact or Deliverable** | **Who** | **Estimated** | **Actual** | **Difference** |
| SPMP | Munieshwar Ramdass | 4 | 1 | 3 |
| SPMP | Ajay Shenoy | 4 | 1 | 3 |
| SPMP | August Tan | 4 | 1 | 3 |
| SPMP | Summary | 12 | 3 | 9 |

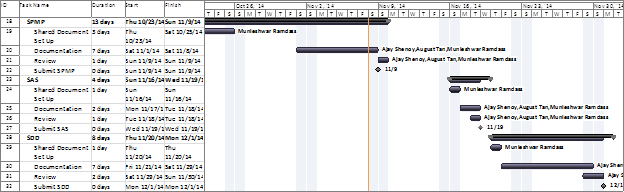
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Artifact or Deliverable** | **Who** | **Estimated** | **Actual** | **Difference** |
| SAS | Munieshwar Ramdass | 4 |  |  |
| SAS | Ajay Shenoy | 4 |  |  |
| SAS | August Tan | 4 |  |  |
| SAS | Summary | 12 |  |  |

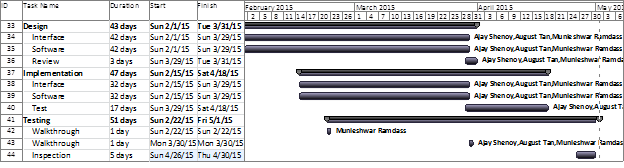
**Cumulative**

|  |  |  |  |
| --- | --- | --- | --- |
| **Who** | **Estimated** | **Actual** | **Difference** |
| Munieshwar Ramdass | 25 |  |  |
| Ajay Shenoy | 16 |  |  |
| August Tan | 23 |  |  |
| Summary | 64 |  |  |

**Microsoft Project Schedule**







**Entire Process**

