Academic Section Management System

CS346 - Software Engineering Lab Assignment 2

Final Project Report - 04 Mar 2024

Group 10B - Group members

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Summary : Progress to Date

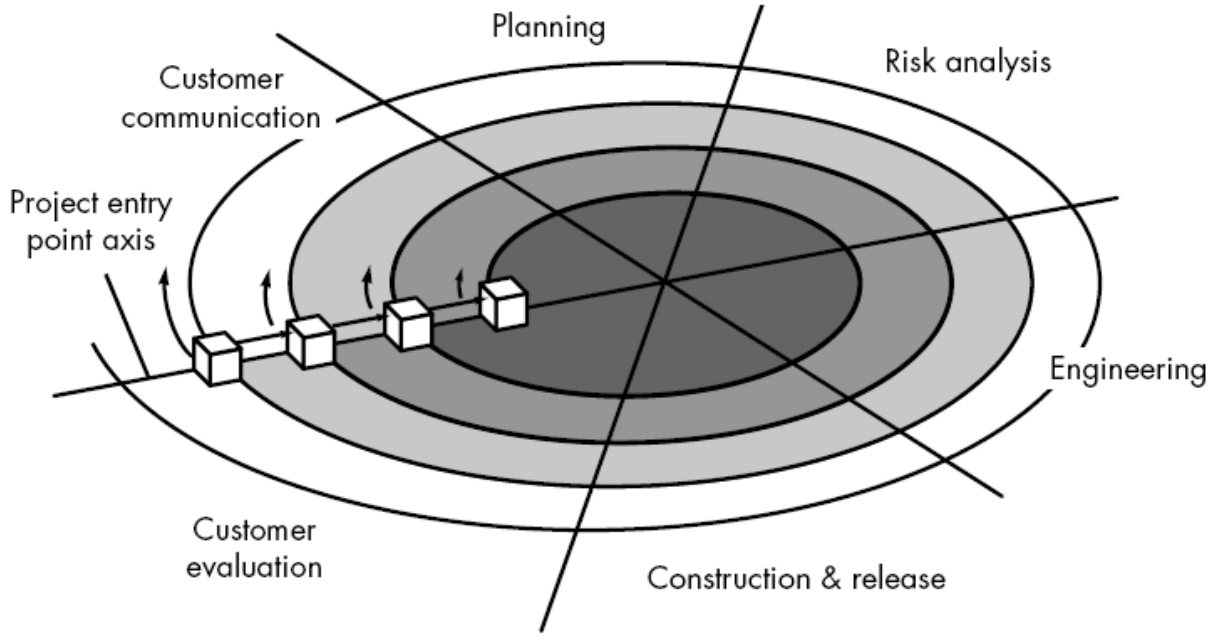
- Initial design and report completed
- Database Setup done
- Login/Register functionality added
- Admin Registration approval added
- Student Course View/Enroll done
- Faculty course Adding functionality added

Project objectives

Develop a software that manages various academic section activities of the institute. The system must cater to the requirements of different users like Dean, Registrar, Faculty, Students, Administrators and Officials for performing their assigned tasks.

Start Date - 5 Feb 2024
Target Date - 4 Mar 2024

Methodology employed



We have employed the **Spiral model** for our Software Development Life Cycle **(SDLC)** model. It provides a systematic and iterative approach to software development.
So far we have run one iteration of the spiral model. The following activities have been carried out in the different phases -

Iteration 1 (7th Feb to 19th Feb):

1. Customer Communication

- Project objective communicated through Facebook on 5 Feb 2024.
- Some clarifications done regarding the platform for development of the software solution.

2. Planning

- Planning started on 7 Feb. Formed Whatsapp group for communication among group members. Decided on using Visual C++ and mysql database for development.
- Meet 9 Feb **:**
    - Started by discussing the type of users and their respective privileges. Finalized three types of entities - student, faculty, and admin.

    - Created a rough plan of the workflow and the features/functions associated with each type of user.
    - Finalized the data models and the corresponding fields for each data entity. Tried to minimize redundancy and create an efficient database structure.
    - Talked about the DFDs and decided to list down all the functions/features and then divide the work accordingly.
- Meet 10 Feb :
    - Completed creation of Level 0, Level 1 and Level 2 DFDs on MIRO
    - Decided on some simplifying assumptions
    - Enrollment status in course added in student-grade-course db
- Completed creation of the basic UI visualizations
- Made the Report with Software Requirement Specifications(SRS) and the possible solution discussed.
- Submitted initial report on 12 feb.

3. Risk Analysis and management

- Technical risks -
    - Database connectivity issues discovered
    - Navigation and workflow issues listed
- Management risks -
    - Assigned different parts of the prototype to smaller groups.
    - Some modules needed to be completed before others could start working.

4. Engineering

- Finished making the initial database on remote mysql server
- Finished making the login/signup page and the logout page
- Configured the initial navigation from the landing page(Login page) to the other pages as per user identity.
- Smaller Groups worked in parallel on different modules
- Finished implementing basic functionalities of the faculty, admin and student users separately.

5. Construction and release

- Currently smaller groups have implemented different functionalities in local repositories. Merging will be done through pull requests.

6. Customer evaluation

- Progress evaluation on 19 Feb 2024.

Iteration 2 (20th Feb to 26th Feb):

1. Customer Communication

- Future working plan confirmed.
- Set objectives for the next iteration - Compile all the components and standardize the UI.

2. Planning

- Decided to migrate to MSSQL server on Microsoft Azure SQL cloud services.
- Meet 22 Feb:
    - Decided on a standard UI structure.
    - Evaluated remaining work and compiled the already created components.
    - Distributed work.

3. Risk Analysis and management

- Technical risks -
    - Database connectivity issues discovered. So local backup was created.
    - Too many changes in the Student forms needed due to poor implementation. So recreated from scratch.
- Management risks -
    - Assigned different parts of the prototype to smaller groups.
    - UI standardization needed before proceeding further.
    - GitHub repository edited for easier coordination by adding separate folders.
    - No further need to integrate modules separately. Managed by GitHub's version control.

4. Engineering

- Compiled already done components and standardized UI.
- Finished migrating database to Azure SQL server.
- Made a local bacpac file.
- Finished implementing the TimeTable generation.
- Partially finished seating plan generation.

5. Construction and release

- All the individual components have been compiled. Git/GitHub is being used for version control hence individual modules need not to be compiled separately one by one.

6. Customer evaluation

- No progress evaluation by customer. Self evaluation done to set goals for the next iteration.

Iteration 3(1st Mar to 4th Mar):

1. Customer Communication

- Set objectives for the next iteration - Finalize UI, Complete seating plan and handle errors.

2. Planning

- Meet 1st Mar:
    - Decided on the technical and user documentation formats.
    - Finalized the Seating Plan algorithm and decided on extra feature enhancements
    - Distributed remaining work.

3. Risk Analysis and management

- Technical risks -
    - Since the remote database was slow, we decided to continue work on the local data server.
    - Finally the database was also pushed to the remote server.
    - Backup generation in case the free trial version of MS Sql failed.
- Management risks -
    - Concurrent working on shared documents to make the documentation.

4. Engineering

- Finished developing the software.
- Finally redeployed online Azure SQL server.
- Finished implementing the seating plan generation.
- Enhanced the UI.
- Added input error handling code.

- Add complaints/query pages for faculty and students to send queries and for admin to resolve them.

5. Construction and release

- The final project with all the components together has been integrated into a .exe executable file.
- The user just needs to run the exe file to use the application. It is connected to the online database so that all users are in sync.

6. Customer evaluation

- Final Project evaluation on 4th Mar 2024.

Challenges solved -

- No IntelliSense(code editing features or assist) on Visual Studio 2010 - changed to using Visual Studio 2013.
- No direct support for MySQL database connection - installed MySQL workbench for database manipulation and MySQL Connector for connecting to the project on Visual Studio 2013.
- Connectivity issues with the online MySQL server were faced. We resolved it by connecting to the Azure SQL database. We also made a local backup database to handle any unforeseen situation.
- Difficulties with integration of different modules in the application were resolved by using the Github version control system.

Work division -

- Database Setup and login/logout window workflow - Aditya and Soumyadeep
- Student page functionalities - Soumyadeep and Mihit
- Faculty page functionalities - Sri Vallabh and Nitish
- Admin page functionalities - Mihit, Sri Vallabh and Vijesh
- Time table generation - Aditya
- UI and solution integration - Aditya
- Exam seating allotment- Vijesh and Akshit

Conclusion -

- The project was completed on time.
- We have developed an end to end fully functional application that provides seamless experience to students, faculty and administrators for academic management purposes.