LONDON METROPOLITAN UNIVERSITY

ITAHARI INTERNATIONAL COLLEGE

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Title: Institute Management System

I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a marks of zero will be awarded.

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1. Introduction

1.1. Project Description

The use of web application has become the part of daily life of today's human civilization. The development of science and technology has made a huge impact on the sector of technology industry. People are searching the easier way of life which contributed to exponential growth of technology industry. Various forms of business are switching towards technology. Among the various sector going online, education is one of the major sectors to move towards technology and provide services through online medium. The proper use of internet can help to grow one's business more effectively.

Nepal is a country which is still lacking in terms of using online medium for education compared to other countries. Most of the schools, colleges, universities, and other educational institutes are still focusing on physical approach for overall management of the organization due to lack of technical knowledge. This resulted in lack of flexibility of organization to adapt to any kind of unprecedented situation.

Most of the educational organization don't even have their own website which is most basic way to showcase what organization has to offer. Due to lack of information provided on internet, students are unable to find the suitable educational institute for their education. Students being unable enrol themselves in the institutes that provide quality education due to lack of information available to students results in poor level of skill being learnt by students.

The report is completely focused on design and development of Institute Management System. Institute Management System would be a web application that would be focused mainly on easing the task of finding and enrolling students in educational institute. This web application would help in choosing various types of courses preferred by student and maintain their educational and financial records. This web application can also be customized as per the need of institute to certain extent. This web application could also be used for advertisement purposes and to publish other notices to the public.

1.2. Problem Scenario

The use of online technologies that can be helpful for proper management of the organization has been neglected by Nepalese educational organizations. The negligence of use of online technologies has great impact on the education industry. But the recent pandemic i.e., COVID-19 has forced to choose the alternative for traditional method of delivering classes and advertisements. Most of the students prefers to attend the institute that are in their locality. But they are unable to find them as no information about them are available on the internet. Due to this, many institutes that provide higher quality education has operating in the shadows in terms of marketplace. There are large number of private educational centre, and the competition between them is growing in the market. Students can have hard time in finding the institute they needed in proper location with reasonable fees and quality education and training.

As the educational organization are not using the available technologies to remain in touch with their students, this causes problem in spread of information and news among the organization's administrative and their students. Also, the methods of keeping the records of students and finance by educational organization is traditional physical method. This method causes problem like loss of data due to various circumstances and poor record keeping which greatly reduces the effectiveness of the organization. The major problem educational institutes faces are:

- Unable to enrol students through online medium.
- Unable to publish events to all students at the same time.
- Problems with keeping tracks of progress of the students.
- Problems with keeping records of students manually in files.
- Unable to connect with students outside office hours.

The major problems faced by students are:

- Unable to find suitable institute due to lack of advertisement.
- Problems with keeping record of payment in instalment as physical record can be easily lost or destroyed.
- Unable to contact teachers and classmates outside class hours.

1.3. Project as a Solution

With the completion of the project the web application for institution and students would be developed. This web application will help institute to attract more students, manage students, keep payments records, keep tracks of courses, and create better learning environment for the students. The institute can use the administrative function to publish new courses or remove existing courses, update prices for any course, keep records of students, keep records of payments, and publish notices. The web application will also have teacher login function through which teachers can publish assignments and learning materials to students as per permission granted by administration.

The students can use student login function through which they can browse through contents of various course and enrol in the course that suitable for them. When the enrolment in approved by the administration, then the student can enjoy all the features available in that course. The students can communicate with teacher and their classmates to learn from each other even out of time of class. This helps in building better environment of learning for students.

2. Aims and Objectives

2.1. Aims

The main aim of this project is to design and develop user-friendly web application that can acts act as medium between institute and students through proper management.

2.2. Objectives

The objectives of the project are listed below:

- To build a secure web application.
- To implement database in real world scenario.
- To grow research and presentation skills.
- To build web application as per need of client.
- To document details while during development of web application.
- To use JavaScript programming language and its two frameworks i.e., React JS and Node JS, for development of web application.
- To use suitable software development methodology for the development of web application.
- To complete the project within the specific time duration.

3. Expected Outcomes and Deliverables

The web application developed with the completion of project is expected to provide better enrolment facility, keeping records of students, progress in course and payments management for the institution. This web application will help students to find the institute and browse through available courses and enrol in the course they are interested in. This web application will help in keeping the track of progress of course through milestones of course. The features of web application are listed below:

- The web application will have portfolio of the institute which will work as advertisement and portal to contact between institute and guest visitors.
- The web application will have messenger chat bot, through which user can contact organization as guest through messages.
- The web application will have administrator login function for institute through which institute can manage the courses to make available for students.
- The web application will utilize google maps API to find the distance between location of user and institute and shortest route possible.
- Application will have news feed page where institute puts up notice for events.
- The web application will send notification through email for successful enrolment in course, available discounts in courses and any new events in news feed section.
- When the fee payment is updated manually by administration of institute, the respective student will receive email notification for successful payment of fee.
- When user enrol in the course and is approved by institute then only those users will be recognized as students, or else recognized as registered users.
- The web application will have student login function through which students can view and choose to enrol in the course that suits them.
- The web application will have teacher login function through which a teacher can assign task to students, provide learning materials and communicate with them even out of office hours.

- Each course will have chat function through which classmates and course leader (teacher) can communicate with each other any time possible.
- The web application will have different login function for teachers where s/he can assign task and publish notice in the chatroom of designated course.
- The web application will have method of assigning task to students and getting reports from students.
- Courses will have milestones and progress of course will be updated upon completion of milestones.

4. Project Risks, Threats, and Contingency Plans

4.1. Risks and Threats

Applications are made for the ease of users for various tasks. When developing an application, there may be many implications, risks and threats that can hamper the developing process of the application. Some of them can have low impact while some can have high impact and cause the risk of failure of application if not handled appropriately. Some of the risk and threats that the web application may face are:

- The web application may not be compatible with all the browsers.
- All the components and features of the web application may not be loaded properly due to issue with internet speed.
- Target audience may not be able to find web application due to issues with SEO.
- The web application may crash unexpectedly.
- The data breach could cause loss of information.

4.2. Contingency Plans

The threats and impacts that could be greatly minimized by following plans listed below:

- Keeping the regular backup of database in cloud would help to avoid loss of data.
- Ensuring security and privileges while developing application and designing database can help to keep data secure.
- Conducting compatibility test on various browsers.
- Ensuring proper SEO and share links on other platforms like social media can help to attract attention of students and targeted audience.
- Build application with optimal size and speed using available technologies.

5. Methodology

5.1. Methodology Consideration

5.1.1. Scrum Methodology

Scrum methodology is one of the popular Agile methodologies followed in the market. This method is flexible, fast, iterative and adaptive which is effective while working with clients to build the product as per client's requirements. While using scrum methodology, transparent communication is established along with continuous progress. The process of iteration is called sprints whereas one complete iteration is regarded as one sprint. An average timeframe of sprint is about 2 to 4 weeks along with regular meetings and backlog file. Dring the sprint, there are daily meetings, scrum meeting, spring planning and the backlog file is converted in the feature. The product is delivered to the client for review and feedback.

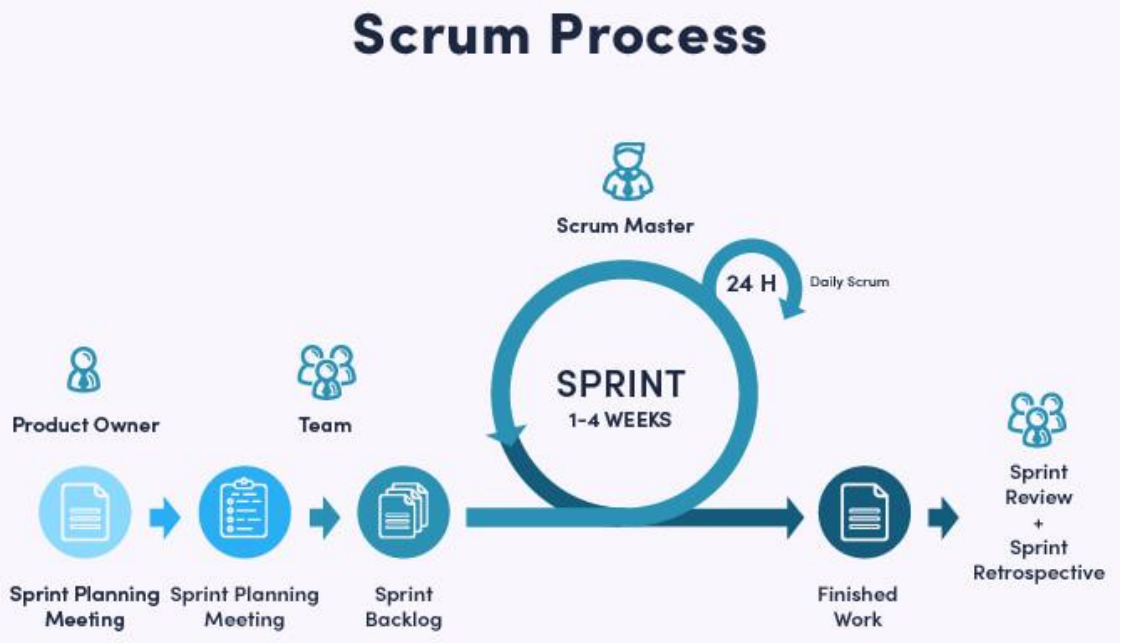

Figure 1: Scrum Methodology (Selleo, 2021)

5.1.2. Waterfall Methodology

Waterfall methodology is also regarded as linear-sequential life cycle model. In this approach, the whole process of development of product is divided into separate phases and any phase of this methodology only begins when previous phase is completed. The overlapping of phases in waterfall methodology is not possible (tutorialspoint, 2021).

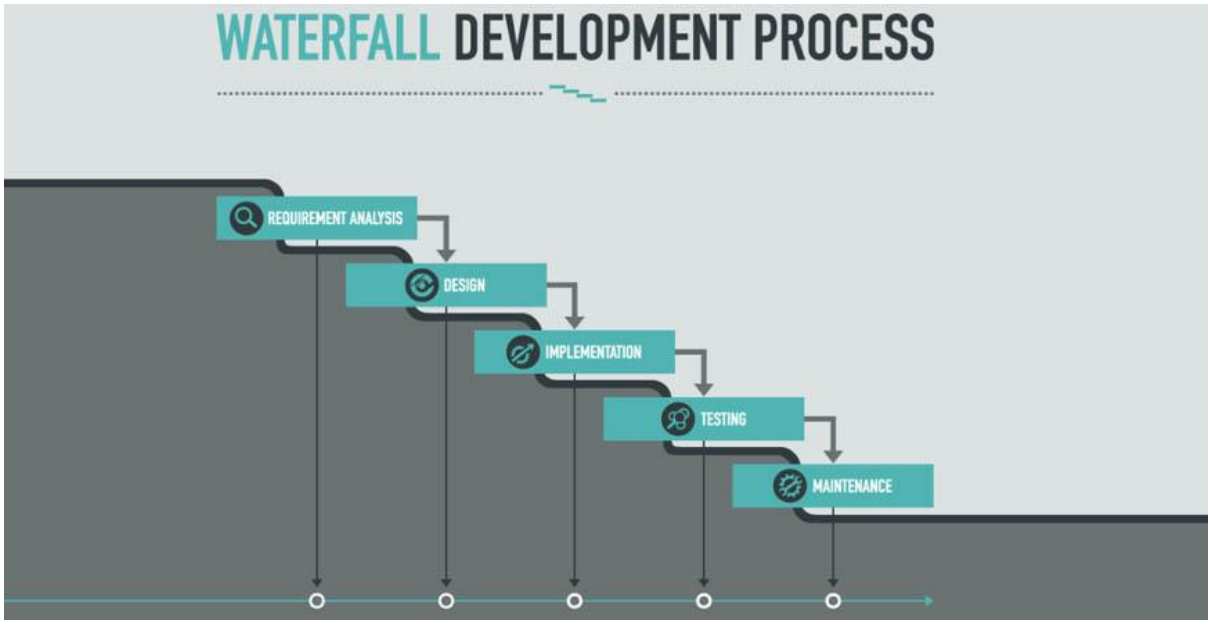

Figure 2: Waterfall Methodology (abayasundar, 2021)

5.1.3. Prototype Methodology

Prototype Methodology is one of the popular methodology for software development which is mostly used when the client do not know the actual requirement of the product. In this methodology, a working prototype of an actual product is built which is a crude version of actual product to obtain the feedback from the client. The prototype is continued to build and improved by adding features until the prototype reaches the final form of the product (JavaTpoint, 2021).

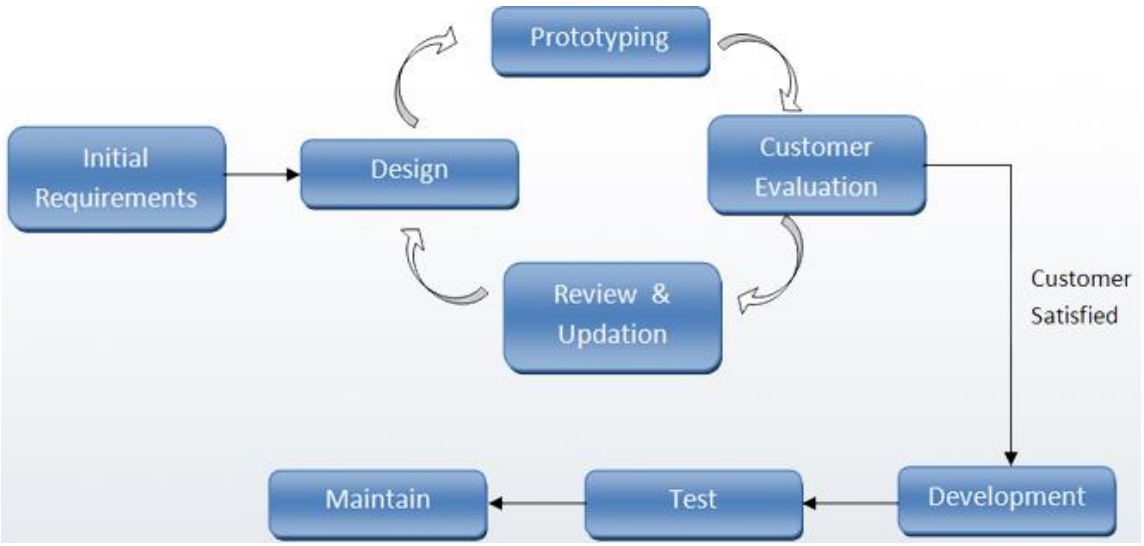

Figure 3: Prototype Methodology (Shopper's Mart, 2021)

5.2. Chosen Methodology

The methodology chosen for the managing the project is Scrum methodology. Scrum methodology is regarded as best methodology to built product for clients as it is designed to be flexible and accept changes like product testing, addition of features, and receiving feedbacks from user and client. This methodology focuses in refining the product continuously in each sprint. This methodology aims to save time through daily meeting and accepting changes at correct moments.

Scrum is popular in industry as clients are not always certain about features of the product they need. Client may want to remove some features as well as add some more feature during the middle of development of the project, so, scrum methodology is practical to handle such situations. This methodology directly involves the client during the development process of the project which helps in maintaining the transparency in project management and increases client satisfaction. It also helps client to get clear idea of what they want in the product.

Scrum methodology helps to reduce various kinds of risks during the development of the project is divided and developed in sprints also known as iterations. When the product backlog is defined, the duration of sprints which is usually 2 to 4 weeks is also determined. At the end of each sprint, the developed product is delivered to client for review and feedbacks.

Some of the other popular methodologies for software development are Kanban and Dynamic System Development Model. Even though these methodologies are easy to implement and work on feature-based approach, but they lack in time management aspects. Whereas scrum methodology focuses on both time management and quality of product. Scrum methodology has many advantages over other methodologies while working with client.

The different phases of development in Scrum Methodology are:

i. Initiate: In this phase, project is initiated along with creation of backlog of the product. It is also the phase where scrum master for the project is identified along with vision of the project, owner of the project, stakeholders, and backlog creation. The created backlog helps team members to identify the priority and requirements of tasks.

ii. Plan and Estimate: In this phase, sprint backlog and user stories are created. The sprint backlog is made as small as possible i.e., an average sprint lasts about two weeks to keep the user stories small. More customer feedback can be received with small sprint duration and bugs and errors can also be handled earlier.

iii. Implement: In this phase, the actual work of the project starts. In this phase, scrum meetings play huge role to track the progress of the project. The product being developed is refined and updated regularly to implement the features properly.

iv. Review and Retrospect: In this phase, when the product is completed, the completed product is re-inspected and reviewed to find if any issue is present. In this phase, product is reviewed to see and determine if product can be improved further.

v. Release: In this phase, the product with complete features is delivered to customer for review. This phase also focuses in documenting the lessons learning during the project. (SCRUMstudy, 2021)

6. Resource Requirements

6.1. Development Requirements

The resources required for the development of the project are listed below:

6.1.1. Software Requirements

- JavaScript
- React JS
- Node JS
- MySQL
- Microsoft Windows 10 64-bit
- Google Chrome Browser
- Visual Studio Code
- Git

6.1.2. Hardware Requirements

- A computer with at least intel i3 processor and 4 GB RAM

6.2. Client and User Requirements

- A computer with at least intel i3 processor with 2 GB RAM with latest version of Web browser for better performance.
- Internet Connectivity
- Web Browser

7. Work Breakdown Structure

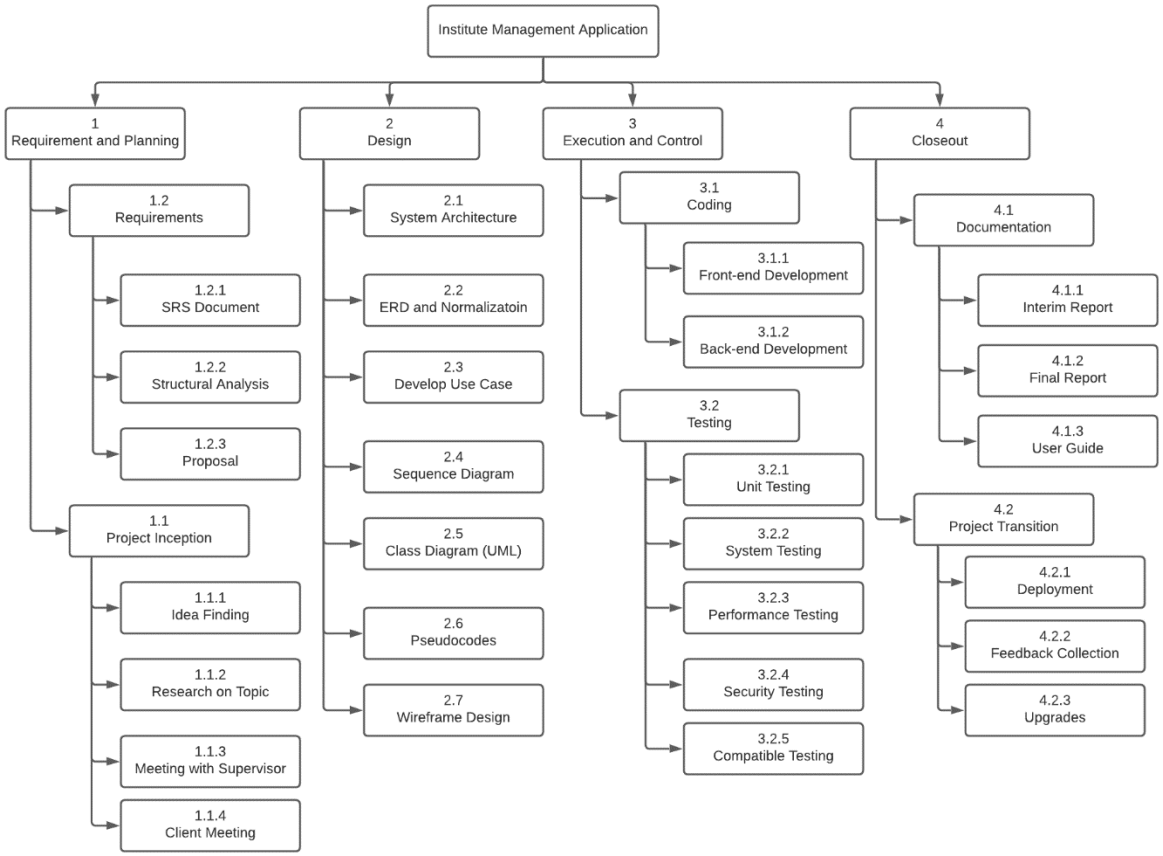

Figure 4: Work Breakdown Structure

8. Milestones

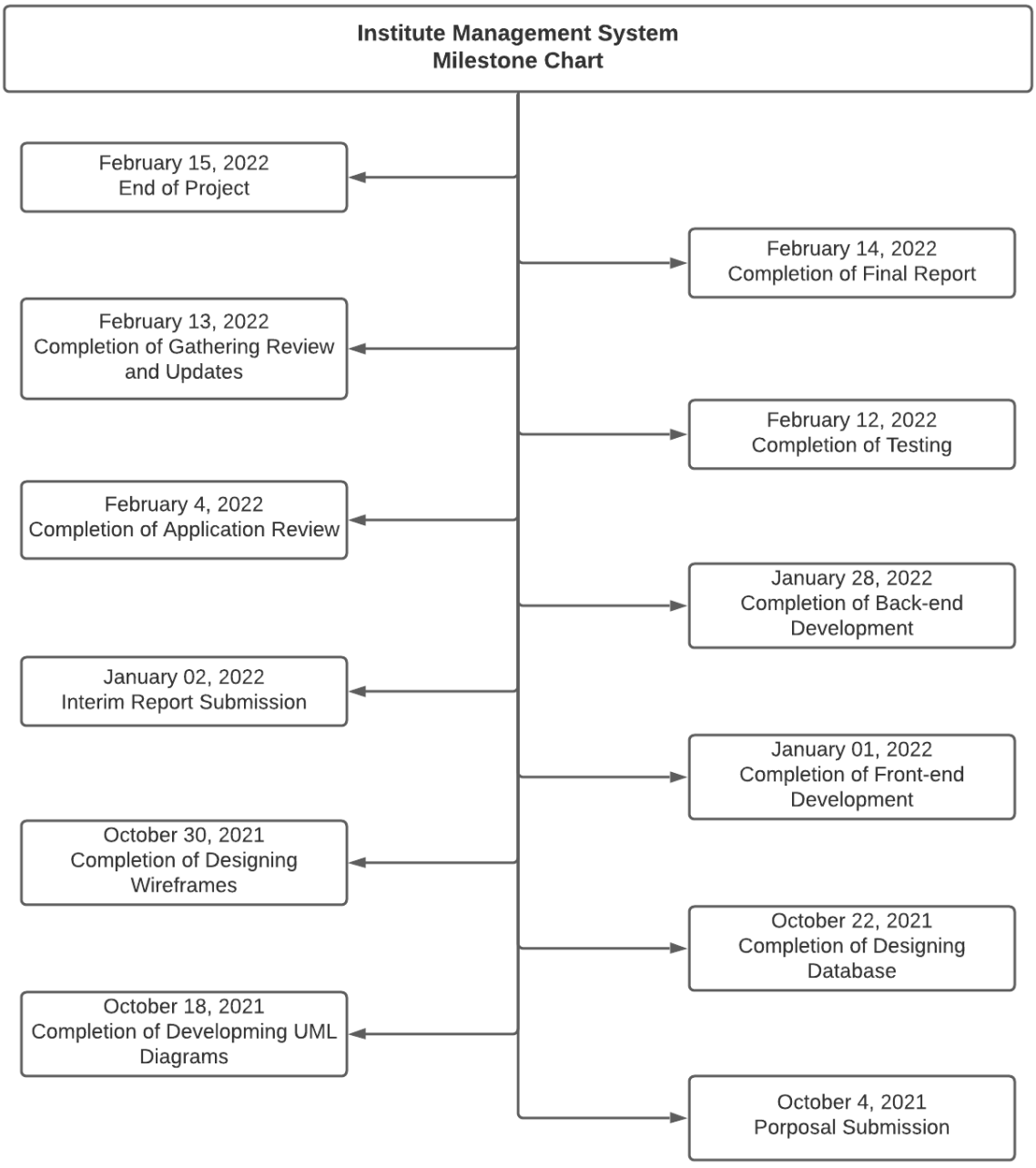

Figure 5: Milestone Chart

9. Gantt Chart

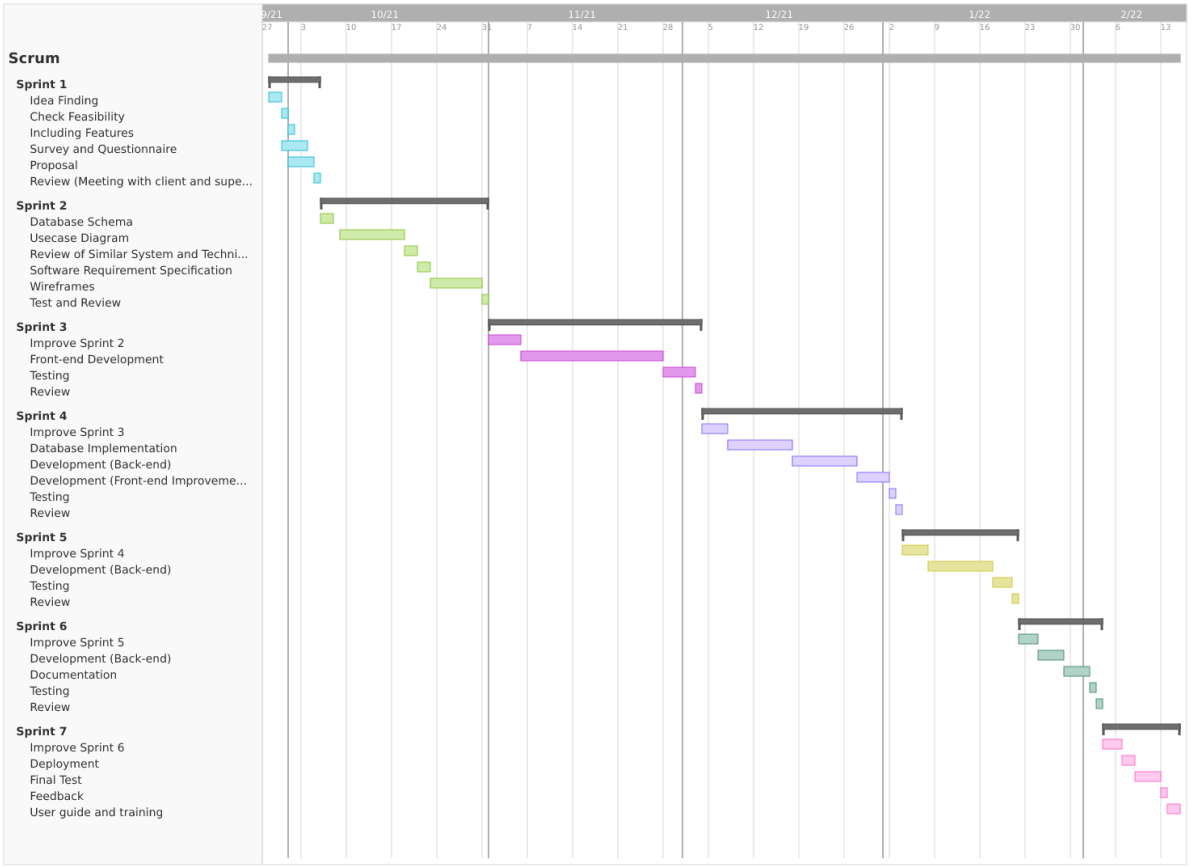

Figure 6: Gantt Chart

10. Conclusion

The web application that is developed in this project will solve the problem of educational institute to manage students, courses, and finances. The web application will also help to solve the problem of students like finding a good institute, keeping in touch with teachers, finding suitable courses, keeping tracks of courses, keeping tracks of billing and many more. With the help of news feeds section, institute can notify all its students on any occasion or events at a same time. The email notification features would help students to any updates on information from institute, notices, and billing almost immediately. The web application will be developed in up coming days with proper documentation and system. The web application would be based on Scrum methodology which is one of the best suited approach while working with client to complete project within certain timeframe. So, the project would be developed in sprints and presented to client to receive feedback and further improve the system.

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