

CS7CS3 Advanced Software Engineering Group

Project Diary

Project Name: *Virtual Library*

Group: *Group 6*

Weiwei Wan

Madhura Vishal Nagle

Sharon Andrea Gomez

Mansi Paradkar

Junwei Yu

Prishita Singh

Zhiqiang Cheng

Long Pan

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Approach of Project

Our selected project was Virtual Library. We planned on developing an ancient structured Library set up away from the city rush. The entire structure is set up in wide fields where one can enjoy the different environment conditions. We had four types of environment set up in the space for the user to have an immersive experience while being present in the library. Also, we have multiple interactive functionalities in the space such as a Noticeboard where messages could be posted and a multiplayer experience while being connected with two VR headsets. In addition to this, a user can log in, create an account, book desks and rent books using the UI created. We had mainly following components to compile the environment such as:

1. Front-end (Website)
2. Back-end (Website)
3. Database Service (Storage of requests/data)
4. Virtual Environment (Virtual Library with environment)
5. VR Headset Integration & Set up
6. Multiplayer (Unity & VR Headsets)
7. Avatar Setup (ReadyMe)

Way of Labour Divided

Initially, We divided the entire work into 12 weeks, topic by topic and then binded the peer programming pairs to each week and topic. The entire schedule was devised as such so that each person can work along with each person and at the same time work upon different topics.

This was our initial schedule:

- **Detailed iteration plan using eXtreme Programming approach**

eXTREME PROGRAMMING SCHEDULE				
	Location: Phoenix House Lab			
	Pair 1	Pair 2	Pair 3	Pair 4
Week 1	Weiwei	Junwei	Prishita	Mansi
	Zhiqiang	Long	Sharon	Madhura
Details	Create Unity project	Back-end environment	Front-end environment	Design user interface
Week 2	Zhiqiang	Weiwei	Prishita	Sharon
	Long	Junwei	Mansi	Madhura

Details	create avatar	Create database	Dashboard creation	Enhancing the UI
Week 3	Zhiqiang	Prishita	Weiwei	Mansi
	Junwei	Madhura	Long	Sharon
Details	Finish the api docs	Unity 3d modelling	Finish first version dashboard(front-end)	Database Restrictions
Week 4	Zhiqiang	Junwei	Long	Weiwei
	Prishita	Madhura	Sharon	Mansi
Details	Enhance Avatar	Unity 3d	Unity 3d	Unity 3d
Week 5	Weiwei	Zhiqiang	Junwei	Long
	Prishita	Madhura	Sharon	Mansi
Details	Backend	Backend	Unity 3d	unity3d
Week 6	Zhiqiang	Weiwei	Junwei	Long
	Mansi	Sharon	Prishita	Madhura
Details	Unity 3d	Unity 3d	backend	backend
Week 7	Junwei	Zhiqiang	Weiwei	Long
	Mansi	Sharon	Madhura	Prishita
Details	understand vr headset	Understand vr headset	Understand vr headset	Understand vr headset
Week 8	Weiwei	Junwei	Prishita	Mansi
	Zhiqiang	Long	Sharon	Madhura
Details	integration	integration	Integration	integration
Week 9	Zhiqiang	Weiwei	Prishita	Sharon
	Long	Junwei	Mansi	Madhura
Details	Test	test	test	test
Week 10	Zhiqiang	Prishita	Weiwei	Mansi
	Junwei	Madhura	Long	Sharon
Details	deploy	deploy	deploy	deploy
Week 11	Zhiqiang	Junwei	Long	Weiwei

	Prishita	Madhura	Sharon	Mansi
Details	Debug & test	Debug & test	Debug & test	Debug & test
Week 12	Weiwei	Zhiqiang	Junwei	Long
	Prishita	Madhura	Sharon	Mansi
Details	documents	documents	documents	documents

We modified our initial schedule to the given below schedule as we progressed over the time:

- **Detailed iteration plan using eXtreme Programming approach**

eXTREME PROGRAMMING SCHEDULE				
	Location: Phoenix House lab			
	Pair 1	Pair 2	Pair 3	Pair 4
Week 1	Weiwei	Junwei	Prishita	Mansi
	Zhiqiang	Long	Sharon	Madhura
Details	Create Unity project	Back-end environment	Front-end environment	Design user interface
Week 2	Zhiqiang	Weiwei	Prishita	Sharon
	Long	Junwei	Mansi	Madhura
Details	Create avatar	Create database	Wireframe creation	VR Headset Set-Up
Week 3	Zhiqiang	Prishita	Weiwei	Mansi
	Junwei	Madhura	Long	Sharon
Details	Finish the Backend docs (Interface, Database)	Unity 3D modelling	Finish first version dashboard (front-end)	Database Connection and restrictions
Week 4	Zhiqiang	Junwei	Long	Weiwei
	Prishita	Madhura	Sharon	Mansi
Details	3D Model Binding	Avatar Integration	Website (Dashboard and Login)	Database authentication and verification
Week 5	Weiwei	Zhiqiang	Junwei	Long

	Prishita	Madhura	Sharon	Mansi
Details	Setting up the Firebase script - populating Database)	Account page setup (Website)	Environment Change Modelling (Unity)	VR Headset Setup
Week 6	Zhiqiang	Weiwei	Junwei	Long
	Mansi	Sharon	Prishita	Madhura
Details	Environment Change Modelling (Unity)	Setting up the Firebase script - populating Database)	Reading Room page setup (Website)	Verifying the DB created with document list created
Week 7	Junwei	Zhiqiang	Weiwei	Long
	Mansi	Sharon	Madhura	Prishita
Details	Setting up the Back-end script -(API Set-up)	Integrating the Unity projects with VR Headsets	Seat Reservation setup (Website)	Flipping the pages of the book (Unity)
Week 8	Weiwei	Junwei	Prishita	Mansi
	Zhiqiang	Long	Sharon	Madhura
Details	Flipping the pages of the book (Unity)	Book Reservation setup (Website)	Setting up the Back-end script -(API Set-up)	Multiplayer environment set-up
Week 9	Zhiqiang	Weiwei	Prishita	Sharon
	Long	Junwei	Mansi	Madhura
Details	About Us page (Website)	Setting up the Back-end script - (API Set-up)	Multiplayer set-up	Testing Book & Desk Reservation setup (Website)
Week 10	Zhiqiang	Prishita	Weiwei	Mansi
	Junwei	Madhura	Long	Sharon
Details	Verification modification (avatar, model database)	Multiplayer environment set-up	Database authentication (User Login and Sign up on UI)	Setting up the Back-end script - (API Set-up)
Week 11	Zhiqiang	Junwei	Long	Weiwei
	Prishita	Madhura	Sharon	Mansi
Details	Multiplayer environment set-up	Integrating the API with the UI	Setting up the Back-end script - (API Set-up)	Flipping the pages

Week 12	Weiwei	Zhiqiang	Junwei	Long
	Prishita	Madhura	Sharon	Mansi
Details	Integrating the API with the UI	Flipping the pages and reading books	Multiplayer environment Integration	Fixing the UI Errors & deploying the UI to the GitHub Pages

Week 13	Weiwei	Zhiqiang	Junwei	Long
	Prishita	Madhura	Sharon	Mansi
Details	Documentation	Documentation	Documentation	Documentation

Time Estimates

We are 8 students devoting 10 hours a week which amounts to 40 hours considering we are four pairs . The total time spent on the project per week comes to 40 hours in a week. The total time spent on the project amounted to 480 hours in total.

So we had nearly 60 Hours for each topic but time consuming work such as Back-end or Front-end and Database related work was devoted more time.

Initially, we subdivided the total workload based on the topics as below:

S. No.	Topics Covered	Time Allotted (hours)
1.	Front-end & Deployment (Wireframe, Web Development, Integration, Testing, Deployment)	80
2.	Back-end (Requirement Set Up, Integration, Testing, Fixes)	80
3.	Database Service (Database Set-up, Requirement, Script Storage, Integration with Backend)	80
4.	Virtual Environment (Virtual Library, Environment, cat set-up, noticeboard, authentication)	80
5.	VR Headset Integration & Set up	80

	(Developer Environment Set Up, Integration with Unity Project)	
6.	Multiplayer (Unity & VR Headsets) (Interaction with two headsets)	68
7.	Avatar Setup (ReadyMe)	2
8.	Documentation	10

The initial plan would have enabled us to complete the given work in time. However, we had a week extended and we had nearly 80 hours extra to finish our project. Most of the time was spent on polishing and giving a final finishing touch to our project. Such as removing any unwanted piece of code, adding comments wherever required, walking through the demo etc.

Inaccurate Estimates

We had some forecasted time estimates for each and every topic. However, as the time progressed we revised our time allocated for each and every topic. The time spent was revised for each and every section.

- ***Impact***

Due to inaccurate estimates of time, we revised our plan again to meet our requirements.

- ***Response***

Time was spent again to revise the plan with respect to the updated requirements. Continuous planning was followed each week to revise the schedule.