City University of Hong Kong

Department of Computer Science

2022/23 Semester B

CS3343 Software Engineering Practice

Ticket System
Project Plan

Group 5

2022.09.05 – 2022.11.25

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1 Summary of the Project

1.1 Project Description

In the whole world environment, due to the impact of the epidemic, people's travel has become more and more difficult. In order to promote the consumption of users, the major air ticket booking agents have made the original functions more complicated, and customers are often prone to touch by mistake in the whole operation process, resulting in mistakes or extra expenses. In this case, a simple ticket purchase process of the software is very important. Our product was born with that in mind.

1.2 Stakeholders

Stakeholders	Internal/External	Description
Project Manager	Internal	- Manage the Project
Project Team Members	Internal	- Develop the software - Maintain the system
Users	External	- Input the departure, the destination, and the date - Obtain a list of routes - Sort the list by different strategy - Take an order
Airlines	External	- Provide the flight information - Record the transactions
Disbursement Channel	External	- Complete the payment

1.3 Objectives of the Project

For this project, our team focused on creating a simple airline ticket software to help consumers simplify the shopping process, from scanning the ticket information, to placing the order, to finally viewing their order details, to obtain the most convenient experience.

2 Summary of Methodology

2.1 Software Development Methodology

Throughout the development process, the waterfall development model was adopted, which is very useful for small teams with short development cycles. Our team can plan the whole project process and time arrangement in the early stage of development, and then gradually complete requirements, design, implementation, verification and maintenance.

2.2 Project Team Organization

Name	Position	Work Description
ZHAO Yiwei	Program Manager	Management, Development
LI Xiangyu	Assistant Program Manager	Management, Testing
WANG Chenchen	Program Developer	Management, Development
WANG Yian	Program Developer	Development, Testing
XIE Yifei	Interface Designer	Design, Development
YANG Jingxian	Program Tester	Development, Testing

2.3 Development Tools

2.3.1 Development IDE

- ◇ Software:
  - Eclipse IDE v4.20.0
  - Visual Studio Code v1.73
- ◇ External libraries:
  - Apache Commons Lang v3.12.0
  - MySQL Connector v8.0.31
  - OpenCSV v 5.7.1

2.3.2 Development Platform

- ◇ Windows 11 v22H2
- ◇ macOS Monterey v12.6.1

2.3.3 Test Cases

- ◇ Junit v5.5.1

2.3.4 Coverage Checking

- ◇ EclEmma v3.1.4

2.3.5 Testing Platform

- ◇ Windows 11 v22H2
- ◇ macOS Monterey v12.6.1

2.3.6 Documentation

- ◇ Visual Paradigm – Use Case Diagram, Class Diagram and Sequence Diagram
- ◇ Javadoc – Java Documentation
- ◇ Bugzilla – Bug Report
- ◇ Microsoft Word – Report
- ◇ Microsoft PowerPoint - Presentation

2.3.7 Project Management

- ◇ TeamGantt – Project Scheduling
- ◇ GitHub – Project Collaboration
- ◇ Google Drive – Project Documentation

3 Configuration Management

3.1 Change Control

Throughout the workflow, we use GitHub to manage our code files, and changes are logged with each push. When there are issues, rollbacks are easily done without losing track of the past.

3.2 Version Control

Each person involved in development has their own branch, which allows some unrelated work to be synchronized and not interfere with each other. At the same time, we have a master branch where code is reviewed and merged at regular intervals.

3.3 Auditing and Reporting

For project-related documentation, including Analysis and Design Reports, Bug Reports, etc., our team uses a shared Google Drive, which can be viewed and edited by anyone. Similarly, changes that occur in the documentation are notified to others by email.
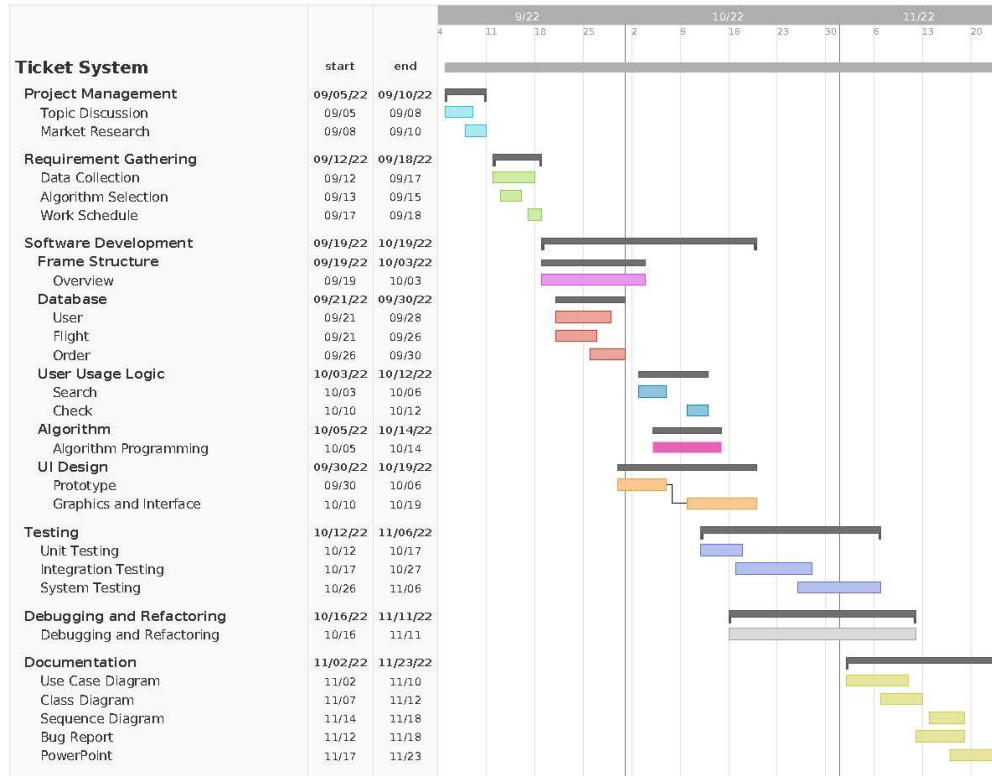
4 Work Breakdown Structure

In the project, our team adopted a Brainstorming approach to complete the definition of Work Breakdown Structure (WBS). At the beginning of the project, we thought about what tasks needed to be done in the workflow and sorted them into a feasible plan. Later in the development phase, it helps us to better monitor the completion of tasks. Below, the WBS is listed as an outline.

0   Ticket System
1   Project Management
    1.1 Topic Discussion
    1.2 Market Research
2   Requirement Gathering
    2.1 Data Collection
    2.2 Algorithm Selection
    2.3 Work Schedule
3   Software Development
    3.1 Frame Structure
        3.1.1   Overview
    3.2 Database
        3.2.1   User
        3.2.2   Flight
        3.2.3   Order
    3.3 User Usage Logic
        3.3.1   Search
        3.3.2   Check
    3.4 Algorithm
        3.4.1   Algorithm Programming
    3.5 UI Design
        3.5.1   Prototype
        3.5.2   Graphics and Interface
4   Testing
    4.1 Unit Testing
    4.2 Integration Testing
    4.3 System Testing
5   Debugging and Refactoring
    5.1 Debugging and Refactoring
6   Documentation
    6.1 Use Case Diagram
    6.2 Class Diagram
    6.3 Sequence Diagram
    6.4 Bug Report
    6.5 PowerPoint

5 Project Schedule

Ticket System	start	end
Project Management	09/05/22	09/10/22
Topic Discussion	09/05	09/08
Market Research	09/08	09/10
Requirement Gathering	09/12/22	09/18/22
Data Collection	09/12	09/17
Algorithm Selection	09/13	09/15
Work Schedule	09/17	09/18
Software Development	09/19/22	10/19/22
Frame Structure	09/19/22	10/03/22
Overview	09/19	10/03
Database	09/21/22	09/30/22
User	09/21	09/28
Flight	09/21	09/26
Order	09/26	09/30
User Usage Logic	10/03/22	10/12/22
Search	10/03	10/06
Check	10/10	10/12
Algorithm	10/05/22	10/14/22
Algorithm Programming	10/05	10/14
UI Design	09/30/22	10/19/22
Prototype	09/30	10/06
Graphics and Interface	10/10	10/19
Testing	10/12/22	11/06/22
Unit Testing	10/12	10/17
Integration Testing	10/17	10/27
System Testing	10/26	11/06
Debugging and Refactoring	10/16/22	11/11/22
Debugging and Refactoring	10/16	11/11
Documentation	11/02/22	11/23/22
Use Case Diagram	11/02	11/10
Class Diagram	11/07	11/12
Sequence Diagram	11/14	11/18
Bug Report	11/12	11/18
PowerPoint	11/17	11/23

6 Future Planning

In the future, our team will continue to do a good job in maintaining the existing functions and optimizing the user experience of consumers. On the basis of the aircraft business, it plans to develop related industrial services, including trains, ships, hotels and restaurants, so that customers can complete their travel plans in one go on the same software.