Project Plan

(Team 23)

Karls'Mat

1. Overview of the Software Product

Restaurants and food chains are continuously making efforts to bring newer and more convenient ways such as take-away and drive-through to meet the varying needs of the customers. People are often indecisive regarding where to eat and what to eat, due to the availability of a vast variety of cuisines. Our product is an online web application which enables users to browse through various restaurants. Users can select a restaurant of their choice and get access to their online menu and also order food or reserve a table in the restaurant from the web application itself. Users can employ filters such as type of cuisine, open hours, geographical location, customer ratings and user reviews; which helps the users to select restaurants according to their personal interests and preferences.

Product Scope

Our product is a free online web application for users to select and order food or reserve a table in a restaurant of their choice. The webpage will consist of buttons and drop down lists with a simple and easy to understand user interface. Users will have a personal login page with options to remember favourite restaurants, rate these restaurants and also write reviews about these restaurants on the webpage.

The end product is an online web application with features such as:

- A comprehensive list of available restaurants which can be sorted in different ways as per user choice.
- Restaurant specific menus with prices of foods they offer, including delivery charges if any.
- Select food and order from the webpage to user's saved addresses (home or work).
- Reserve table at a restaurant of choice.
- The opening and closing hours of each restaurant with their contact information.
- Availability of options for the user to filter restaurants of specific choice and add to favourites.

Project Scope

The project team consists of seven members and work is performed for a duration of six weeks, after which a working and tested version of our product will be released. All the tools used for development of our product will be free of cost.

The main objectives of this project are:

- To develop a free and user-friendly web application for users on the internet.
- To deliver a complete or partially working and tested version of our product with the features specified later in this document.
- To deliver the product within six weeks from when the project comes to life.
- To contribute a total team effort of 490 hours (70 hours per team member) to this project.
- To not use tools and services which are not free of cost.

Project Deliverables

Deliverable		Deadline
Project Plan		2017-02-12
Status Report after each Sprint	Status Report 1	2017-02-17
	Status Report 2	2017-03-03
	Status Report 3	2017-03-17
Final Product		2017-03-22

2. Software Development Methodology

Based on a collective decision, we have decided that Scrum agile methodology is the most suitable development methodology for our project. Given the nature of our project such as project duration and unstable requirements, Also, Scrum methodology will enable us to have a working and tested product increment after each sprint consequently monitoring the change in requirements if any. As a Scrum team we list out all the features of our product that are planned to develop based on the requirements and correspond them with IDs. This is the Product Backlog of our Scrum Team. The Product Backlog is listed further in this document below. Our team has decided to have three sprints throughout the project lifetime with each sprint having a duration of two weeks.

The roles involved in this project team are as follows:
Scrum Master: The Scrum master is responsible for conducting all the meetings and managing the entire project. He keeps track of the progress of the project and monitors the work done in each sprint.
Product Owner: The product owner is responsible for managing the product requirements and maintaining the product backlog.
Scrum Team: The Scrum team is a self-organizing team which is responsible for the development and testing of the product.

ID	Name	Role
M1	Sai Priyatham Dongoor	Scrum Master
M2	Aman Guptha	Team member
M3	Akhilesh Nimmakayala	Team member
M4	Guoning Yan	Team member
M5	Karthik Narla	Product Owner
M6	Venkata Sai Anurudh Gudivada	Team member
M7	Pengyang Qi	Team member

3. Tasks

The Product Backlog with user stories is represented below;

User Stories		
ID	As a	I want to;
1	User	View Homepage
2	User	Create an account by providing required credentials
3	User	Login to my account
4	User	Browse through the list of restaurants
5	User	Filter the list of restaurants
6	User	See the menu and respective prices of items in the menu
7	User	Place an order by selecting food items
8	User	View the total bill
9	User	View the final order and select address
10	User	Reserve a table
11	User	View confirmation details of the reservation
12	User	Logout
13	User	Give feedback
14	User	View information about the developers
15	User	Give reviews on restaurants
16	User	Delete the account
17	User	Make a list of favourite restaurants
18	Admin	Register my restaurant on the web application
19	Admin	Login to my account
20	Admin	Add/update/delete food items and prices
21	Admin	Add/change opening hours of the restaurant, address and contact information
22	Admin	Add/change restaurant description
23	Admin	Logout

Sprint 1 Backlog is determined by selecting the most prioritized user stories from the Product backlog and represented below; As a Scrum team we only plan one Sprint ahead in time. Sprint 2 and Sprint 3 are planned in later stages after completion of each sprint depending on the user stories remaining from the Product Backlog. Sprint 1 backlog is represented in a tabular form below.

Sprint 1 Backlog				
ID	As a	I want to:	Task ID	Tasks
1	User	View Homepage	1.1	To design the outline of homepage
			1.2	To develop the primary web page
			1.3	To create primary buttons (login, signup, home, feedback)
2	User	Create an account by providing various credentials	2.1	To develop Signup page
			2.2	To store information into database
3	User	Login to my account	3.1	To create Login page
			3.2	To validate the credentials by connecting to database
12	User	Logout	12.1	To create the Logout button
			12.2	End user session and redirect to Homepage after logout
13	User	Give feedback	13.1	To develop the Feedback page
			13.2	To save user feedback to the database
14	User	View information about the developers	14.1	To provide information about developers on About Us page
18	Admin	Register my restaurant on the web application	18.1	To develop the Admin page
19	Admin	Login to my account	19.1	To create Admin Login button
			19.2	To validate and give access to respective restaurant owners
23	Admin	Logout	23.1	To create Admin Logout button
			23.2	End admin session and redirect to Homepage after logout
0	-	-	0.1	Scrum meetings and Project Plan
			0.2	Install NetBeans, phpmyadmin, Xampp
			0.3	Link webpage with database using php

4. Effort Estimation

We as a Scrum adopting team have formulated a product backlog which consists of user stories. The user stories present in the product backlog are not effort estimated. A sprint backlog is created at the beginning of each sprint in which the user stories are prioritized and then further divided into tasks. Then the effort required for each task is estimated, which also helps assure that the tasks present in each sprint are sufficiently big enough. Based on a collective decision we agreed to use Planning Poker to present the effort estimations of each member.

Planning Poker

As there is no developer experienced enough to give expert advice it was a clear gesture that it is essential for all the team members to participate in the effort estimation for tasks in each Sprint Backlog, and hence our selection of Planning Poker as the estimation technique. A Planning Poker session was conducted in which all the team members participated for estimating the effort required (in person-hours) for the completion of the tasks in the Sprint 1 Backlog. One of the main advantages of using Planning Poker is that it consists of an estimation accuracy review i.e. an additional round of estimation is conducted as there are conflicts in our estimations made by two or more team members. The members with such estimates are given a chance to justify the extremity of their estimate. The process of estimation will be repeated until we obtain values close to the median. After all the required values are obtained the Scrum Master calculated an average which is the final estimate for all the recognized tasks or features present in our Sprint backlog.

Sprint 1 Planning Poker Estimates

Sprint 1 – Effort Estimation (in person-hours)									
Task ID	Tasks	M1	M2	M3	M4	M5	M6	M7	Median
1.1	To design the outline of homepage	1	2	2	1	3	1	1	1
1.2	To develop the primary web page	5	5	8	13	5	8	8	8
1.3	To create primary buttons (login, signup, home, feedback)	3	5	2	5	5	5	3	5
2.1	To develop Signup page	2	3	5	5	3	5	5	5
2.2	To store information into database	8	5	13	5	8	5	13	8
3.1	To create Login page	2	3	1	3	3	2	3	3
3.2	To validate the credentials by connecting to database	8	5	5	8	8	5	13	8
12.1	To create the Logout button	1	1	2	3	2	3	3	2
12.2	End user session and redirect to Homepage after logout	3	1	2	3	5	3	3	3
13.1	To develop the Feedback page	3	2	1	3	5	3	5	3
13.2	To save user feedback to the database	2	5	3	3	5	5	5	5
14.1	To provide information about developers on About Us page	5	5	2	3	3	5	5	5

18.1	To develop the Admin page	1	1	3	2	2	3	2	2
19.1	To create Admin Login button	2	1	3	1	1	2	3	2
19.2	To validate and give access to respective restaurant owners	3	2	3	5	5	8	5	5
23.1	To create Admin Logout button	1	2	2	2	1	1	3	2
23.2	End admin session and redirect to Homepage after logout	2	3	3	1	1	5	3	3
0.1	Scrum meetings and Project Plan	21	21	34	34	21	34	34	34
0.2	Install NetBeans, phpmyadmin, Xampp	8	13	8	13	5	13	13	13
0.3	Link webpage with database using php	34	55	55	55	34	55	34	55
Total Effort Estimate for Sprint 1 = **172 person-hours**									

5. Monitoring and Control Plan

Our project is monitored using burn down charts, conducting regular scrum meetings and through Excel sheet. Monitoring and controlling the progress of project is done as stated:

Sprint Plan Meetings

A sprint plan meeting is conducted before starting each Sprint during which members of the team gather to pick user stories from the Product Backlog and add to the Sprint Backlog which are later effort estimated using Planning Poker sessions as mentioned in this document above.

Regular Scrum Meetings

Regular scrum meetings are planned by the Scrum master, considering the schedule of each team member and allotting a time slot so that each and every team member can participate in the meetings. WhatsApp is used for communication between team members, where ideas are discussed and Scrum meetings can be organised.

Burn Down charts

Burn down charts are used as a visibility tool which helps us track our project using a Work remaining versus Time remaining graph. The burn down chart is updated every day to track team progress, which helps understand team pace. By analysing the results of this graph, if there is any delay or if present effort do not match the estimated effort then we can alter our effort on the project so that we can deliver a working release after every sprint.

Sprint Review Meetings

Sprint review meetings are conducted after the end of each Sprint to discuss any obstacles faced by the team members and to track deviation from the project plan.

Excel Sheet

Tasks taken up by each team member, progress of the team member regarding his tasks are updated in an excel sheet. This helps us view incomplete tasks and acknowledge problems raised during the development process.

Status Reports

Status reports are documented after completion of each Sprint according to our project plan in which we represent team progress including individual contributions and also represent project progress using the burndown chart. The Sprint Backlog for the upcoming Sprint is also decided in the Sprint plan meeting and included in these status reports.

Tools

Open source tools are used for developing our web application. Resources are selected based on the need for development, experience and familiarity of team members with those tools.

Type of resource	Resource	Team member involved
Software Tools	NetBeans 8.2	All Team members
	PHPmyAdmin	All Team members
	GitHub	All Team members
	Google Drive	All Team members
	Microsoft Word	Karthik, Akhilesh, Anurudh, Priyatham
	Whatsapp	All team members

Links to our Resources:

Github: https://github.com/KarthikNarla/Restaurant-Management-System
Google Drive: https://drive.google.com/drive/folders/0B58N28mMo6Uva19aMWktZDhjTU0

6. Risk Monitoring and Mitigation

The following are the project and product risks identified for this project;

Risk	Impact	Mitigation Strategy	Monitoring Strategy
Unavailability of team members	Low	This hinders the progress of the project when a back-up is not planned by remaining team members in the group. As everyone in the team have prior knowledge about the project, this risk may not affect the overall performance of the group.	The scrum master will identify the individual role of each member in product development. Tracking the team member participation in regular scrum meetings and status meetings is planned as a part of monitoring strategy.
Team members working remotely	Low	This could be mitigated by having a group discussion with team members using communication tools when communication over-head occurs.	One of the team member i.e. Aman Gupta has reported to work remotely. Communication with the team members is planned using github for committing code, google drive for sharing documents and Whatsapp messenger for further discussion. This risk will be monitored by the Scrum Master.
Distance and cultural clashes	High	This will be mitigated as each team member shares their skills and effort is taken to overcome language and cultural barriers. By understanding each	This is monitored by the Scrum Master. Clashes between team members will be sorted out by conducting individual meeting

		team member capabilities we can thereby reduce misinterpretation among members of the group.	with respective members. If any member in the group doesn't have a clear view, then proper care will be taken to explain enabling the member to cope up with the team.
Delay in project	Medium	Mitigation strategy for this risk is to monitor the project using burn down charts and understand project deviation therefore understanding the pace of work that is being carried out.	Tasks in each sprint are noted down in google excel sheet by product owner. Product and sprint backlogs are developed by involving all the team members to check the completed and pending tasks. This risk will be monitored by scrum master and product owner.
Prioritization of user stories	Low	This is mitigated by having an extensive plan on the product which is going to be developed. User stories are prioritized such that every group member participates in the discussion and accepts the decision made by the team.	The scrum master and product owner are responsible for managing this risk. If the Sprint releases do not meet the required pace to reach the project deadline, then prioritized tasks in the sprint will be re-checked with team members.
Misunderstanding and developing wrong features and user stories	Low	Developing a proper design using mock-ups of the web application can mitigate this risk.	This risk will be monitored by the product owner by reviewing each task within the sprint backlog in every scrum meeting along with the team members. Each

			sprint release will be reviewed with mock-ups to verify its correctness in design. Any errors identified will be discussed along with the team members and a plan will be made accordingly.

7. Quality Criteria

Quality Criteria is planned to be assured in this project by maintaining control over product quality and process quality.

Process Quality Assurance

The progress throughout the project will be monitored by the Scrum Master who keeps track of effort using burn down charts. He, then updates the team members based on the decisions made in regular scrum meetings and review meetings. This process takes place at start and end of each sprint. Effort estimated will be updated based on the feedback received from previous sprint and these updates will be used for estimating other tasks in next sprint. Product backlog will be updated if there is any need for adding new tasks or developed product will provided as input to next sprint for further development.

Product Quality Assurance

Quality assurance of the product is planned by selecting a small subset among the functions that are used for testing. We try to write the test case in such a way that it negates the developed design i.e. to see if only the appropriate inputs lead to the desired output and vice versa. As the function fails to execute without errors, then changes will be made to the code by giving the appropriate inputs, only this time expecting the test to pass. If the code fails to execute again, then changes will be made to code to run without errors. This process will be repeated until the function can be executed without any errors. Before developing a new design this process would be repeated to implement the expected functionality.

The following are the test phases planned in our project:

Unit Testing

During the process of development, each method will be tested and results of the tests will be updated to the team members if any errors are observed. Though team members don't have previous knowledge in this type of testing, we would try to gain knowledge accordingly with development and test the modules so that the product design is consistent.

Integration Testing

As multiple members of the group are participating in the process of development, it is necessary to integrate the modules with utmost care. Any conflicts while integration would

lead to project failure. Thus code committed to Github during each sprint will be integrated in the presence of team members. Some of the team members will be assigned to integrate developed sub-tasks and see whether functionality of each module remains same after integration is done. Remaining members will try to test the whole system without considering the internal structure of code.

Acceptance Testing

After completing each sprint, the product owner will check the system and provide suggestions to team members if any further improvements are needed. As the tasks within each sprint are noted down in an excel sheet, the status of each task will be changed to 'Completed'.