**CS 3343**

Software Engineering Practice

**Group Project – “Hot Meals”**

Group-1

**Project Plan**

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# Project Description

Hot Meals is an application that allows users to make reservations and order food while making reservations. Users input their choices of location, the number of people and the dishes they wish to order. Users can then choose from a variety of time intervals. Time intervals consider how much time it would take to eat the order while suggesting an interval.

# Stakeholders

|  |  |
| --- | --- |
| **Stakeholder** | **Description** |
| **User** | User provides input regarding location, food, number of people and what time they would like to book. |
| **Restaurant** | Restaurant’s Menu and premises are being used |
| **Developers** | Developers are involved with the design and implementation of the application. |

The restaurants spend a considerable time on customers. Waiting for them to order, cooking food, then serving them, and waiting for customers to eat. Although, during the first two steps, the customer sits idle. If a customer can place an order before coming, more customers can occupy the tables, allowing for higher revenues and increasing convenience for restaurants.

# Objectives of the project

Hot Meals is a reservation application that aims to reduce waiting times at restaurants. Studies have shown that, on average, people spend 30+ minutes waiting for tables. What if we could reduce it to less than 2 minutes. Imagine when you enter a restaurant, your reserved table is set with freshly prepared food that you wanted, smelling nice and delicious, having virtually no waiting time. Hot Meals is an attempt to bring this idea to life and make people’s life easier.

Hot Meals is an application where a user can create reservations and order food while making the reservation and making payments, in one easy, simple and convenient interface.

# Tools

1. Development Tools
   1. Visual Studio Code
   2. IntelliJ
   3. Eclipse
2. Development Platform
   1. macOS Monterey - 12.0.1
   2. macOS Big Sur – 11.6.1
   3. macOS Catalina – 10.15
   4. Windows 10
3. Test Cases
   1. Junit
4. Project Management
   1. OneDrive
5. Collaboration Tools
   1. GitHub
   2. Zoom
   3. FaceTime
6. Documentation
   1. Visual Paradigm
   2. GitHub
   3. Microsoft Word
   4. Apple Pages
   5. Google Docs
7. Presentation
   1. Microsoft PowerPoint

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# Methodology

Once the requirements, stakeholders and the goals of the project were ironed out, then the software development model had to be chosen. We decided to use a prototype evolutionary model where we work on three iterations. Before beginning on the first iteration, the UML diagram decides a rough sketch of how the program would function and an idea of what classes and functions would be needed.

The first iteration of the project would be a functional and bare prototype and each future iteration would improve on it by adding more features, stability, etc.

Each iteration however would be done in a waterfall pattern where we would first plan the goals of the iteration, the work, what we learned from the previous one and so on. And then the actual coding of the prototype would happen followed by the testing of new features, functions, etc. These steps would always happen in this order following each other hence the waterfall model.

For the first iteration, after deciding how the rough design of the program would be, we split up the work between our coders and created our own classes etc. The first iteration would be the most important since it laid the basic design of the rest of our program. After it was completed, test cases were written by each of the coders for their own sections. Following that a discussion was done on how our plans and implementation changed, how to work on the next iteration and so on. and planning the new changes for the second one, and so on. This process was repeated for the second and third iteration.

The first iteration focused on meeting the basic requirements which is creating customer reservations and having a system clock. The most important part of this iteration was planning how to schedule customer reservations. How will different locations be managed, what is the most efficient way to check when the restaurant had more space to accommodate more customers and how long would customers take to eat were all questions we had to think about. The interval system was the heart of the program and we tested out various algorithms for efficiency in runtime and memory till we decided on our current one which is in essence a 1-dimensional block fitting algorithm.

Our testing revealed some incorrect results from the interval scheduling algorithm and users were able to make bookings when they shouldn’t. We decided to leave some of these bugs for a later prototype due to being minor and move to the second iteration.

New features were the focus of the second iteration. The goal of this prototype was to build new features and add them to our already working product. We planned on adding delete and view booking here. With many new features, we discovered a lot of bugs in testing and places for users to input to cause errors.

Hence the third iteration of our program was focused on stability, bug fixes and polishing. We fixed all our known bugs, added exceptions for users so the program would not end and instead told the user their mistake allowing them to fix it. All of this added more stability and polishing to the program combined with the bug fixes to increase the correctness of the program to make it functional.

# 

# Development

This is a general outline of our development process in 4 stages. Initial Planning, iteration 1, iteration 2 and iteration 3.

1. Initial Planning
   1. Create a initial project idea
   2. Decide on stakeholders and clients
   3. Look at current solutions, benefits, and cons
   4. Create basic requirements and objectives
2. Iteration 1
   1. Planning
      1. Decide on flow of the program
      2. Create UML diagram
      3. Divide the work
   2. Coding
      1. Each coder works on their assigned tasks
      2. Another coder brings all the pieces of each class together
   3. Testing
      1. Each coder writes individual tests for their own classes
      2. If bugs are found, write reports and plan fixes or what to do
3. Iteration 2
   1. Planning
      1. Compare current implementation to original plan and see what worked and why the changes happened
      2. Plan new features
      3. Decide on implementation of new features and fixing some bugs
      4. Divide the work
   2. Coding
      1. Each coder works on their assigned features and or bugs
      2. Write reports for any fixed bugs and if any are found
   3. Testing
      1. Test each section
      2. If bugs are found, write reports and plan fixes or what to do
4. Iteration 3
   1. Planning
      1. Go through bug reports and have external users try the program
      2. List down all the places for exceptions and bugs
      3. Divide the work
   2. Coding
      1. Each coder works on their assigned tasks
      2. Write reports on which bugs are fixed and if any new ones are found then fix those and write reports
   3. Testing
      1. Test all the classes and build on previous test cases
      2. If any bugs are found, fix them, and write the reports

# Burndown Chart

Chart, line chart

Description automatically generated

# Gantt Chart

This chart has been attached separately as an excel file. Please refer to “CS3343 Group1 - Gantt chart.xlsx”

# Citation

October 8, 2013. (2013, October 8). *Study released on Average Restaurant Wait Times*. FSR magazine. Retrieved November 26, 2021, from https://www.fsrmagazine.com/content/study-released-average-restaurant-wait-times.