CSL 2060 - Project

Essence Kernel and Additional Practice

for

Click to Order

An Online Food Ordering System

Team Members

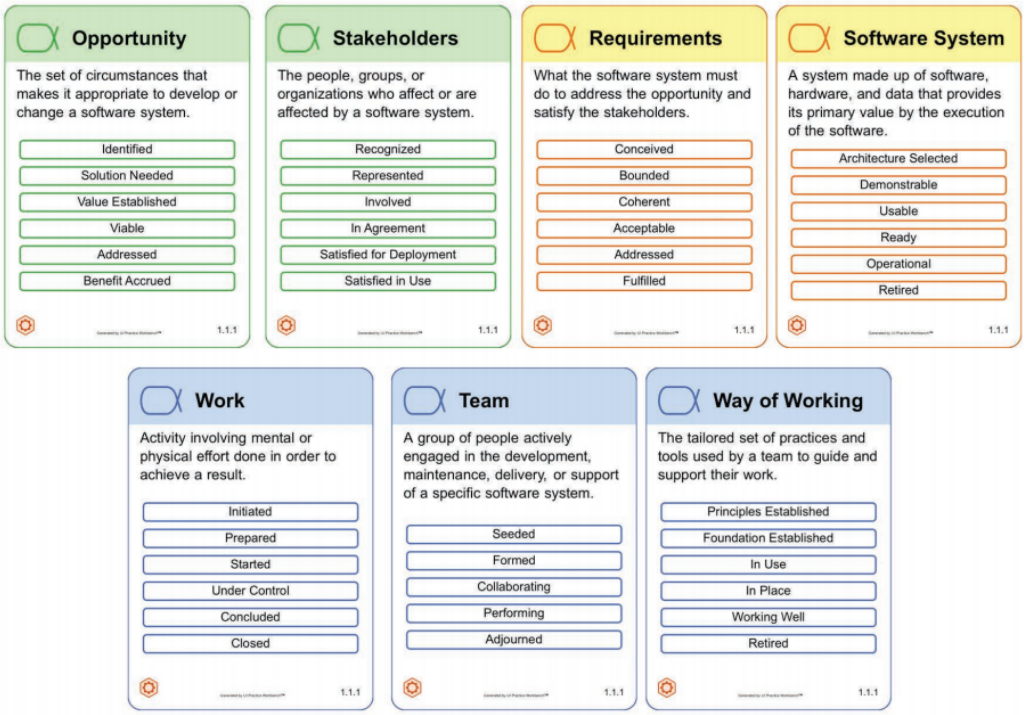
Kshitiz(B19CSE111)

Barun(B19CSE020)

Essence

- Essence being dynamic and actionable takes a structured approach in organizing the elements of the software project.
- First of all the elements are organized in mainly three areas of concern with each of them focusing on the specific dimension of the development process.
- Customer - It deals with the actual use and exploitation of the software system.
- Solution - It contains details related to the specifications and development of software.
- Endeavor - It deals with things which are related to the development team and their way of approaching the work.

Essence Kernel Alphas



- Customer
- Opportunity

    - It refers to the set of circumstances that makes it appropriate to develop or change a software system.
    - Opportunity represents the understanding of the stakeholders needs and therefore helps to shape the requirements of the software system by providing the justification.
- Stakeholders.
    - It refers to the people, groups, or organizations that affect or are affected by the software system. They help to provide the opportunity and hence are the source of the requirements and funding for the software system.
    - The stakeholders involved in the Software project are :
        - The intended stakeholders involved in the use case are Customers, IITJ Canteen Services, Delivery Partner (Delivery Boy), Suppliers, Customer Service / Helpdesk, System Architect and Software Developers.
        - Customers/ Users - They are the recipient of the goods and services obtained from the Canteen for a monetary consideration. They will also have the option to change the menu. The payment can be done by the user once they receive the order.
        - IITJ Canteen Services - They are responsible for the daily operations of the canteen as well as its overall direction, profitability, and reputation. Once the customer confirms the order, canteen services receive the order request. Canteen services check with order and confirm the availability and assign the order to the Delivery boy.
        - Staff - They are the employees who are mainly responsible to ensure that the work is done according to the prepared plan, policies, and standard quality to meet the standards that are set by the management. They also consist of a delivery boy who receives the customer's order details once the food is prepared and delivers it to them.

        - Suppliers - They provide the Canteen with raw materials like vegetables, meat, groceries and at the same time ensure their quality, delivery schedules, and rationale price.
        - Software developer - They analyze user's needs and then design, test, and develop the software to meet those needs.
        - IT Security - They are critical for various reasons like protecting the privacy and sensitive data of customers on the app, safeguarding the finances of the online system along with ensuring server security.
        - Customer Service/ Helpdesk - They serve as a customer contact platform for all the queries related to the system and help to improve the overall customer experience.They help in resolving issues related to order, payment, quality of food through phone or social media accounts.
- Solution
- In Solution shared understanding of the requirements are established followed by implement, build, test, deploy and support.
- Requirements
- It refers to what the software system must do in order to address the opportunity and satisfy the stakeholders. It is important as it helps to drive the further development and testing of the software system.
- The requirements which are gathered from the stakeholders are referred to as SRS or the Software Specification Requirements. The various requirements involved in the software development are:
- Functional Requirements
    - A server shall host the Click to Order App and provide system data processing and storage capability.
    - An application that shall provide a User/Canteen with all User/Canteen system functionalities (according to access control).
    - The customer shall be able to navigate through the menu and order food items of their choice.
    - The app shall display a representation of the total amount of money that needs to be paid by the user for the item ordered.

    - The Canteen services shall able to CRUD items from the menu
    - The Canteen services shall be able to receive/ view and be able to accept or cancel the order depending upon the order received and availability of the ordered item.
    - The delivery partners shall be able to receive an incoming request from the Canteen, be able to acknowledge the request, receive customer details from the Canteen and be able to pick up and deliver the order along with acknowledging the payment done for the order.
- Interface Requirements
    - The interface requirements for the Online Food Ordering System consists of the following requirements:
    - User Interface
        - Screen representing the various food items which can be selected from.
        - After confirmation of the food order, admin shall receive the details of the ordered item.
        - The GUI should be user-friendly so that every kind of customers shall be able to place order easily
    - Hardware Interface
        - The system on which application is running should have decent internet connectivity.
        - The application can run on any browser.
    - Software Interface
        - The system shall communicate with the configurator to identify all the available components to configure the product.
        - The communication functions of the app with the server shall follow Internet protocol version 6 and at the same time also use the md5 hashing algorithm for encrypting the password.
    - The system shall also provide various system features for both the users and admin respectively:
    - For User

        - **Food Menu and Categories -** Customers can order food from the food menu or go through individual categories available to select their food item they wish to order.
        - **Select Food Items** - Customers can select the desired food items from the menu on the basis of their choice or various categories available. They are also provided with the facility to search the food items from the menu.
        - **Order Food** - Customers can order the food they wish to order. After placing the if the order is confirmed the "Congrats! Your Food Item is Ordered Successfully" message appears on the screen thereby confirming the order.
    - Admin Panel
        - Log-in - The admin can login into the admin panel using his/her unique Username and Password. In order to maintain privacy the password entered is encrypted using the md5 hashing algorithm.
        - Manage Admin - The manage admin functionality allows the admin to add / delete admins thereby allowing the managing of more than one admin. They can also update their username along with the password as well
        - Manage Dashboard - Admin can keep track of the number of food categories and menu. They also have an option of keeping track of the number of orders made and the total revenue generated.
        - Manage Food Items - Admin can add new food categories and food items as per the availability of the raw materials provided to them by the supplier .Moreover, they can also delete the existing categories and food items along with updating their details such as price, description or image
        - Manage Order: Admin can manage the order, change the status of the order as Ordered, On Delivery, Delivered and cancelled depending on the situation.
- Performance Requirements

    - The order placed by the customer should result in confirmation of Order within a minute.
    - The system shall use the computing resources efficiently, i.e., should not consume more bandwidth and run efficiently on web interfaces
    - There shall be different login databases for admin.
    - The server shall be capable of supporting no less than 100 concurrent connections from any combination of various interfaces i.e. it should be capable of supporting 100 active orders at a time and no orders shall be lost under any circumstances.
    - There shall not be a delay of more than 3 seconds upon navigating from one functionality to another like from add to cart to proceed to payment.
- Non-functional Requirements
- The non-functional requirements and their measures for a software system are:
    - Availability
        - The system should be available at all times, meaning the user can access it using their browsers 24 X 7.
    - Security
        - The system's back-end servers shall only be accessible to authenticated administrators.
        - The system shall be able to do encryption and decryption of data for password which is given by admin for login. The system uses md5 hashing algorithm for encrypting the passwords.
    - Reliability
        - The reliability of the overall system depends on the reliability of the separate components. The main pillar of reliability of the system is the backup of the database which is continuously maintained and updated to reflect the most recent changes.
    - Maintainability
        - MySQL Database are used for maintaining the database and the application server takes care of the site. Also, the software

design is being done with modularity in mind so that maintainability can be done efficiently.

- Correctness
  - The system is designed such that it performs all the intended functions correctly and appropriately.
- Learnability
  - Learnability of a software system is ensured by.
    - The design of user interfaces
    - The clarity and the simplicity of the user instructions
- Readability
  - Readability of a software system is ensured by:
    - Form of representation and readability of implementing Programming Language
    - Structuredness of the system and quality of the documentation
- Extensibility
  - Extensibility allows required modifications at the appropriate locations to be made without undesirable side effects. Extensibility of the system is ensured by:
    - Structuredness (modularity) of the software system along with the availability of comprehensible program documentation
- Testability
  - It refers to the suitability for allowing the programmer to follow program execution (runtime behavior under given conditions) and for debugging. The testability of system is ensured by-
    - Modularity
    - Structuredness

- Software System
  - The software 'Click to Order 'is an online food ordering system that allows the customer to avail the IITJ Canteen services from the comfort of their browsers without the hassle of waiting in long queues

and wasting a lot of time. The system helps to manage the working of the canteen more effectively and efficiently by computerizing meal ordering, billing and inventory control. It also allows the canteen to know about the details of the customer like number of people for a particular interval of time, their orders and accordingly the canteen can make arrangements to improve the customer experience. They can also calculate daily expenditure and profit.

- The website is built using HTML, CSS and PHP with MySQL as the database to manage the data. HTML is used to display the basic static pages, CSS is used for styling. For managing the back end we used PHP. MySQL database contains all the data that we show on our webpages upon users request.
- The system allows the users to check out the menu section using an interactive and easy-to-use surface computer GUI to order the food of their choice and can subsequently pay for the items ordered once they receive it.

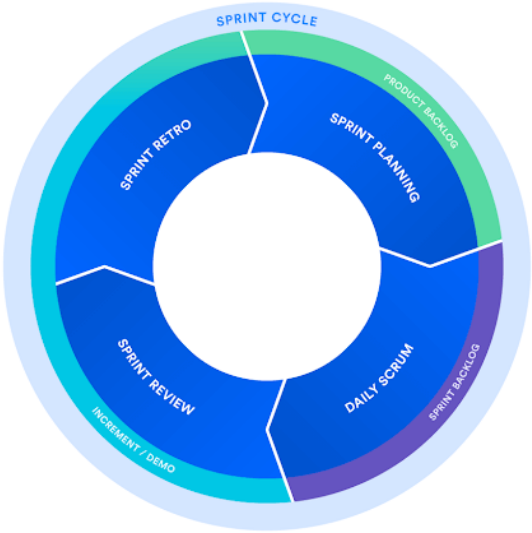
Endeavor

- In this area of concern the team is formed and its way of working is decided. Accordingly the project work is divided and carried out.
- Team
  - It refers to the group of people actively engaged in the development, maintenance, delivery, or support of a specific software system.
  - In our software project our team consists of two members respectively. The team then performs the work needed to create, update or change the software system.
  - Team Members :
    - Kshitiz - B19CSE111
    - Barun Shakya - B19CSE020
- Work
  - It refers to the activity done by the team to meet the goals of producing a software system matching the requirements and addressing the opportunity which are presented by the stakeholders.

    - The work done is often guided by the practices that are in sync with the team way of working.
    - The work in developing our system includes:
        - Designing the Front End using HTML and CSS.
        - Creating MySQL Database
        - Connecting the Front End with the Database using PHP
        - Testing PHP-MySQL connection
        - Deployment
- Way of Working
    - It refers to the tailored set of practices and tools that are used by the team to guide and support the work.
    - The team evolves their way of working alongside their understanding of their mission and their working environment.
    - Moreover, as the work progresses the team continuously reflect on the way of their working along with adapting to the current context.
    - In our software project we have used Scrum practice the details of which will be discussed below.

SCRUM

- Scrum refers to a framework that allows the teams to work together on a software project.It is considered as an agile project management framework that describes the set of meetings, tools and roles which help the teams to structure and manage their work.



- The scrum serves as an explicit guidance to the team to work together
- All the work that we have to do is placed in an ordered list also known as Product Backlog. The product backlog is maintained with the most important items present in the top of the list
- The main component of Scrum is the sprint during which the team met to meet the goal of completing the software project.
- The PBIs that are to be performed are selected through the sprint planning activity where the team along with the product owner (PO), agreed to work on high priority PBIs in subsequent sprints.
- The PBIs are then moved from Product Backlog to the Sprint Backlog. This is done on the first day of each Sprint where the team member discusses what to be delivered and when.
- The Sprint Planning Activity consists of two parts mainly:
    - In the first part the goals of the sprint were explained by the PO to the team along with the list of PBIs as well.

- Accordingly in the second part the team then decides the future PBIs that have to be achieved .
- In a sprint interval the team meets to synchronize their work and create a plan. This is referred to as the Daily Scrum and occurs for around 15-20 mins.
- In the daily scrum each team member explains what was done in the last meeting and what will be the plan for today as well the obstructions that they are facing while executing the task.
- A sprint review activity is organised in each iteration of the sprint that reviews the product along with key stakeholders. This helps in proper user understanding of the product as well as ensures that their demands are being fulfilled.
- Moreover, a sprint retrospective activity is also held as it provides an opportunity for the Scrum Team to agree on the improvement to their way of working that can be implemented in the next sprint.
- There are mainly three major roles in Scrum :
    - PO - He/She is responsible for feeding the product backlog based on his/her interaction with customers and users (Barun)
    - Scrum master - He/ She is responsible for facilitating the Scrum activities and at the same time motivates the team members to follow the Scrum activities. (Kshitiz)
    - Developers - Team Members that are actively involved in estimating the efforts for implementation of each PBI. In case if the PO or SM are actively involved in the Sprint BAcklog they participate as Developers.

Scrum with Essence

Scrum Elements	How the Team has done
Product Owner	Barun is the PO of the team
Scrum Master	Kshitiz is the Scrum Master of the team
Sprint	The team has decided to iterate on either weekly or biweekly time-box.
Sprint Planning	At the start of every sprint
Daily Scrum	On all the days of sprint excluding the ones reserved for : 1. Sprint Planning 2. Sunday (Break) 3. Sprint Review 4. Sprint Retrospective
Sprint Review	Every second last day of the sprint.
Sprint Retrospective	After sprint review

Initial Product Backlog

Item	PBI	Originator	Priority	Estimated Days

1	Conduct User Research and Gather User Requirements	Barun	High	7
2	Project Planning and Preparing SRS Document	Kshitiz	High	6
3	Designed User Interface	Kshitiz	High	7
4	Added Search,Categories, Menu and Order Functionalities	Barun	Medium	7
5	Create Database	Barun	High	14
6	Designing the Backend	Kshitiz	Medium	8
7	Connecting the Backend and Front-End using PHP	Kshitiz	High	8
8	Testing	Barun	Medium	4
9	Deployment	Kshitiz	High	2

1. Sprint -1 (Date : 8 March - 14 March)

- Sprint Planning
    - Conducting User Research and Gathering User Requirements
- Daily Scrum - 1
    - Talking to the IITJ Students or the end user in order to gather the requirements. We first start by discussing the issue with the students so that we can get a better understanding of the problem.
    - This also helps to gather the necessary user requirements accordingly which will also help in better customer experience.
- Daily Scrum - 2
    - We then gather the information from the IITJ Canteen Services to understand their requirements as well.
    - This helps to learn more about the functioning of the canteen services and also provides an opportunity to improve some aspects of its working through the software development.
- Daily Scrum - 3
    - After conducting the user research and gathering the information we then finally formulate and reassess the requirements.
    - After this we then create a Product Backlog for all the necessary features included in it along with its description, estimated time and its priority.
- Sprint-1
    - Schedule
        - Sprint Scheduled for after 8-03-2021.
        - The Backlog Items have been reviewed and prioritized.
    - Planned
        - In the sprint planning for the first iteration it was decided to conduct the User Research and gather the User Requirements.
        - The team has agreed to further proceed with the development in the project by focusing on the backlog items.
        - Key aspects of the planning have been carefully identified.

    - Reviewed
        - The review of the first iteration of the sprint was carried out successfully.
        - All the components that have been earlier planned in the sprint backlog have been executed successfully and further improvements actions have been planned.
    - Sprint Backlog
        - Conduct User Research and Gather User Requirements
- Sprint Review
    - The outcomes of the sprint are gathered and discussions are undertaken on the components that have to be done next.
    - Next Backlog - Project Planning and Preparing SRS Document
    - The sprint reviews also ensure that the requirements of the stakeholders are also under consideration and the software is then developed accordingly.
- Sprint Retrospective
    - The team meets after the sprint review in every sprint to discuss the way of working.
    - Further improvements in the development of software are discussed and identified. Discussions are further carried out on whether sufficient time was allotted or not.
    - We also discuss whether each one of the team members has a clear understanding of the product backlogs and their components as clarity will help in better working on the software.

- Updated Product Backlog

Item	PBI	Originator	Priority	Estimated Days
2	Project Planning and Preparing SRS Document	Kshitiz	High	6
3	Designed User	Kshitiz	High	7

	Interface			
4	Adding Search, Menu and Order Functionalities.	Barun	Medium	7
5	Create Database	Barun	High	14
6	Designing the Backend	Kshitiz	Medium	8
7	Connecting the Backend and Front-End using PHP	Kshitiz	High	8
8	Testing	Barun	Medium	4
9	Deployment	Kshitiz	High	2

Updated Alpha

- Opportunity - Identified
- Stakeholders - Recognized
- Requirements - Conceived
- Software system - Architecture Selected
- Work - Initiated
- Team - Formed
- Way of working - Principles Established

2. Sprint -2 (Date : 15 March - 19 March)

- Sprint Planning
    - Project Planning and Preparing SRS Document
    - In the sprint planning for the second iteration it was decided to finalize the requirements and accordingly prepare a Software Specification Requirements(SRS) of the project listing the problem specification, general description, requirements including functional, interface and performance requirement along with other non-functional requirements.
- Daily Scrum - 1
    - It involved finalizing and freezing the user requirements based on the user research. After discussing and understanding the problem statement as well as the team members have understood the core philosophy behind the project.
- Daily Scrum - 2
    - We then decided to prepare the SRS document listings down the outline including the requirements, scope of the problem along with the design constraints.
    - The SRS documents ensure a well documented material that can be used by the developers for reference while developing or maintaining the code thereby ensuring the stakeholders requirement as well

- Sprint-2
    - Schedule
    - Sprint Scheduled for 15-03-2021
    - The Backlog Items of the Sprint have been reviewed and prioritized.
- Sprint-2
    - Planned
    - In the sprint planning for the second iteration it was decided to finalize the requirements and accordingly prepare a Software Specification Requirements(SRS) of the project.

    - The team has also agreed to further proceed with the software development by focusing on the backlog items.
    - Moreover, the key aspects of the work which has been carried out along with the one to be done in the future has been carefully identified.
- Sprint-2
    - Reviewed
    - The review of the second iteration of the sprint was carried out successfully.
    - All the components that have been earlier planned in the sprint backlog during the first iteration along with the current one have been executed successfully and further improvements actions have been planned.
    - We have now decided to move forward with the designing of the User Interface using the wireframe before coding which will be discussed in further detail in the next session.
- Sprint-2
    - Sprint Backlog
    - Project Planning and Preparing the SRS Document
- Sprint Review
    - The outcomes of the second iteration of the sprint have been gathered and discussions are undertaken on the components that have to be done next in the third sprint.
    - Next Backlog - Design the User Interface
    - The sprint reviews also ensure that the requirements of the stakeholders are also under consideration. To further make this possible a detailed SRS document has been finalized which contains references for both the user and the developer to refer to in the future.
- Sprint Retrospective
    - The team met after the sprint review to discuss the way of working.
    - The details of the SRS document was written after due consideration to all the stakeholders associated with the project.

- Moreover, further improvements in the development of software are also discussed and identified.

- Updated Product Backlog

Item	PBI	Originator	Priority	Estimated Days
3	Designed User Interface	Kshitiz	High	7
4	Added Search,Categories, Menu and Order Functionalities	Barun	Medium	7
5	Create Database	Barun	High	14
6	Designing the Backend	Kshitiz	Medium	8
7	Connecting the Backend and Front-End using PHP	Kshitiz	High	8
8	Testing	Barun	Medium	4
9	Deployment	Kshitiz	High	2

Updated Alpha

- Opportunity - Value established
- Stakeholders - Involved
- Requirements - Bounded
- Software system - Architecture Selected
- Work - Started
- Team - Collaborating

- Way of working - Foundation established

Sprint -3 (20 March - 2 April)

- Sprint Planning
    - Designing the User Interface along with Adding the
    - In the third iteration of the sprint we focused on prototyping the user interface using the wireframe followed by designing the front End using HTML and CSS based on the design finalized in the wireframe.
    - For designing the wireframe Figma has been as it easily allows the developers to create a prototype of the website along with facilitating the collaboration between the team members
- Daily Scrum - 1
    - It involved designing the prototype of the website using Wireframe on Figma .
    - Designing the wireframe helped in locating the various components on the website in order to maintain its aesthetic look.
    - Various components of the website including the Navigation bar, Search Field option, Categories Section, Food Menu Section, Contacts Section were designed and placed appropriately on the basis of their usage and functionality.
- Daily Scrum - 2
    - After making a wireframe of the website we then started with the coding part of the project.
    - The Front End part of the software is made using HTML and CSS.
    - We have implemented the necessary components of the website including the navigation bar,search field, categories section representing the food on the basis of categories.
    - All the buttons and icons were also placed appropriately on the basis of their use case.

- Daily Scrum -3
    - We then implemented the food order section of the webpage which allows the user to select the food items of their choice and then order them by entering their details.
    - The order section consists of a form that the user has to fill the in order to successfully place their order.
    - The form contains the details regarding the Full Name of the User, Email, Phone Number, Address to where the food has to be delivered, the Quantity of Food Items to be ordered.
    - Moreover, the menu section of the webpage has been designed consisting of the food items which are available in the canteen.
- Sprint-3
    - Sprint Scheduled for 20-03-2021.
    - The Backlog Items of the Sprint have been reviewed and prioritized.
- Sprint-3
    - Planned
    - In the third sprint planning it was decided to design the wireframes of the website as it helps to ensure that the user interface satisfies the needs of the stakeholders.
    - Following this, the coding part of the project was initiated where the front end was designed using HTML and CSS. The basic skeleton of the website consisting of the button and icons, navbar, search and categories section have been designed and implemented.
    - Apart from this the other components of the website including the order and menu functionalities have also been designed while focusing on the backlog items along with carefully identifying the necessary key aspects of the project.
- Sprint-3
    - Reviewed
    - The review of the third iteration of the sprint was carried out successfully.

    - It was discussed that the wireframes created represented the desired workflow of the application along with the convenience aspects of the same.
    - Further the Front End part of the software was designed keeping in mind both the aesthetics as well as the functionality aspect of the software.
    - Apart from this all the components that have been earlier planned in the sprint backlog during the earlier iterations along with the current one have been executed successfully or not and further improvements actions have been planned.
    - All the functionalities of the software including the menu and order functionalities have been designed as discussed in the previous iterations.
- Sprint-3
    - Sprint Backlog
    - Designing the User Interface along with Adding the Search, Categories, Menu and Order Functionalities.
- Sprint Review
    - The outcomes of the third iteration of the sprint have been gathered and discussions are undertaken on the components that have to be done next in the third sprint.
    - Next Backlog - Create Database
    - The sprint reviews also ensure that user interface design has been according to the requirements that have been previously specified in the SRS document as well.
- Sprint Retrospective
    - The team met after the sprint review to discuss the way of working.
    - The details of the wireframe and the user interface (Front- End) was discussed. Designing the wireframe helped to keep the concept user-focused and at the same time facilitate feedback from the users.
    - All of us also agreed that conducting user testing during the early wireframing stage allowed the team to identify key pain points that help to establish and develop the product concept better. Moreover,

the front end part including all the functionalities were in accordance to the one discussed earlier.

- Updated Product Backlog

Item	PBI	Originator	Priority	Estimated Days
5	Create Database	Barun	High	14
6	Designing the Backend	Kshitiz	Medium	8
7	Connecting the Backend and Front-End using PHP	Kshitiz	High	8
8	Testing	Barun	Medium	4
9	Deployment	Kshitiz	High	2

Updated Alpha

- Opportunity - Value established
- Stakeholders - In Agreement
- Requirements - Coherent
- Software system - Architecture Selected
- Work - Started
- Team - Collaborating
- Way of working - In use

Sprint - 4 (3 April - 18 April)

- Sprint Planning
  - Creating the Database
  - In the fourth iteration of the sprint we focused on creating the database in order to store and access the information easily.
  - The Database is an important component of the software that manages the pertinent information about both the customer and the admin.
  - Subsequently we can query the information from the database as when required. Moreover, by storing data in a structured manner it enables easy understanding for the end users as well.
- Daily Scrum - 1
  - It deals with creating the Manage Admin Database of the software.
  - The Admin Database is created using the phpmyadmin.
  - Moreover, the admin table consists of four column mainly:
    - ID
    - Full Name
    - User Name
    - Password
- Daily Scrum - 2
  - It deals with creating and managing the food categories and food items database.
  - The Food Categories option consists of five columns mainly:
    - ID - A unique id associated with food item
    - Title - The name of the Food Item
    - Image - Image of the Food Item
    - Featured - It represents whether the given good will be displayed currently on the website.
    - Active - Representing the availability of food item
  - The Food Items table has eight columns mainly :
    - Id
    - Title
    - Description

        - Price
        - Image
        - Category id
        - Featured
        - Active
- Daily Scrum -3
    - It deals with creating the managed order database.
    - The manage order database consists of 11 columns respectively:
        - Id
        - Food Name
        - Price
        - Quantity
        - Total Cost
        - Order Date
        - Customer Name
        - Customer Address
        - Customer Email
        - Customer Phone Number
- Sprint-4
    - Sprint Scheduled for 03-04-2021.
    - The Backlog Items of the Sprint have been reviewed and prioritized.
- Sprint-4
    - Planned
    - In the fourth sprint planning it was decided to create the database for the software.
    - The database for the software included Manage Admin Database, food categories and food items database along with managed order database in order to store the information in a structured manner for easy retrieval.
    - After this the team has also agreed to further proceed with designing the backend of the system along with connecting the backend with the front end using PHP.

    - The backlog items in Product Backlog have been identified carefully keeping in mind the necessary aspects of the project.
- Sprint-4
    - Reviewed
    - The review of the fourth iteration of the sprint was carried out successfully.
    - The working of the database was carefully reviewed and ensured that the functionality was similar to the ones that were discussed earlier during the planning phase.
    - The performance of the CRUD was reviewed and it was concluded to design the backend followed by connecting the components together to form the software.
- Sprint-4
    - Sprint Backlog
    - Creating Database
- Sprint Review
    - The outcomes of the fourth iteration of the sprint have been gathered and discussions are undertaken on the components that have to be done next in the fifth sprint.
    - Next Backlog - Designing the backend and connecting the backend and frontend using PHP.
    - The sprint reviews also ensure that Database of the necessary Data Fields have been implemented keeping in mind the use case of the software.
- Sprint Retrospective
    - The team met after the sprint review to discuss the way of working.
    - The details of the Database were discussed and it was concluded that the Database field was according to the desired functionalities from the software.
    - All of us also agreed to ensure the principles of the software development has to be followed while further development keeping in mind the functional and non- functional requirements.

- Updated Product Backlog

Item	PBI	Originator	Priority	Estimated Days
6	Designing the Backend	Kshitiz	Medium	8
7	Connecting the Backend and Front-End using PHP	Kshitiz	High	8
8	Testing	Barun	Medium	4
9	Deployment	Kshitiz	High	2

Updated Alpha

- Opportunity - Addressed
- Stakeholders - Involved
- Requirements - Acceptable
- Software system - Demonstrable
- Work - Under Control
- Team - Performing
- Way of working - Working Well

Sprint - 5 (19 April - 2 May)

- Sprint Planning
    - In the fifth iteration of the sprint we focused on creating the backend along with connecting it with the front using PHP.
    - The database is connected using the mysql_connect method and ensures easy retrieval of data as when required.
- Daily Scrum - 1
    - It deals with implementing the PHP code for various sections including the search section, food order, categories and menu section.

    - The components included are :
        - Food Menu and Categories
        - Select Food Item
        - Order Food
        - Log-in and Manage Admin
        - Manage Dashboard
        - Manage Food Items
- Daily Scrum - 2
    - It deals with connecting the PHP and MySQL Database .The Database is connected to the frontend using mysql_connect method involving the use of PHP.
- Sprint-5
    - Sprint Scheduled for date 19-04-2021.
    - The Backlog Items of the Sprint have been reviewed and prioritized.
- Sprint-5
    - Planned
    - In the fifth sprint planning it was decided to design the backend along with connecting the MySQL Database with the front using the mysql_connect method.
    - The PHP codes for different components are implemented and accordingly they are connected with the frontend codes.
    - Moreover, after this the team has also agreed to further proceed with the testing and local deployment of the software using XAMPP, an open source PHP server.
    - The Product Backlog Items have been identified carefully keeping in mind the necessary aspects of the project.
- Sprint-5
    - Reviewed
    - The review of the fifth iteration of the sprint was carried out successfully.
    - The working of the backend and database connection with the front end was carefully reviewed and ensured that the queries were fetched easily from the database without any errors.

    - The Admin panel forming an integral part of the backend of the software is also working well carrying out all the functionalities required.
- Sprint-5
    - Sprint Backlog
    - Designing the Backend and Connecting the Database with frontend using PHP.
- Sprint Review
    - The outcomes of the fifth iteration of the sprint have been gathered and discussions are undertaken on the components that have to be done in the next iteration.
    - Next Backlog - Testing and Local Deployment using XAMPP.
    - The sprint reviews also ensure that the backend has been designed keeping in mind the functionalities expected from the software.
    - Moreover the database has also been connected properly and queries are fetched easily without any delay.
- Sprint Retrospective
    - The team met after the sprint review to discuss the way of working.
    - The details of the Backend and Database connection with PHP was discussed extensively and it was the components that were performing their functions appropriately.
    - Moreover, team members also agreed to ensure that the testing is done accordingly in order to ensure the functionality of the software.
    - The further testing and local deployment will then be used to develop the software as desired while planning.
- Updated Product Backlog

Item	PBI	Originator	Priority	Estimated Days
8	Testing	Barun	Medium	4
9	Deployment	Kshitiz	High	2

Updated Alpha

- Opportunity - Addressed
- Stakeholders - Involved
- Requirements - Addressed
- Software system - Usable
- Work - UnderControl
- Team - Performing
- Way of working - Working Well

Sprint-6 (Date - 2 May - 7 May)

- Sprint Planning
    - In the sixth and final iteration of the sprint we focused on testing the functionalities of the software along with local deployment of the same using XAMPP, an open source PHP server that allows local hosting along with Testing and is pre-installed with tools such as MySQL.
    - Testing of the website is done in order to ensure that the website is working properly. Accordingly using the open source servers the local deployment of the software is then carried out.
- Daily Scrum - 1
    - It deals with testing the PHP and MySQL connections to ensure that the software is working properly without any errors.
    - For doing so various test scripts are executed to test the connection between the database and PHP.
- Daily Scrum - 2
    - After testing for the PHP and MySQL connections we also test for the order placement and the managing of order functionality on the admin site.
    - For this unit tests are used for ensuring that the orders are being recorded correctly as well as all the related functionalities are also working as desired.

- Daily Scrum -3
    - After ensuring that the software is tested for any errors it is then locally deployed using XAMPP which is used for PHP servers.
    - Once the deployment takes place, the user can then use the software to carry out their functionality as mentioned.
- Sprint-6
    - Sprint Scheduled for date 2-5-2021.
    - The Backlog Items of the Sprint have been reviewed and prioritized.
- Sprint-6
    - Planned
    - In the sixth and final sprint planning it was decided to test for the working of the software by executing various tests in order to ensure that the software was working as decided during the planning phase.
    - For Testing we have used several test codes and the successful output of these codes ensured that the software modules and functionalities are working correctly.
    - Moreover, once the software is checked for all the test cases it is then deployed locally using XAMPP.
    - For this we first installed XAMPP on our local machine. Then run the XAMPP control panel. Start Apache and MySQL Actions.
    - Now copy the project folder into xampp -> htdocs ->clicktoorder folder.
    - Now the website is deployed locally. The url of the website is localhost/clicktoorder.
- Sprint-6
    - Reviewed
    - The review of the sixth and final iteration of the sprint was carried out successfully.
    - The test cases were reviewed to check if they cover all the functionalities desired and then also check for the edge cases as well.
    - Moreover, upon deployment the software was working as desired demonstrating all the functionalities that have been mentioned in the SRS document.

- Sprint-6
    - Sprint Backlog
    - Testing and Local Deployment
- Sprint Review
    - The outcomes of the final iteration of the sprint have been gathered and discussions are undertaken on the working of the software system. The functionalities have been tested using test codes and then using XAMPP they have been locally deployed.
    - Moreover, all the key aspects of the software are reviewed thereby finally testing and locally deploying as well.
- Sprint Retrospective
    - The team met after the sprint review to discuss the way of working.
    - The details of the working of the software was discussed and it was concluded that the desired mentioned functionalities have been well implemented .
    - Moreover, the team members also checked for the local deployment of the software that was carried out using XAMPP.
    - All of us also agreed that all the components of the software that have been earlier planned in the sprint backlog during the earlier iterations along with the current one have been executed successfully.

- Updated Product Backlog

Item	PBI	Originator	Priority	Estimated Days

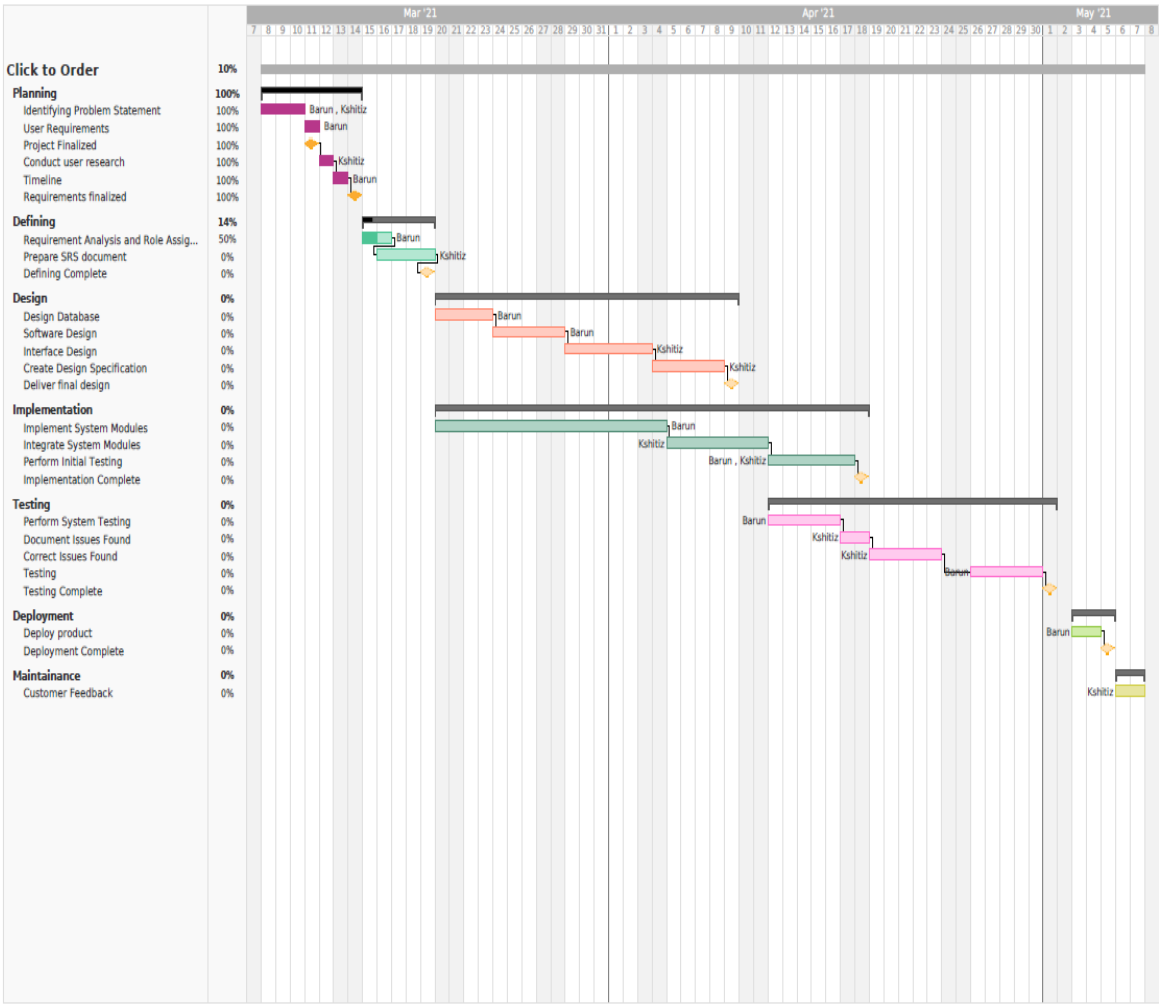
Updated Alpha

- Opportunity - Addressed
- Stakeholders - Satisfied for Deployment

- Requirements - Fulfilled
- Software system - Operational
- Work - Concluded
- Team - Adjourned
- Way of working - Retired

SDLC Model - WaterFall Model

- In our project we have used the Waterfall model in order to make the software development process easier and more efficient.



Waterfall Model

Waterfall model also known as linear-sequential model is one of the Software Development Life Cycle Models. Each phase in the Waterfall Model begins only when the previous phase is completed. The outcomes of one phase acts as an input for the next phase sequentially.

Accordingly the software project is divided into various phases. There are mainly six phases in the Waterfall model respectively:

1. Requirement Gathering and analysis
    - This step deals with all the possible requirements of the system to be developed which are further captured in the phase followed by documenting them into Software Requirement Specification document. captured in this phase and documented in a requirement specification document.
    - It mainly focuses on communicating with the stakeholders to gather and analyze the requirements and then upon discussions among the stakeholders and the team members they are documented inot SRS.
    - Accordingly in our project there are various requirements including functional requirements explaining the functionalities that are required in the software, Interface requirements. Moreover the software requirements for the user and admin are also mentioned respectively.
    - The performance requirements and various non functional requirements (such as Modularity, Testability, Reliability etc.) are also specified in the document for any future reference.
2. Design
    - The requirements specification from the first phase is considered and accordingly the system design is prepared as it helps in specifying the hardware and software requirements along with the system architecture.
    - In the design phase team members make use of the gathered information from the earlier phases and then with the help of system architect the design of the model is then analyzed.
    - Use of wireframes in prototyping the user interface also plays an important role in the design phase. The workflow of the application can be easily understood in this phase which further helps in better customer satisfaction and efficient software development.
3. Implementation

- This phase deals with the development of the software in small programs also known as units which are integrated further.
- After the development of each unit they are tested using test codes in order to ensure that they perform their functionality properly.
- In this phase the actual code is written by programmers (team members in our case) who develop the software according to the instructions documented in the Requirement and Design phase.
- In our project the website is built using HTML, CSS and PHP with MySQL as the database to manage the data.
- HTML is used to display the basic static pages, CSS is used for styling. For managing the back end we used PHP. MySQL database contains all the data that we show on our webpages upon users request.
- The various features implemented on both the user side and admin side are Food Menu and Categories, Select Food Items, Order food on the user side
- On the admin side Login, Manage Admin, Manage Dashboard, Manage Food Items along with manage order are present.

4. Testing

- This phase involves testing of the individual units that are developed using test codes. Upon completion these are then integrated into a system.
- Moreover, after integration the entire system is then tested for any errors.
- This step ensures that the software is error free and all the functionalities as desired are working perfectly as errors found in the maintenance phase are usually costly in nature and not efficient as well.

- In our project we have used several test codes and the successful output of these codes ensured that the software modules and functionalities are working correctly.

5. Deployment

    - This phase is done once the testing phase has been completed. After deployment the software is then used by the users with all the functionalities intact that were earlier discussed.
    - In our project the software is locally deployed using XAMPP, an open source PHP server.
    - For this we first installed XAMPP on our local machine. Then run the XAMPP control panel. Start Apache and MySQL Actions.
    - Now we copy the project folder into xampp -> htdocs ->clicktoorder folder(name of our project)

6. Maintenance

    - This is the last phase of the Waterfall model and comes after the deployment phase.
    - Often some issues arise in the client side or the server side and in order to fix those issues further releases of the software are made.
    - Moreover, the maintenance phase is also utilised in cases where some better version of the software needs to be released for enhanced customer experience.

The various advantages associated with Waterfall Model includes:

- The Waterfall Model is easy to manage due to the rigidity of the model since each phase has a fixed deadline and a review process.
- Waterfall model works well for smaller projects where the requirements are well defined and understood.
- The clearly defined stages, easy to arrange tasks and proper documentation of the process and results lead to its increased popularity.

- Moreover, they are also easier to control with limited external factors as no overlapping development phase exists.

- Phases of WaterFall Model