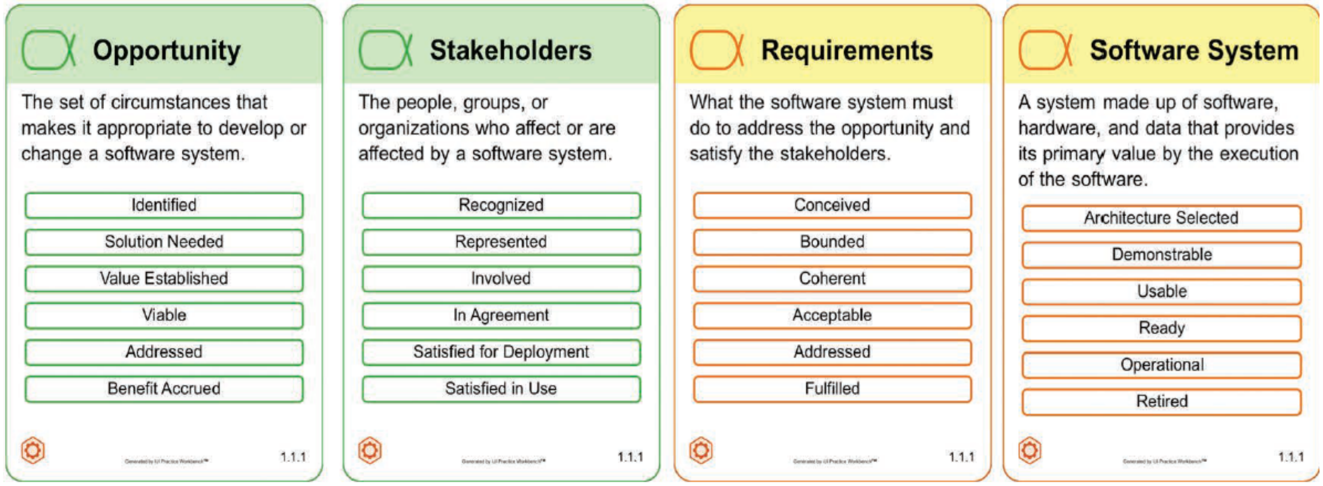
SE Project : Food Delivery System

Essence kernel

Areas of concern:

- **Customer-**
  - **Alphas-** Opportunity ,Stakeholders
  - **Activity spaces-** Explore possibilities,understand stakeholder needs,ensure stakeholder satisfaction,use the system.
  - **Competencies-** Stakeholder representation
- **Solution-**
  - **Alphas-**Requirements ,Software system
  - **Activity spaces-** Implement system,test the system,deploy and operate the system.
  - **Competencies-**Analysis,development,testing
- **Endeavor-**
  - **Alphas-**Work ,Team,way of working
  - **Activity spaces-**Prepare to do work,coordinate activity,support the team,track progress
  - **Competencies-**Management

Kernel Alphas:



Opportunity

The set of circumstances that makes it appropriate to develop or change a software system.

- Identified
- Solution Needed
- Value Established
- Viable
- Addressed
- Benefit Accrued

1.1.1

Stakeholders

The people, groups, or organizations who affect or are affected by a software system.

- Recognized
- Represented
- Involved
- In Agreement
- Satisfied for Deployment
- Satisfied in Use

1.1.1

Requirements

What the software system must do to address the opportunity and satisfy the stakeholders.

- Conceived
- Bounded
- Coherent
- Acceptable
- Addressed
- Fulfilled

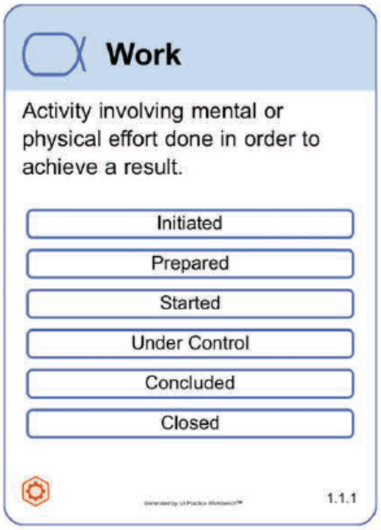
1.1.1

Software System

A system made up of software, hardware, and data that provides its primary value by the execution of the software.

- Architecture Selected
- Demonstrable
- Usable
- Ready
- Operational
- Retired

1.1.1

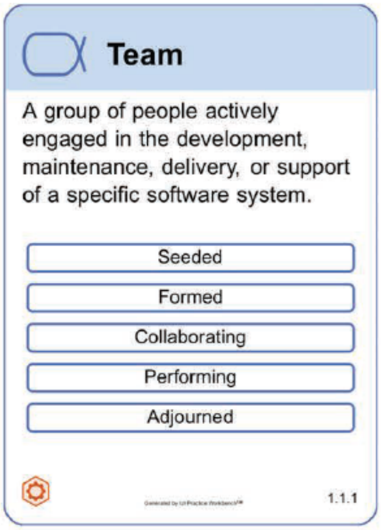


Work

Activity involving mental or physical effort done in order to achieve a result.

Initiated
Prepared
Started
Under Control
Concluded
Closed

1.1.1

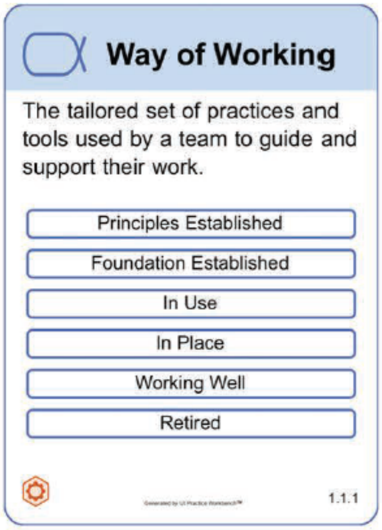


Team

A group of people actively engaged in the development, maintenance, delivery, or support of a specific software system.

Seeded
Formed
Collaborating
Performing
Adjourned

1.1.1



Way of Working

The tailored set of practices and tools used by a team to guide and support their work.

Principles Established
Foundation Established
In Use
In Place
Working Well
Retired

1.1.1

- **Opportunity:** An online food delivery service is very important nowadays when people cannot freely go out for lunch or dinner because of the pandemic. Our Food Delivery system allows the customer to instantly order food at their doorstep from a wide variety of cuisines quickly and easily. It also lets the customer book a table at the restaurant as per their requirements. All the alpha states under opportunity were achieved.

- **Stakeholders:** The stakeholders for this software includes both the team members (Praneet and Priyansh) , the customers, the food delivery service, the restaurant owner, chefs, waiters, restaurant manager, delivery man, delivery service manager, website manager(the person who confirms the order and sends a confirmation mail and books the table and looks the customer queries), food regulation authority, government. Most of the alpha states under stakeholders were achieved.

- **Requirements:** The software allows the customer to order food and browse through the restaurant menu smoothly and also lets them enter a detailed address and even book a table at the restaurant on a specific date or time which fulfills all the basic requirements. The user is also prompted that their order has been received after placing the order. The webpage can be used through GUI/keyboard on desktop and touch-based feedback on smartphones. All the alpha states under requirements were achieved.

- **Software system:** A food delivery web-application made using the following technologies:
  - HTML
  - CSS
  - Bootstrap5
  - Javascript
  - Jquery
  - NodeJS
  - ExpressJS
  - MailGun Api

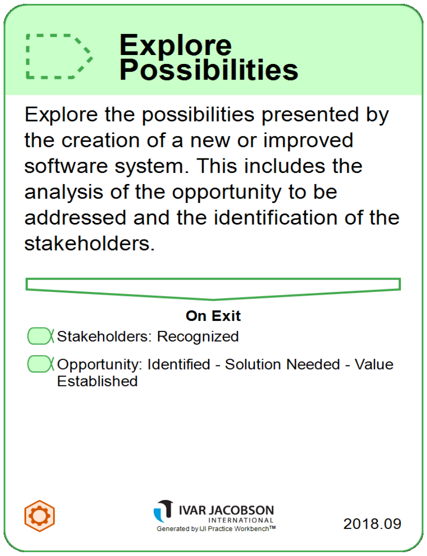
  All the alpha states under the software system were achieved.

- **Team:** Our team consists of two members: Praneet Thakur (B19CSE066) & Priyansh(B19CSE067) and both of us have been actively engaged in planning,development, maintenance and delivery of the software system. All the alpha states under Team were achieved.

- **Work:** Research and planning was done to understand the users and stakeholder's needs. Development was done in 2 phases: Front end phase and back end phase. At the end of each phase,revisions were made before proceeding to the next phase of testing and implementation where the software was tested with different test cases and scenarios. Finally after testing, the software was deployed and maintenance was done regularly. All the alpha states under Work were achieved.

- **Ways of working:** Research was done separately by both the team members in order to get both contrasting and overlapping opinions from the users.Front end development was done by Praneet and the backend development was done by Priyansh. Used the editor Atom during the whole development process and a Github repository was made for the same. All the alpha states under Ways of working were achieved.

Activity spaces:



Explore Possibilities

Explore the possibilities presented by the creation of a new or improved software system. This includes the analysis of the opportunity to be addressed and the identification of the stakeholders.

On Exit

Stakeholders: Recognized

Opportunity: Identified - Solution Needed - Value Established

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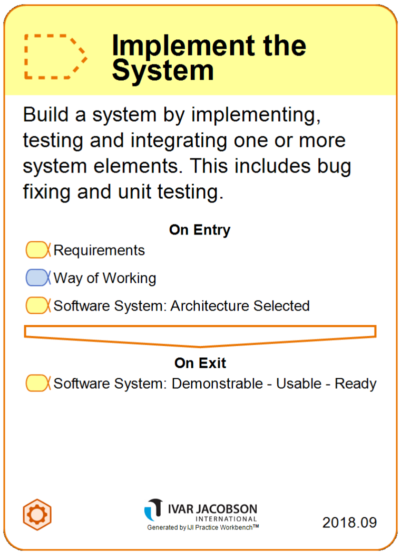

Implement the System

Build a system by implementing, testing and integrating one or more system elements. This includes bug fixing and unit testing.

On Entry

Requirements

Way of Working

Software System: Architecture Selected

On Exit

Software System: Demonstrable - Usable - Ready

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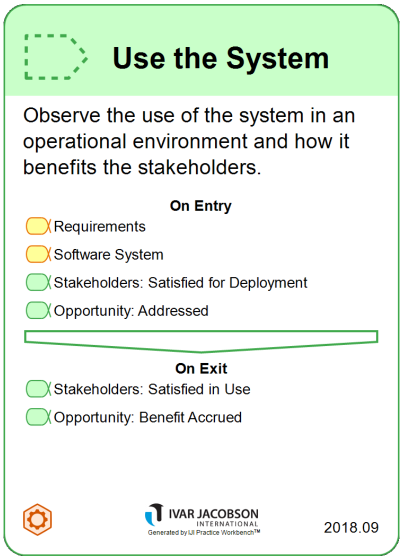

Use the System

Observe the use of the system in an operational environment and how it benefits the stakeholders.

On Entry

Requirements

Software System

Stakeholders: Satisfied for Deployment

Opportunity: Addressed

On Exit

Stakeholders: Satisfied in Use

Opportunity: Benefit Accrued

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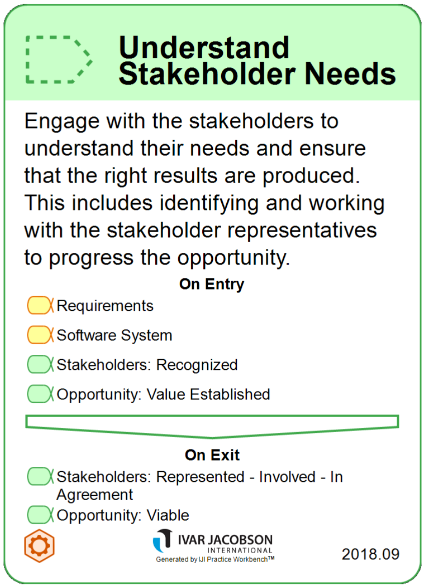

Understand Stakeholder Needs

Engage with the stakeholders to understand their needs and ensure that the right results are produced. This includes identifying and working with the stakeholder representatives to progress the opportunity.

On Entry

Requirements

Software System

Stakeholders: Recognized

Opportunity: Value Established

On Exit

Stakeholders: Represented - Involved - In Agreement

Opportunity: Viable

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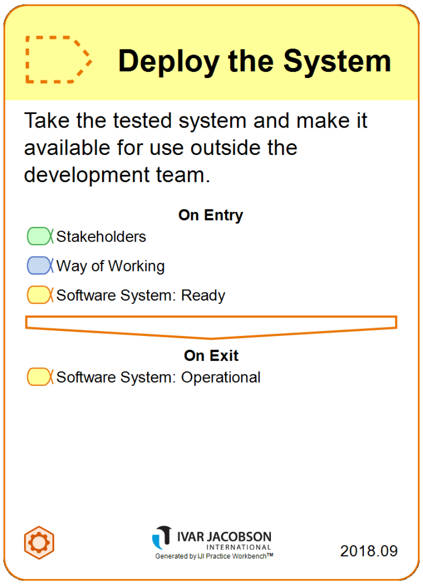

Deploy the System

Take the tested system and make it available for use outside the development team.

On Entry

Stakeholders

Way of Working

Software System: Ready

On Exit

Software System: Operational

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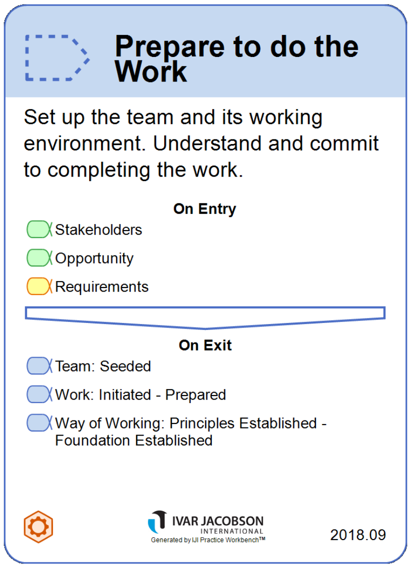

Prepare to do the Work

Set up the team and its working environment. Understand and commit to completing the work.

On Entry

Stakeholders

Opportunity

Requirements

On Exit

Team: Seeded

Work: Initiated - Prepared

Way of Working: Principles Established - Foundation Established

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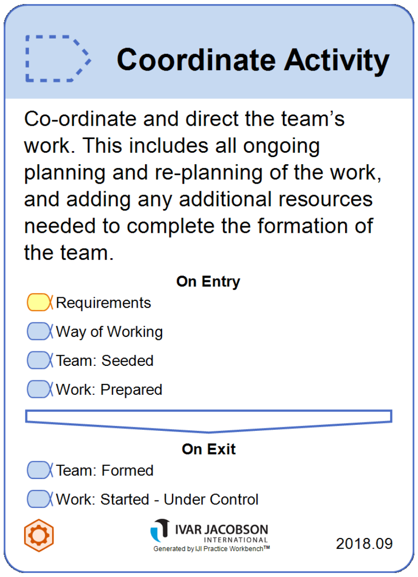

Coordinate Activity

Co-ordinate and direct the team's work. This includes all ongoing planning and re-planning of the work, and adding any additional resources needed to complete the formation of the team.

On Entry

Requirements

Way of Working

Team: Seeded

Work: Prepared

On Exit

Team: Formed

Work: Started - Under Control

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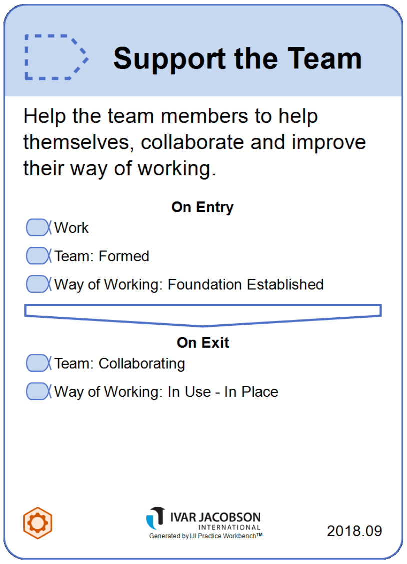

Support the Team

Help the team members to help themselves, collaborate and improve their way of working.

On Entry

Work

Team: Formed

Way of Working: Foundation Established

On Exit

Team: Collaborating

Way of Working: In Use - In Place

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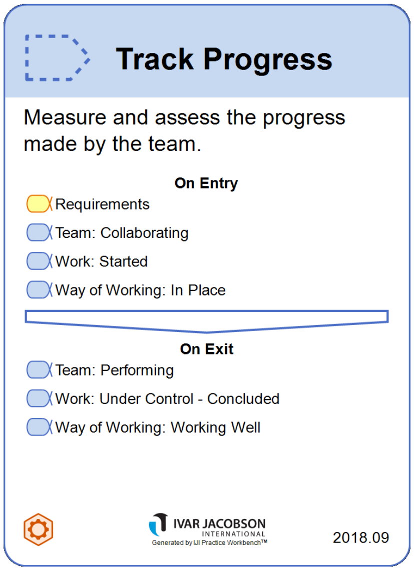

Track Progress

Measure and assess the progress made by the team.

On Entry

Requirements

Team: Collaborating

Work: Started

Way of Working: In Place

On Exit

Team: Performing

Work: Under Control - Concluded

Way of Working: Working Well

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- **Explore possibilities:** This software system enables a very feasible and easy way to order food quickly and to make reservations at the restaurant as per your needs. It also opens up the opportunity to make take-away or drive through possible for the restaurant.

- **Understand Stakeholder needs:** Feedback from the users and stakeholders was taken in order to further understand their needs and to make improvements to the software system.

- **Ensure stakeholder satisfaction:** Improvements were constantly made based on the feedback given by the users to ensure user satisfaction.

- **Use and implement the system:** The system was used in a live environment to see how it behaves.

- **Test/Deploy/operate the system:** The software was tested with different test cases and deployed on heroku after various bug fixes.

- **Prepare to do work:** The team was formed and the requirements and deadlines were understood.

- **Coordinate activity:** Proper planning was done for the project beforehand and roles and responsibilities were assigned to the teammates.

- **Support the team and track progress:** Both the team members helped each other to improve our way of working and the progress of the team was tracked throughout the duration of the project.

Competencies:

- **Stakeholder representation:** Meetings were held between different stakeholders to understand and share different opinions about the needs of the users.

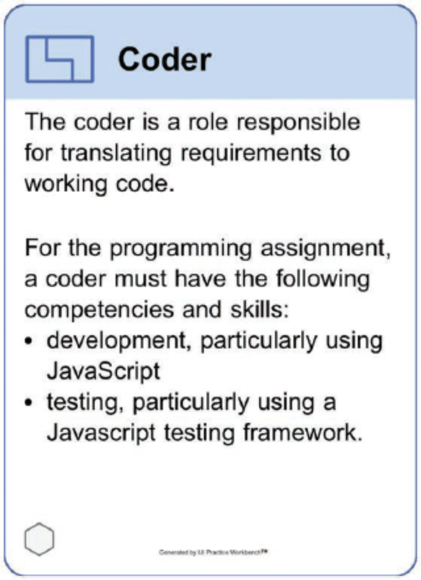
- **Analysis:** Different opportunities were looked into and a target was set for the functionality and requirements of the project.

- **Development and testing:** The software was properly developed using the tools mentioned in the software system alpha and deployed after proper testing using different test cases.

- **Management:** The work done by the team was coordinated,planned and tracked properly.

Patterns:

- **Student pairs:** Both the students collaborated on reviewing each other and working on code together for the completion of the assignment.
- **Coder:** Both the team-mates worked on the completion of the code together.



Coder

The coder is a role responsible for translating requirements to working code.

For the programming assignment, a coder must have the following competencies and skills:

- development, particularly using JavaScript
- testing, particularly using a Javascript testing framework.

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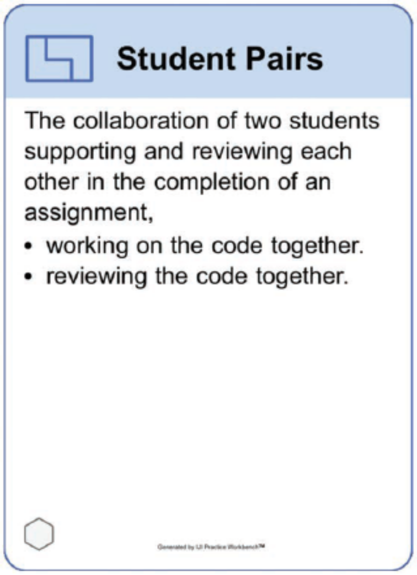

Student Pairs

The collaboration of two students supporting and reviewing each other in the completion of an assignment,

- working on the code together.
- reviewing the code together.

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Additional practises:

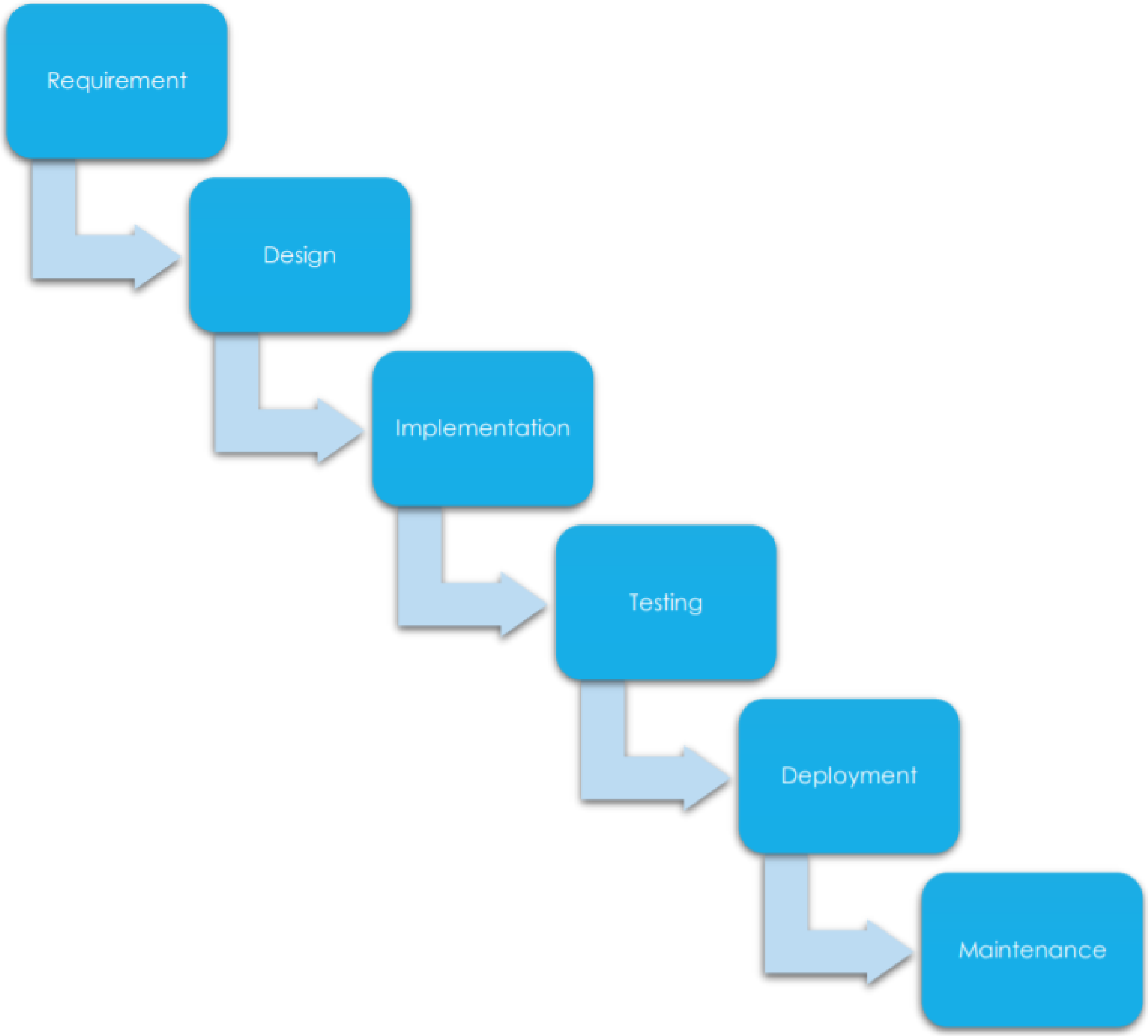
Software Development Life cycle model:

The SDLC model followed for this project is the Waterfall model.

About the Waterfall model:

The waterfall model is also called as **'Linear sequential model'** or **'Classic life cycle model'.**In this model, each phase is fully completed before the beginning of the next phase.This model is used for the small projects.
In this model, feedback is taken after each phase to ensure that the project is on the right path.Testing part starts only after the development is complete.

The waterfall approach:

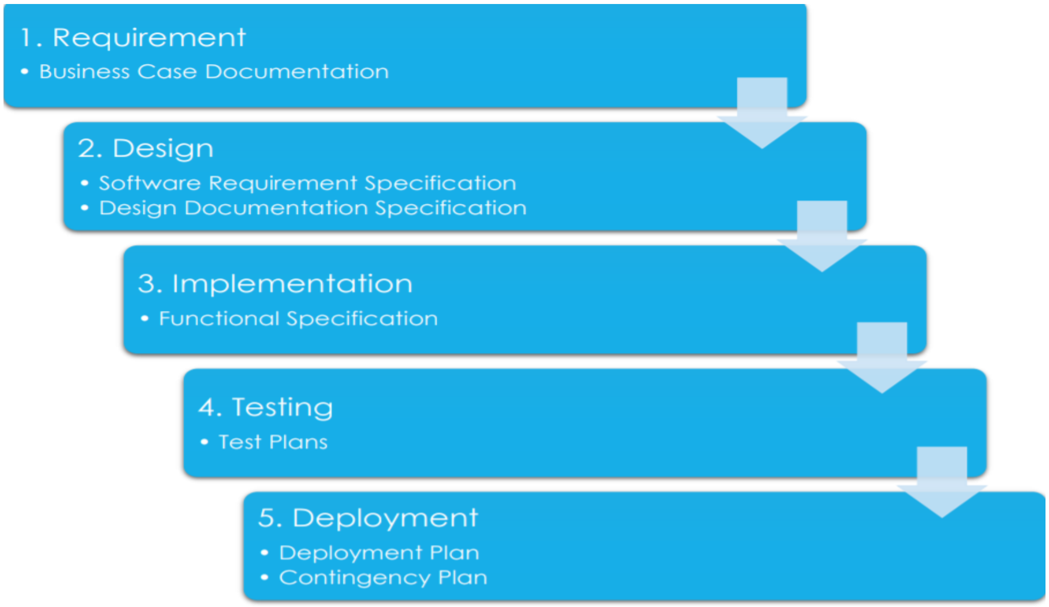


Phases of waterfall model:

- **Requirement:** This phase focuses on communicating with stakeholders to gather and analyze requirements. The project managers try their best to understand and analyze business,capture all the details of users needs, define the scope and arrange resources in a documentation.
- **Design:** This phase takes the output of requirement phase as its input and the business analysts evaluate and start on the logical design of the software by making use of the requirements. Based on the high-level design which has fulfilled all the requirements, the designers convert this high-level design into

physical design while putting hardware and software technology into consideration. System architecture is defined in the design phase as well.

- **Implementation:** The actual code is written in this phase.Programmers develop the software as per the user requirements and the agreed-upon design.
- **Testing:** With the inputs from all the previous phases,the testers formulate different test cases to test the software at hand. After various bug fixes and testing,the software is finally considered ‘READY’.
- **Deployment:** After a successful test phase, the software is finally deployed in a live environment.
- **Maintenance:** It is inevitable that there will be some defects or issues in the software. In this phase,the software is regularly checked upon for such defects and various bug fixes are made over time.


1. Requirement
• Business Case Documentation
2. Design
• Software Requirement Specification
• Design Documentation Specification
3. Implementation
• Functional Specification
4. Testing
• Test Plans
5. Deployment
• Deployment Plan
• Contingency Plan

Advantages of waterfall model:

- The waterfall model is simple and easy to understand, implement, and use.
- All the requirements are known at the beginning of the project, hence it is easy to manage.
- It avoids overlapping of phases because each phase is completed at once.
- This model works for small projects because the requirements are understood very well.
- This model is preferred for those projects where the quality is more important as compared to the cost of the project.

Disadvantages of waterfall model:

- This model is not good for complex and object oriented projects.
- It is a poor model for long projects.
- The problems with this model are uncovered, until the software testing.
- The amount of risk is high.

Rationale for selected SDLC

Waterfall methodology is good for developing complex and reliable systems. But its performance is poor when the schedule is short and the deadline is visible. But since we had clear and reliable requirements without a short deadline ,we took the Waterfall model as the SDLC to follow.