Object Oriented Analysis and Design with Software Engineering Laboratory

Subject Code: UE18CS355

Project ID : C2

Project Title : Amazon (Online Shopping)

Name and SRN of the team members :

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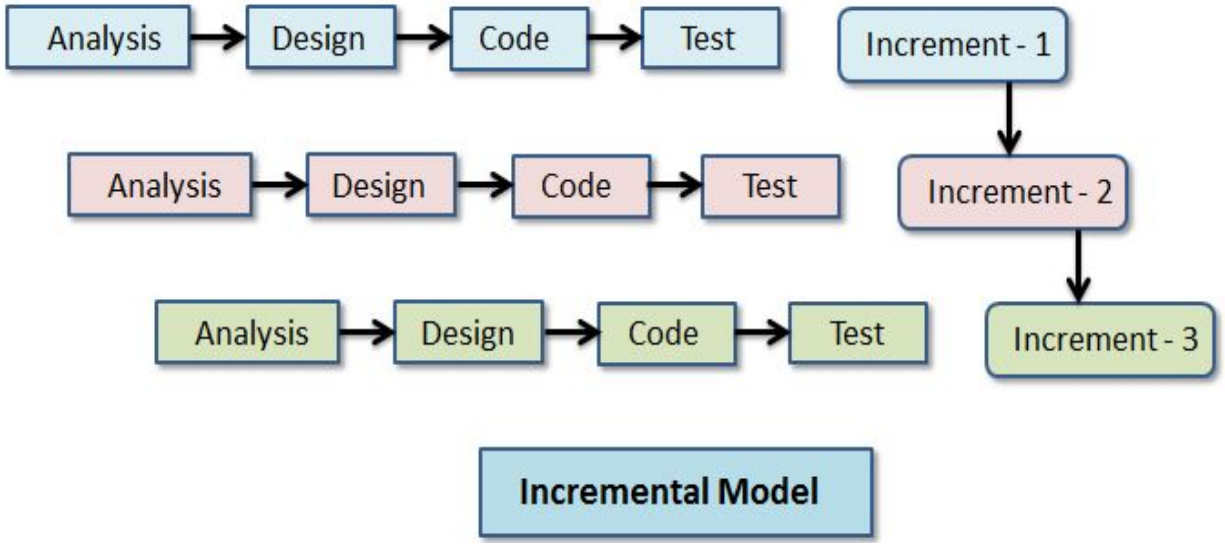
1: Identify the lifecycle to be followed for the execution of your project and justify why you have chosen the model.

There are two types of project life cycles used in project management – the **iterative** and **incremental** lifecycle.

- The project phases, also called iterations, repeat the project activities as the team's understanding of the product also improves. This means that the product is developed through a repeated cycle.
- The incremental life cycle, on the other hand, adds successively to the functionality of the product. This means that the product is designed, implemented as well as tested in increments until it is completed.

The model chosen for this project is an **Incremental model**.



In this model, each module passes through the requirements, design, implementation and testing phases. A working version of software is produced during the first module, so there is a working software early on during the software life cycle.

Each subsequent release of the module adds function to the previous release. The process continues till the complete system is achieved.

Few other reasons to choose this model are:

a. It is flexible and less expensive to change requirements and scope.
b. This model is less costly compared to others.
c. A customer can respond to each build.
d. Errors are easy to identify.
e. It is easier to test and debug during a smaller iteration.

2: Identify the tools which you want to use at different phases of SDLC like planning tool, design tool, version control, development tool, bug tracking and testing tool.

1. **Planning tool - Trello**

   Trello is a web-based, Kanban-style (lean method to manage and improve work across human systems), list-making application. It is a collaboration tool that organizes your projects into boards. In one glance, Trello tells you what's being worked on, who's working on what, and where something is in a process. Like a white board filled with sticky notes, with each note representing a task for the team. This "white board" can be taken anywhere on your smartphone or can be accessed from any computer through the web.

2. **Design tool - Figma(For UI)**

   Figma is a primarily web-based, vector graphics editor and prototyping tool which has additional offline features enabled by desktop applications for macOS and Windows. Figma prototypes can also be viewed on mobile devices. The feature set of Figma focuses on use in user interface and user experience design, with a priority for real-time collaboration.

3. **Version control - Git**

   Git is a distributed version-control system for keeping track of changes in any set of files, so a record of what has been done is kept and you can revert to specific versions should you ever need to. It is originally designed for coordinating work among programmers cooperating on source code during software development.

4. **Development tool - Github and Visual Studio Code**

   Github - It is a provider of Internet hosting for software development and version control using Git. It offers distributed version control and source code management functionality of Git and its own features.

   Visual Studio Code - It is a code editor optimized for building and debugging modern web and cloud applications. It is a free source-code editor made by Microsoft for Windows, Linus and macOS. The features also include support for syntax highlighting, intelligent code completion, snippets, code refactoring and embedded Git.

5. **Bug tracking tool - Visual Studio Code Debugger and Trello**

   Visual Studio Code Debugger - One of the key features of Visual Studio Code is its great debugging support. VS Code's built-in debugger helps accelerate your edit, compile and debug loop.

   Trello - Cards can be filtered according to critical, major, minor, and trivial and can be assigned colors to reflect the severity of the bugs. Users can then invite

their team members so that they will have access to the board and be able to report bugs.

6. **Testing tool - Travis CI and Postman**

[CI is Continuous Integration, a software development method where members of the team can integrate their work at least once in a day. Every integration is checked by an automated build to search the error.]

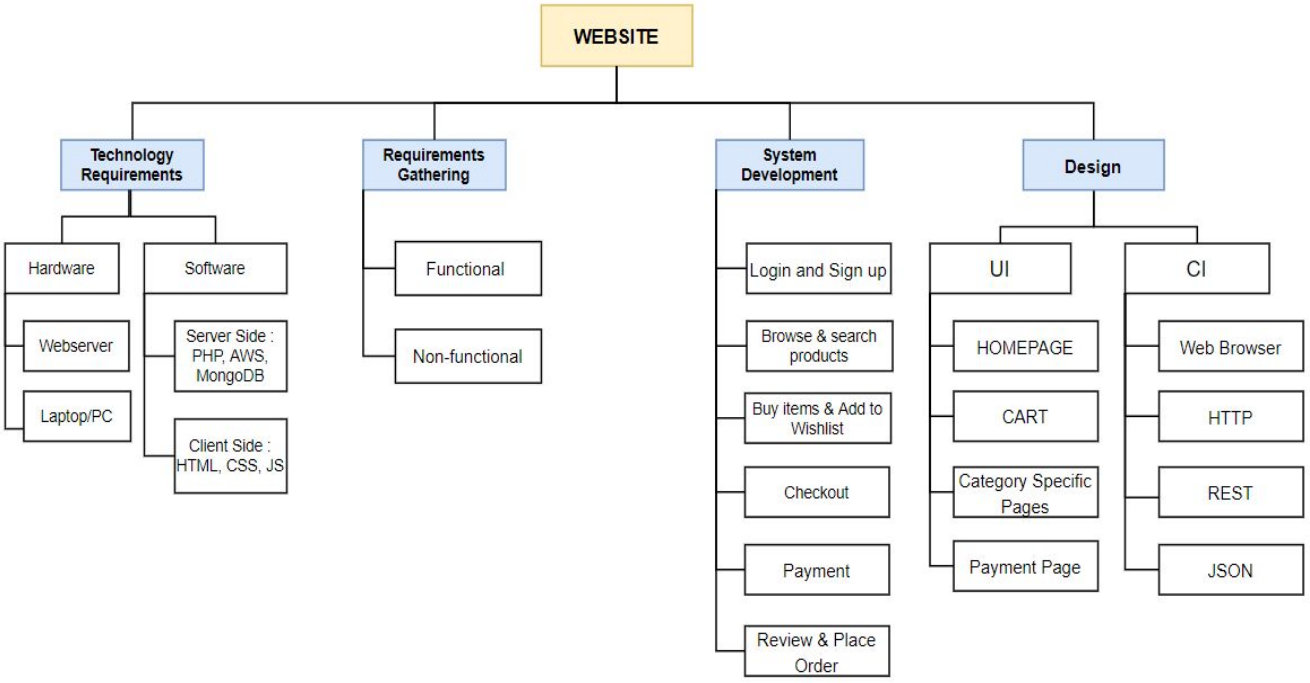
Travis CI - It is a hosted continuous integration service used to build and test software projects hosted on GitHub and Bitbucket. It provides support for 21 languages like Android, C, C#, C++, Java, JavaScript (with Node.js), Perl, PHP, Python, R, Ruby, etc. Travis CI was the first CI service which provided services to open-source projects for free.

Postman - Postman is a collaboration platform for API development. The features simplify each step of building an API and streamline collaboration so that better APIs can be created faster. Manual tests are automated and integrated into your CI/CD pipeline to ensure that any code changes won't break the API in production.

3: Work Breakdown Structure for the entire functionalities of the project .

The work breakdown structure has been divided into 4 branches :

- Technology Requirements which deal with the respective hardware and software components required including server side and client side software infrastructure.
- Requirements Gathering which deals with the various functional requirements for each system feature and non-functional requirements such as performance, safety, security etc.
- System Development which deals with various use cases such as View Items, Make Purchases and Client Records. The View Items use case will include searching and browsing products, using filters for more advanced search. The Make Purchase use case will include selecting a product using the View use case and making a payment for the same. The Client Records use case will involve user registrations on the website and allied activities, such as coupon codes, etc.
- Design deals with user interfaces (UI) and communication interfaces (CI).



4: Determine all the deliverables and categorise them as reuse/build components and justify the same.

Deliverables which will be delivered across different phases of the project are :

- Payments
  - Allows the user to maintain an Amazon wallet, by transferring from one of their linked bank accounts.
  - User navigates to payment options.
  - User selects their preferred payment option.
  - 'Transaction Successful' message is displayed once the transaction is completed.
- WishList
  - Wish list is used to add items the user is considering buying at a later time.
  - Button, 'Add to Wishlist' changes colour and product is added to the WishList.
  - User is now able to see the newly added item.
  - User can add an item from WishList to Cart by clicking on 'Add to Cart'.

- Cart
    - Button, ‘Add to Cart’ changes colour on clicking.
    - User can navigate to ‘Your Cart’ and view the item in their cart.
- Gifting
    - Allows a user to deliver a product as a gift to another address.
    - User clicks the ‘This will be a gift’ option or ‘Gifting this to someone?’ option when viewing in Cart.
- Dashboard
    - Dashboard is visible as the first page.
    - Displays products/items based on the user's history.

The different project phases are :

- Project Planning and Preparation :
    - Software Requirements Specification Document [***Build Component***]
    - Project Plan [***Build Component***]
- Requirement Analysis :
    - Requirements Gathering [***Reuse Component***]
    - System Development [***Build Component***]
    - Use Cases and Activity Diagrams [***Build Component***]
- Implementation :
    - Frontend [***Build Component***]
    - Backend [***Build Component***]
    - Integration [***Build Component***]
- Testing :
    - Error detection and Handling. [***Reuse Component***]
    - User feedback testing [***Build Component***]

    The system will be tested using various surveys and interviews. The required changes will be made after that.

5: Do a rough estimate of effort required to accomplish each task in terms of person months.

The rough estimate of effort required to accomplish each task can be obtained using the **Cocomo Model**.

The **Cocomo Model** (Constructive Cost Model) is a regression model based on LOC (number of lines of code). It is a procedural cost estimate model for software projects and often used as a process of reliably predicting the various parameters associated with making a project such as size, effort, cost, time and quality.

This project is organic type as the team size is adequately small, the problem is well understood and has been solved in the past and the team members have a nominal experience regarding the problem.

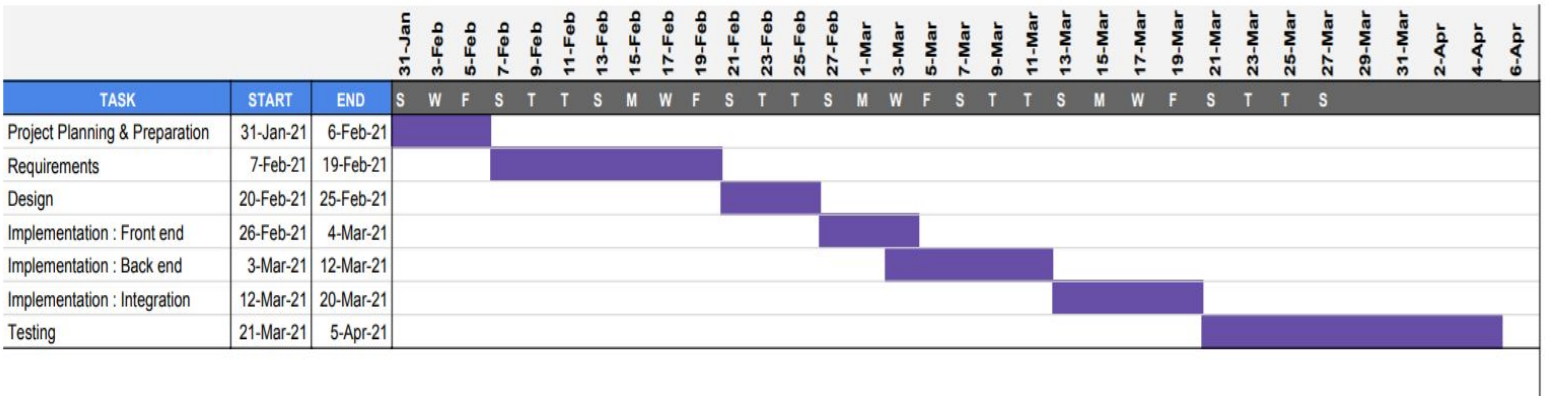
The effort can be given as :

Effort (E) = a(KLOC)^b

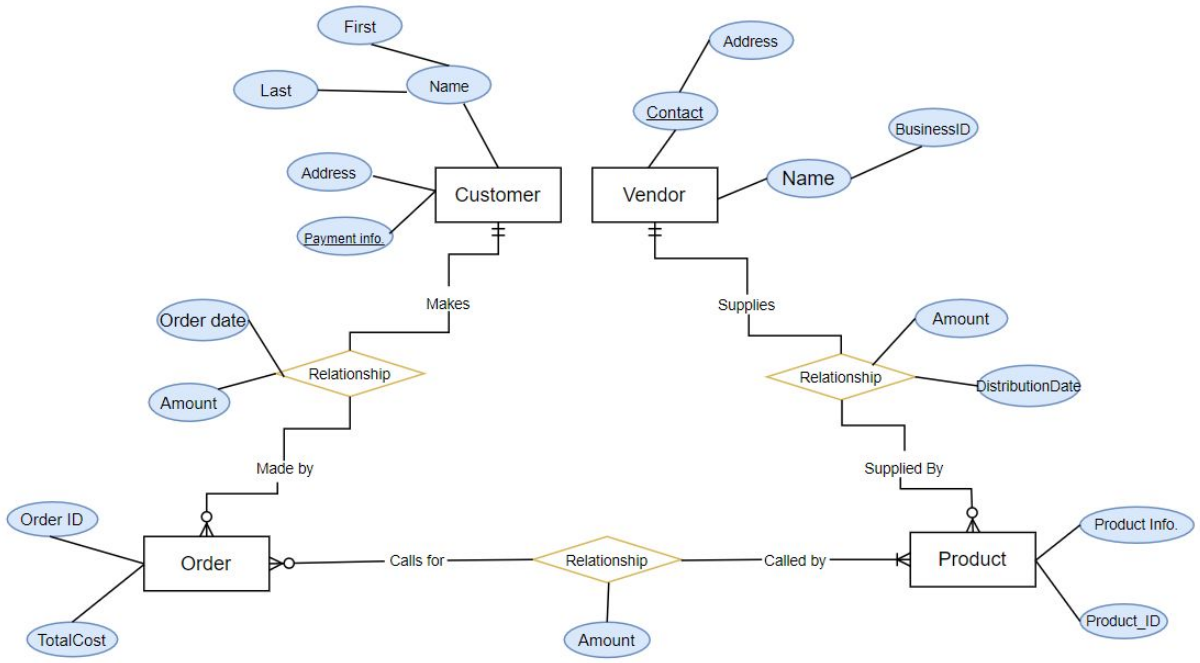
Where a=2.4, b=1.05 and KLOC =1.0

E = 2.4 Person-Months

6: Create the Gantt chart for scheduling the defined tasks.



7: ER Diagram.



References:

1. https://thedigitalprojectmanager.com/project-planning-tools/ - [*10 Best Project Planning Tools & Software List*]
2. https://visme.co/blog/design-collaboration-tools/ - [*20 of the Best Design Collaboration Tools*]