

Victoria University
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Dept. of Computer Science & Engineering

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Ans to the Q no - 1(a)

Software engineering:- Software engineering is an engineering branch associated with development of software product using well-defined scientific principles, methods and procedures. The outcome of software engineering is an efficient and reliable software product.

Ans to the Q no - 1(b)

SDLC activities:- The software development Life Cycle (SDLC) is a structured process that enables the production of high-quality, low-cost software, in the shortest possible production time.

SDLC provides a series of steps to be followed to design and develop a software product efficiently. SDLC framework includes the following steps:

Communication:-

This is the first step where the user initiates the request for a desired software.

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Requirement Gathering:-

This step onwards the software development team works to carry on the project by collaborating with stakeholders to gather information on their requirements. These requirements are classified into user, system, and functional requirements.

Feasibility Study:-

The team conducts a feasibility study after gathering requirements to determine if a software project is financially, practically, and technologically feasible for the organization. Numerous algorithms help developers determine the feasibility of a software project.

System Analysis:-

Developers create a roadmap and choose the best software model for their project. System analysis involves understanding product limitations, learning system issues, and addressing project impact on organization and personnel. The project team plans schedules and resources accordingly.

Software design:-

The next step involves gathering user input and analysis data to design a software product, producing logical and physical design, such as meta-data, data dictionaries, and pseudo codes.

Coding:-

Programming phase involves ~~writing~~ writing ~~coding~~ code in suitable language and efficiently developing error-free executable programs.

Testing:-

50% of software development process should be tested, as errors can ruin the software. Developers and experts conduct ~~the~~ thorough testing at various levels, ensuring early error discovery and resolution for reliable software.

Integration:-

SDLC stages involve software integration with libraries, databases and external entities.

Implementation:-

Installing software on user machines, testing for

portability, ~~and~~ adaptability and resolving integration issues during implementation.

Operation and maintenance:-

This phase ensures efficient software operation, reduces errors and provides training ~~etc.~~ for users. Software is maintained by updating, updating code based on user environment changes, but may face challenges from hidden bugs and unidentified issues.

Deposition:-

Over time, software performance declines, leading to the need to eliminate a significant portion of the system. This involves archiving data, closing down, planning disposition, and terminating at appropriate end-of-system time.

Spiral model:-

Spiral model is a combination of both, iterative model

(b)

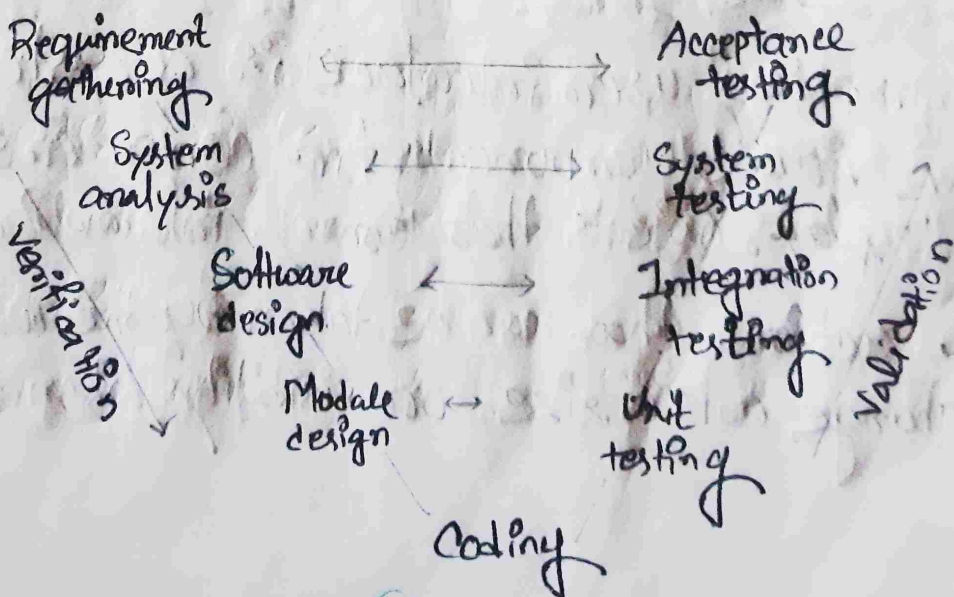
Spiral Model:-

The spiral model is a systems development life cycle (SDLC) method used for risk management that combines the iterative development process model with elements of the waterfall model.

Ans to the Q no - 110

V-model:-

The major drawback of waterfall model is we move to the next stage ~~or~~ when only when the previous one is finished and there was no chance to go back if something is found wrong in later stages. V-model provides means of testing of software at each stage in reverse manner.



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At every stage, test plans and test cases are created to verify and validate the product according to the requirements of that stage. For example, in requirement gathering stage the test team prepares all the test cases in correspondence to the requirements. Later, when the product is developed and is ready for testing, test cases of this stage verify the software against its validity towards requirements at this stage.

This makes both verification and validation go in parallel. This model also known as verification and validation model.

Ans to the Q no-1 (d)

Graphical user interface:-

A GUI (graphical user interface) is a system of interactive visual components for computer software. A GUI displays objects that convey information, and represent actions that can be taken by the users. The objects change color, size, or visibility when the users

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Interacts with them.

To make a GUI as user friendly as possible, there are different elements and objects that the user use to interact with the software.

- ① Button: - A graphical representation of a button that performs an action in a program when pressed.
- ② Dialog box: - A type of window that displays additional information, and asks a user for input.
- ③ Icon: - Small graphical representation of a program, feature, or file.
- ④ Menu: - List of commands or choices offered to the users through the menu bars.
- ⑤ Menu bar: - Thin, horizontal bar containing the labels of menus.
- ⑥ Ribbon: - Replacement for the file menu and toolbar that groups programs activities together.
- ⑦ Tab: - ~~At~~ Clickable area at the top of a window that show another page or area.

- ④ Toolbar:- Row of buttons, often near the top of an application window, that controls software functions.
- ⑤ Window:- Rectangular section of the computer's display that shows the program currently being used.

Ans to the Q no-2(a)

Project manager:-

A project manager is a character who has the overall responsibility for the planning, design, execution, monitoring, controlling and closure of a project. A project manager represents an essential role in the achievement of the projects.

Ans to the Q no-2(b)

A project manager is a character who is responsible for giving decisions, both large and small projects. The project manager is used to manage the risks and minimize uncertainty. Every decision the project

managers must directly profit their project.

Role of a Project Manager:-

- ① Leader:- A project manager must lead his team and should provide them direction to make them understand what is expected from all of them.
- ② Medium:- The project manager is a medium between his clients and his team. He must co-ordinate and transfer all the appropriate information from the clients to his team and report to the senior management.
- ③ Mentor:- He should be there to guide his team at each step and make sure that the team has an attachment. He provides a recommendation to his team and points them in the right direction.

Responsibilities of a Project Manager:-

1. Managing risks and issues.
2. Create the project team and assign tasks to several team members.
3. Activity ~~planning~~ planning and sequencing.

4. Monitoring and reporting progress.

5. Modifies the project plan to deal with the situation.

Ans to the Q no-2(c)

Objects: - There are 3 types of objects: -

① Entity object: - This object generally corresponds to some real-world entity in the problem space. Say we're building a role-playing game (RPG), an entity object would be our simple "Hero" class.

These objects generally contain properties about themselves (such as "health" or "mana") and are ~~modified~~ modifiable through certain rules.

② Control object: - Control objects are responsible for the coordination of other objects. These are objects that control and make use of other objects. A great example in our RPG analogy would be the "fight" class, which controls two heroes and make them fight.

Encapsulating tight logic in a class offers extensibility, allowing for easy HPC type input and inheritance, allowing for overriding functionality to meet specific needs.

③ Boundary objects: - Boundary objects are objects that take input from or produce output to another system, such as users, internet or database. They translate information into and out of the system, such as translating keyboard input into recognizable domain events.

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