**Forums 20**

**1 ) UML (Unified Modeling Language ) :**

* UML is known as language of diagrams.
* The base of UML diagram is object oriented approach (OOA).
* UML has 9 diagrams : 5 Static and 4 Dynamic

|  |  |
| --- | --- |
| 5 Static | 4 Dynamic |
| Use-Case | Sequence |
| Class | Activity |
| Component | State chart |
| Packages | Collaboration |
| Deployment |  |

**2) Use Case Diagram :**

* A use case diagram is a high level diagram.
* An use case diagrams are designed to explain how an external users are interacting with the system.
* The main purpose of the diagram is to identify the requirement.
* Use case diagram will be drawn from end-user point of view.
* There are two type of use cases : Essential use case and Supporting use case.

**3) Activity Diagram :**

* An activity diagram is drawn to model how the system should function in order to achieve business logic, business functionality and business objectives.
* Activity diagram is basically a flow chart to represent the flow from one activity to another activity.
* The activity can be described as an operation of the system so the control flow is drawn from one operation to another.

**4) Requirements Engineering :**

* Requirements engineering is the process of identifying, analyzing, documenting, validating, and managing the needs and requirements of stakeholders for a software system.
* It ensures that the system being developed meets the user’s expectations and business goals.
* **Elicitation, Analysis, Specification, Validation, Management** these are the key activities involved in requirements engineering.

**5) Requirements Gathering :**

* Requirement gathering is the first and one of the most critical steps in the Requirements Engineering process.
* It involves collecting information from stakeholders to understand what they need from a system or product.
* Key objectives :

understand business needs.

Identify user expectations

Define system boundaries and functionalities.

**6) Elicitation Techniques :**

* Elicitation techniques are the methods used to collect requirements from stakeholders, users, and other sources during the early stage of a project.
* These techniques help business analysts understand what the system should do and the constraints it must operate under.
* Common requirement elicitation techniques :

Interviews

Workshops / JAD (joint application development ) sessions

Questionnaires / Surveys

Observation

Document Analysis

Brainstorming

Prototyping

Focus groups

Interface analysis

Mind mapping

**7) MVC Architecture :**

MVC is a design pattern where, the application is divided into 3 logical parts – model, view, controller.

**Model :**

The model represents the data and the business logic of the application.

Model is responsible for multiple tasks like managing the application’s data, performing data validation, implementing business rules, and handling data access operations.

It represents the data that is being transferred between view and controller.

**View :**

The view is responsible for presenting the data to the user and for handling the user interface.

The view can be a webpage, desktop application window, or any other form.

It receives input from the user and passes it to the controller for processing.

It represents the presentation of the application.

It takes data from the model and renders it in a way that is suitable for user’s display.

**Controller :**

Controller acts as an intermediary between the model and view.

It receives input from the user (via view), processes the input by appropriate methods in the model, and then updates the view with the new data or state.

The controller handles user interactions, interprets user input, and translates it into instructions for the model or view.

It coordinates the flow of data between the model and view, ensuring that they remain separated and independent of each other.

**8) Camel-Casing :**

Camel casing is a writing style that combines words into a single continuous word by capitalizing the first letter of each word and omitting spaces.

In BA camel-casing is used in requirements documentation.

BA uses camel casing to name the entities like use case, features, user stories.

The database tables name also use camel-casing.

By using camel-casing in the documents, it helps to maintain consistency in the entire document and also increases readability.

**9) Data Mapping :**

Data mapping is a process to establish connection between multiple data sources.

The purpose of data mapping is to ensure that the data is accurately transferred or converted to different format.

The main purpose of data mapping is :

1. Data Integration : while combining the data from different sources, it ensures that the data is properly matched.
2. Data Migration : while migrating the data from source to the destination, the data elements mapped accurately into the new system.
3. Data Transformation : data transformation means converting the data from one format to other.

**10) Questionnaire Technique :**

The questionnaire technique is a research method used to collect information from individuals through a set of structured or unstructured questions.

It can be conducted through various formats, such as online surveys, printed forms, or face to face interview.

Types of questionnaires :

1. Online questionnaire
2. Telephone questionnaire
3. Paper questionnaire
4. Face to face interview

Questionnaires are used for :

* Market research
* Academic research
* Customer feedback surveys
* Employee satisfaction assessments
* Healthcare studies
* Social science research

**11) Status Reporting :**

Status reporting is the process of regularly updating stakeholders on the progress, performance, and challenges of a project.

It provides insights into current status, risks, issues, and next steps, helping in decision-making and project tracking.

How to drive status reporting :

1. Define objectives
2. Set frequency
3. Use standard formats
4. Gather data
5. Communicate clearly
6. Review and follow-up

**12) interview Technique :**

The interview technique is one of the most commonly used methods by Business Analysts (BA) for gathering requirements, understanding processes, and gaining insights from stakeholders.

Contexts for conducting interviews :

1. Gathering requirements
2. Understanding problems and challenges
3. Validating requirements and solutions
4. Workflow understanding
5. Risk identification

**13) Brainstorming :**

Brainstorming is a creative problem-solving technique used to generate a large number of ideas or solutions to a particular problem or challenge.

It is used in all types of software development methodologies.

It provides quite late delivery as compared to joint application development.

Brainstorming focuses on idea generation and creativity.

Brainstorming session lasts for couple of hours.

**14) Reverse Engineering :**

Reverse engineering is the process of deconstructing a thing to learn how it works, what it’s made of, and how it is assembled.

Common reasons for reverse engineering include :

* Developing interfaces for system interoperability
* Improving product documentation
* Modernizing of software products
* Security adaption
* Fixing product flaws
* Redesign
* Competitor intelligence

**15) Observation Technique :**

Observation techniques are used to gather information by watching and understanding workplace activities. It is used to identify needs and opportunities, understanding business processes, create performance standards, assess solution performance, and facilitate training and development.

There are two approaches for observation :

1. **Active :** it is referred as a noticeable approach, while observing an activity the observer can ask any questions as they occur.
2. **Passive :** it is also referred as to an unnoticeable approach, in this approach, the observer does not interrupt the work while the user is performing the work activity. Any questions would be asked once the observation is over.

**16) Prioritize the Requirements :**

Prioritization is a technique for queuing the requirements for the development process.

Factors that influence the prioritization techniques are importance, risk, cost, benefits, time, and strategy. Three main actors involved in this are customer, developers, and business owners.

MoSCoW Technique : MoSCoW is a prioritization technique which is used in business analysis and software development to reach mutual understanding with stakeholders on the importance of each requirement.

**17) Requirement Traceability Matrix :**

Requirement Traceability Matrix is a document used in software development and systems engineering to ensure that all requirements defined for a system are tested thoroughly. It traces each requirement to its corresponding design elements, code modules, and test cases.

Purposes of an RTM :

* Ensures coverage : All requirements are implemented and tested.
* Helps manage changes : if a requirement changes, the RTM shows what design, code, and test artifacts are affected.
* Assists in impact analysis.
* Supports compliance and audits.

**18) SWOT Analysis :**

|  |  |
| --- | --- |
| Internal | External |
| Strengths (S) | Opportunities (O) |
| Weaknesses (W) | Threats (T) |

1. Strengths : These are things your company/team does well. They give you a competitive advantage.
2. Weaknesses : Areas where the business is lacking or at a disadvantage.
3. Opportunities : External factors you can leverage for growth or improvement.
4. Threats : External risks or challenges that could harm the business.

**19) GAP Analysis :**

Gap analysis is the process of comparing the current state to the desired future state and identifying what needs to change to bridge the gap.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Skill | Current Level | Required Level | Gap | Action |
| Data Analysis | Intermediate | Advanced | Yes | Training course, mentoring |
| Excel | Basic | Intermediate | Yes | Online tutorials, workshops |
| Communication | Strong | Strong | No | - |

When to use Gap Analysis :

* During strategic planning
* Before launching a new project or product
* When performance isn’t meeting expectations
* For training needs and skill development

**20) Use Cases and User Stories :**

**Use Cases :** Structured, detailed descriptions of how a user interacts with a system to achieve a goal. Often used in traditional (waterfall) development.

Example : “UC001-User Logs In”

**User Stories :**  Short, simple requirements statements from the user’s perspective. Popular in Agile/Scrum environments.

Standard Format :

As a [type of user],

I want to [some goal],

So that [some reason].