Short Questions

- What is Information System?
  - Information systems are software applications that manage large amounts of data, share information, etc.
- What are the components of The Information System?
  - There are total 5 components there
    - Hardware
    - Software
    - Database
    - Networks
    - Procedures
- What is the primary purpose of building an information system?
  - The primary goal is to create **value** for the organization
- Who is the key person behind a system?
  - System Analyst
- What is the responsibility of a system analyst?
  - There are 5 main responsibilities:
    - Ensuring that the system conforms to information system standards
    - Designing the new business processes
    - Analyzing the business
    - identifying opportunities for improvement
    - designing information systems to implement these ideas
- What is system analysis?
  - The collection of notations, methodologies, and tools used to gather details and analyze a problem situation before information system design and implementation.
- How does system analysis helps to build a successful system?
  - Ensures that system-
    - Meets user needs
    - Is delivered on time
    - Can be developed/updated/maintained inexpensively
- What are the divisions of project phases/The System Development Life Cycle?
  - There are 4 phases of a project:
    - Planning
    - Analysis
    - Design
    - Implementation
- What is a methodology?
  - A formalized approach or series of steps to implement SDLC
- What is the full form of SDLC?
  - System Development Life Cycle.
- What are the categories of SDLC methodology?
  - 3 categories:
    - Process-centered
    - Data-centered

        - Object-Oriented
- Why methodology is required to build a system?
    - Having a good design before implementation is important to avoid failure.
- What are the top methodologies for system development?
    - Top 4:
        - Structured Design
        - Rapid Application Development (RAD)
        - Agile Development
        - DevOps
- What is the full form of RAD?
    - Rapid Application Development
- Why DevOps is important?
    - DevOps is important because it's a software development and operations approach that enables faster development of new products and easier maintenance of existing deployments.
- How does the DevOps word come?
    - Dev from Development and Ops from Operations
- What are the steps of DevOps?
    - There are total 8 steps in DevOps:
        - Code
        - Build
        - Test
        - Release
        - Deploy
        - Operate
        - Monitor
        - Plan
- What things need to be continuous in DevOps?
    - 5 things:
        - Continuous Development
        - Continuous Testing
        - Continuous Integration
        - Continuous Deployment
        - Continuous Monitoring
- Write the advantages and disadvantages of DevOps.
    - Advantages:
        - Reduced chance of product failure
        - Improved flexibility and support.
        - Faster time to market.
        - Better team efficiency.
        - Clear product vision within the team.
    - Disadvantages:
        - Difficulties with Integration
        - Automated Testing
        - Relatively High Costs

        - Toolset Choice
        - Lack of Talent
- Write the name of 5 tools that are used in DevOps.
    - Tools:
        - AWS
        - GitLab
        - Selenium
        - JUnit
        - Eclipse
        - Bamboo
        - Sensu
        - Chef
        - Puppet
        - Jira
- What are the roles in information systems?
    - 5 rolls:
        - Business analyst
        - System analyst
        - Infrastructure analyst
        - Change management analyst
        - Project manager
- What are the responsibilities of a Business Analyst?
    - 3 Responsibilities:
        - Analyzing the key business aspects
        - Identifying how the system will provide business value
        - Designing the new business processes and policies
- What are the responsibilities of an Infrastructure Analyst?
    - 2 Responsibilities:
        - Ensuring the system conforms to infrastructure standards
        - Identifying the infrastructure changes needed to support the system

- What are the responsibilities of a Change Management Analyst?
    - 2 responsibilities:
        - Developing and executing a change management plan
        - Developing and executing a user training plan
- What are the responsibilities of a Project Manager?
    - 4 Responsibilities:
        - Managing the team of analysts, programmers, technical writers, and other specialists
        - Developing and monitoring project plan
        - Assigning resources
        - Serving as the primary point of contact for the project.
- Mention a few business needs.
    - 3 business needs:
        - Lower cost/Increase revenue

        - Improve customer service
        - Use latest/emerging technologies
- What system request presents?
    - A brief summary of a business need and the system will create value for the business
- What do project sponsors do?
    - A project sponsor is a key person. He does the following things-
        - Recognize business need
        - Understand business value
        - Adoption of new IT
        - Want system to succeed
        - Prepares the System request documents
- What does an approval committee do?
    - reviews proposals(System Request) from various groups and units
    - Approve/decline/suspend projects
- What are the types of Business Value?
    - 2 types:
        - Tangible
        - Intangible
- What are the key elements of System Request:
    - 5 key elements:
        - Project sponsor
        - Business need
        - Business requirements
        - Business value
        - Special issues or constraints
- What is Feasibility Analysis?
    - Feasibility analysis is used to aid in the decision of whether or not to proceed with the IS project and Identifies project risk.
- What are the sectors of Feasibility Analysis?
    - 3 Sectors:
        - Technical feasibility (Can We Build It?)
        - Economic feasibility (Should We Build It?)
        - Organizational feasibility (If we build it, will the users accept it and incorporate it with the organization?)
- How to understand if a system is organizationally feasible?
    - 2 ways:
        - Check Strategic Alignment – fit between project and business strategy?
        - Perform Stakeholder Analysis

- What does Stakeholder mean?
    - any person, group, or organization that can affect or will be affected by the system
- What are the three things that stakeholders analysis considers?

- 3 things:
  - Project champion(s)
  - Organizational management
  - System users

- What roles do champions play?
  - Initiates the project
  - Promotes the project
  - Allocates his/her time to project
  - Provides Resources

- What roles does Organizational Management play?
  - Know about the project
  - Budget enough money for the project
  - Encourage users to accept and use the system

- What roles do System Users play?
  - Makes decisions that influence the project
  - Perform hands-on Activities for the project
  - Ultimately determines whether the project is successful or not by the rate of its use.
- What ensures the success of a project?
  - Identifying the business value of the new project is a key to success
- What are the challenges of the Analysis Phase?
  - The first challenge is collecting and integrating the information
  - The second challenge is finding the right people to participate
- What is the goal of the analysis phase?
  - The goal of the analysis phase is to truly understand the requirements of the new system and develop a system that addresses them
- What are the types of requirements?
  - Two types:
    - Functional requirements
    - Non-Functional requirements
- What are the types of Non-Functional Requirements?
  - 4 types:
    - Operational
    - Performance
    - Security
    - Cultural and Political
- What are the 5 most commonly used Requirements elicitations/gathering techniques?
  - They are-
    - Interviews
    - JAD sessions
    - Questionnaires
    - Document analysis
    - Observation.

- What is Problem Analysis?
  - Asks user to identify problems and solutions
- What is Root cause analysis?
  - Finding the root cause of the problems and prioritizing them according to the user's feedback, and then investigating for highest priority problems and which are cause creating multiple problems.
- What is duration analysis?
  - Calculation of time needed for each and all steps and reducing the duration by Process Integration and Parallelization.
- What is Process Integration?
  - change the process to use fewer people, each with broader responsibilities
- What is Parallelization?
  - change the process so that individual steps are performed simultaneously

- What is Net Present Value(NPV)?
  - The NPV is simply the difference between the total present value of the benefits and the total present value of the costs
- What is Return on Investment(ROI)?
  - Measures money received in return for money invested
- What is Break-Even Point(BEP)?
  - Length of time when returns will match amount invested
- How to understand is a business is risky?
  - Higher BEP means Greater Risk
- How Activity Based Costing Helps to reduce the cost?
  - Identifies most costly steps and focuses improvement efforts on them.
- What is benchmarking?
  - The study tells how is an organization performing compared to other similar organizations.
- What is activity elimination?
  - Identify what would happen if each organizational activity was eliminated and Use “force-fit” to test all possibilities
- What are the main two types of UML diagrams?
    - Behaviour Diagram
    - Structural Diagram

- Name a few Behaviour Diagram.
  - 3 types:
    - Activity Diagram
    - Usecase Diagram
    - Sequence Diagram
- What type of Diagram is Class Diagram?
  - Structure Diagram

- Which diagram is considered mostly as requirement analysis tools?
  - Use case diagram
- What a Use case diagram does?
  - It identifies the actions(uses) of the system based on the action linked with the actors(case).
- What are the key components of the Use Case Diagram?
  - There are 4 key components:
    - Actor
    - Use case
    - System Boundary
    - Relation
- The actor is responsible for which things in a system?
  - 3 Responsibilities:
    - Performing the actions
    - Giving inputs
    - Use processed output
- How many types of actors there can be in a use case diagram?
  - 4 types:
    - Primary Actor
    - Secondary Actor
    - External hardware
    - Other System
- What does a Primary actor do?
  - Performed the main system functions
- What does a Secondary actor do?
  - Performs the administrative functions
- What is an External Hardware?
  - Any external hardware device which is a part of the application
- What does the Other System do?
  - Any external system which has interaction with the current system.
- What are Use Cases?
  - Indicates the system functions performed by an actor
- What is a system boundary?
  - Shows how the system interacts with the user
- What is another name for Relation?
  - Communication Line

- How many types of relations are there?
  - 3 types:
    - Association
    - Generalization
    - Dependency
- What is Association?
  - Connects an actor with the use case (Straight Solid Line)

- What is Generalization?
  - Represents the Parent-Children relation of actors or use cases using a straight line with a hollow arrow
- What is a dependency?
  - Indicates the dependency relationship between two use cases.
- How many types of dependencies are there?
  - 2 types:
    - Include
    - Extend
- What is an Activity Diagram?
  - An activity diagram is a diagram where activity modeling is done. Activity modeling is the sequence and conditions for coordinating lower-level behaviors, rather than which classifiers own those behaviors. These are commonly called control flow and object flow models. A UML Activity Diagram shows sequential and parallel activities in a process.
- Write a useful modeling activity diagram.
  - Business Process
  - Workflows
  - Dataflows
  - Complex algorithms
- What is a marge node?
  - A merge node is a control node that brings together multiple alternate flows.
- What is a decision node?
  - A decision node accepts tokens on an incoming edge and presents them to multiple outgoing edges.
- What is a join node?
  - A join node is a control node that synchronizes multiple flows.
- What is a fork node?
  - A fork node is a control node that splits a flow into multiple concurrent flows.
- What is an Object Node?
  - An object node is an activity node that indicates an instance of a particular classifier, possibly in a particular state, may be available at a particular point in the activity.
- What is Swimlanes?
  - Swimlanes (or activity partitions) indicate where activities take place. It can also be used to identify areas at the technology level where the activities are carried out.

Math Equations

★ Present Value (PV):

- $PV = \frac{Cash\ Flow\ Amount}{(1+intrest\ rate)^n}$ Where 'n' equals the number of period(Mostly years)

★ Net Present Value (NPV):

- $NPV = \sum PV\ of\ Total\ Benefits - \sum PV\ of\ Total\ Costs$

★ Return on Investment (ROI):

- $ROI = \frac{Total\ Benefits - Total\ Costs}{Total\ Costs}$

★ Break-Even Point (BEP):

- $Number\ of\ years\ of\ negative\ cashflow + \frac{That\ year's\ Net\ Cash\ Flow - That\ year's\ Cumulative\ Cashflow}{That\ year's\ Net\ Cash\ Flow}$
  - Here,
    - Number of years of negative cashflow = last n'th year of negative cash flow where year start's with year 0
    - That year = Year with positive cashflow