1. What is SDLC?

* Software Development Lifecycle is the structured process applied on the development of the software technology. It is the series of steps that provide model for the development and maintenance of software.

It consists of 6 phases.

* Requirement Gathering
* Analysis
* Design
* Implementation
* Testing
* Maintenance

1. What is agile methodology?

* Agile SDLC model is a combination of iterative and incremental process through which the complete task is broken down into series of phases/Time boxes and each build is incremental in terms of product features; the final build holds all the features required by customer.

1. What is SRS?

* Software requirement specification is the document which provides the complete information of the behaviour of the system to be developed.
* It consists of use case which explain sequence of actions that the client will have with software.
* It consists of basically 3 types of requirement :
* Customer Requirement
* Functional Requirement
* Non-functional Requirement

1. What is OOPS?

* Object oriented programming is a programming paradigm based on concepts of objects, which contain data and code: data in the form of fields and code in from of procedures.
* There are 4 concepts of OOPS :
* Encapsulation
* Inheritance
* Polymorphism
* Abstraction

1. Write basic concept of OOPS.

* The following are the basic concept of OOPS –
* **Object** – It is the basic unit of object oriented programming to which concept applies. It is the combination of data and function that operate on that data. It is the instance of the class and its memory.

For e.g. – Classname objectname = new classname

* **Class** ­– A Class represents an abstraction of object and abstracts the properties and behaviour of that object i.e. it can be considered as the collection of data member (variables) and member functions (methods) with its behaviour.

For e.g. - Class classname {

Data member;

Member function ;}

* **Encapsulation** – it is the process of wrapping up of data in a single unit. In Java it is the wrapping up of variables and functions in a Class.
* **Inheritance** - It means that the class inherits the characteristics of another class. This is also called “is a “relationship. In Java properties parent class extends into child class so that to increase extensibility and reusability.
* **Polymorphism** – It allows different object to respond to same message in different ways i.e. - a single function or an operator functioning in many different ways on usage. There are mainly 2 types: Method Overloading and Method Overriding.
* **Abstraction** – It refers to ability to make class abstract i.e. – data hiding or confining data to present class. It enables both client and developer to capture only necessary details that is relevant to current perspective.

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1. What is Class?

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1. What is encapsulation?

* It is the process of wrapping up of data in a single unit. In Java it is the wrapping up of variables and functions in a Class.
* It is placing of data and the functions that work on data in same place.
* It also enables the data hiding i.e. hiding irrelevant information from the users of class.

1. What is inheritance?

* It means that the class inherits the characteristics of another class. This is also called “is a “relationship. In Java properties parent class extends into child class so that to increase extensibility and reusability.
* This is very important concept of OOPS since it helps to reduce the code size.
* It describes the relationship between two classes. A class can get some of its characteristics from parent and also unique features can be added.
* There are 5 types of inheritance :
* Single
* Multilevel
* Hierarchal
* Hybrid
* Multiple

1. What is polymorphism?

* It allows different object to respond to same message in different ways i.e. - a single function or an operator functioning in many different ways on usage.
* The ability to change forms is called polymorphism.
* There are mainly 2 types :
* **Method Overloading** - A class having multiple methods having same name but different parameters is known as method overloading. It is compile time polymorphism.
* **Method Overriding** – Whenever 2 classes contain methods with same name and arguments it is certain that one of the methods will override the other during execution. It is run time polymorphism.

1. What is RDBMS?

* The software used to store, mange, query and retrieve data stored in relational database is called relational database management system. RDBMS provides an interface between users and applications and the database as well as the administrative function for managing data storage, access and performance.

1. What is SQL?

* SQL is the Structured Query Language, which is a computer language for storing, manipulating and retrieving data stored in RDBMS.
* It is standard language for RDBMS. All the RDBMS like MySQL, Oracle, etc. use SQL as their standard database language.

1. Write SQL commands.

* Some of the most important SQL commands are:
* **SELECT** - Extracts data.
* **UPDATE** - Update data.
* **DELETE** - Delete data.
* **INSERT INTO-** Inserts new data.
* **CREATE DATABSE -** Create new database.
* **ALTER DATABSE –** Modifies Database
* **ALTER TABLE -** Modifies Table.
* **DROP TABLE -** Deletes Table
* **CREATE INDEX –** Creates an index
* **DROP INDEX –** Delete index

1. Draw usecase on online book shopping.
2. Draw usecase on online bill payment system(Paytm)
3. Write SDLC phases with basic introduction.

* Software Development Lifecycle is the structured process applied on the development of the software technology. It is the series of steps that provide model for the development and maintenance of software.

It consists of 6 phases.

1. **Requirement Collection** - It is collection of client needs, features to be incorporated and usage scenarios.

There are basically 2 types of requirements:

* **Functional Requirement** – The requirement to be incorporated or added in software.
* **Non-functional Requirement** – These are constraints/limitations on the system or the development process.

1. **Analysis** – It is the complete required document which specifies the clear and precise requirement of what is to be built.
2. **Design** – On the basis of required document the design is planned and design architecture document is created. In this Implementation Plan, Critical priority analysis, Performance Analysis and test plan is designed.
3. **Implementation** – On the basis of required document and design phase the product is built. This phase deals with the issues of quality, performance, libraries and debugging and the end deliverable is the product itself.
4. **Testing** – In this phase the correctness, completeness and quality of the product is being checked.
5. **Maintenance** – This is after deployment of the software into the field in order to track defect and deficiency. This includes configuration, version management and reengineering.

There are 3 types of maintenance:

* Corrective maintenance
* Adaptive maintenance
* Perfective maintenance

1. Explain phases of waterfall model.

* Waterfall model is the SDLC model which is used in software development. It is a step by step “waterfall” process and the output of the one phase act as the input for another.
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1. Write phases of spiral model.

* Spiral model is widely used SDLC model as it is in synch with the natural development process i.e. learning with maturity and also involves minimum risk for clients and developer.
* Spiral model is mainly divided into 4 phases :
* **Planning and Objectives** – It involves the identifying of the required objectives, alternatives and constraints. The requirement of the client is analysed and identified and elaborated. The alternative solutions possible are proposed.
* **Risk Analysis** – In this all the possible solutions are evaluated to select the best possible solution. Then risk related to that solution are identified and then resolved using the best available solution.
* **Implementation/ Engineering** – In this phase the product is being developed and verified through testing.
* **Customer Evaluation** – In thisphase the client evaluate the developed version of software. In the end planning for next phase is started.

1. Write agile manifesto principles.

* There are 12 principles in the Agile Manifesto :
* Satisfying customers through early and continuous delivery of valuable work.
* Breaking big work down into smaller tasks that can be completed quickly.
* Recognising that the best work emerges from self-organized teams.
* Providing motivated individuals with the environment and support they need and trusting them to get the job done.
* Creating processes that promote sustainable efforts.
* Maintaining a constant pace for completed work.
* Welcoming changing requirements, even late in a project.
* Assembling the project team and business owners on a daily basis throughout the project.
* Having the team reflect at regular intervals on how to become more effective, then tuning and adjusting behaviour accordingly.
* Measuring progress by the amount of completed work.
* Continually seeking excellence.
* Harnessing change for a competitive advantage.

1. What is Join?

* A join is an SQL operation performed to establish a connection between two or more database tables based on matching columns, thereby creating a relationship between the tables. There are different types of joins.

1. Write types of joins.

* Here are some different type of joins in SQL
* **(INNER) JOIN** – Returns records that have matching value in both tables.
* **LEFT (OUTER) JOIN** – Returns all records from the left table and matched records from the right table.
* **RIGHT (OUTER) JOIN** - Returns all records from the right table and matched records from the left table.
* **FULL (OUTER) JOIN** – Returns all records when there is a match in either left or right table.

1. Explain working methodology of agile model and also write pros and cons.

* Agile SDLC model is a combination of iterative and incremental process models with focus on process adaptability and customer satisfaction by rapid delivery of working software product.
* It breaks the tasks into small incremental builds and these builds are provided in iteration.
* Iterative approach is adopted and working software is delivered after each iteration. Each build is incremental in terms of features and final product that is delivered consists of all the requirement needed by client.
* **PROS**-
* It is practical and realistic approach.
* Working prototype can be developed rapidly and demonstrated.
* Suitable for changing requirements.
* Resources required are minimum.
* Delivers early partial working solutions.
* Little or no planning required.
* **CONS**-
* Not suitable for complex dependencies.
* More risk of sustainability, maintainability and extensibility.
* Depends heavily on customer interaction.
* There is high individual dependency, since there is minimum documentation required.

1. Draw usecase on Online shopping product using COD.
2. Draw usecase on Online shopping product using payment gateway.