**Day 2: 14-10-2025: SDLC**

SDLC: Software development life cycle

It is a process used by software developer and team to design, develop, test and deploy high quality software or application in a systematic way.

SDLC phase

1. Requirement gathering and analysis: understand what the client needs.
2. Planning : create the project plan, schedule, language, resource etc
3. Design : create the system and software architecture using UI/UX
4. Development (implementation using language) :coding using language like java, Python, etc
5. Testing : test the software unit testing, integration testing, e2e testing
   1. STLC
6. Deploy the application on server or run time environment: run the application on actual sever, ec2(aws),
7. Maintenance: fix bugs update features

SDLC Models

1. Water fall model : linear and sequentially follow all the phase one by one.
2. V model
3. Increment model
4. Spiral model
5. Agile model:

Etc

**Agile model:** Agile is a modern SDLC approach. In Agile the break enterprise level project into small, management unit called iteration or sprint.

**Agile principle**

1. Individual and interaction 🡪processes and tools.
2. Working software or application -🡪 documentation
3. Customer collaboration -🡪 contract negotiation
4. Responding the changes base upon client requirement 🡪 following a plan

**Role in agile**

1. PO (Product Owner)
   1. Represent the customer
   2. Maintain the Product backlog (list of features need in a project).
2. SM (Scrum master)
   1. Maintain the scrum team
   2. Ensure all team member follow agile principle
3. ST (scrum team member)
   1. Cross functionality group of people, developer, tester, manager, architecture etc.

**Agile workflow**

1. Product backlog creation (features of the project or application).
   1. All features required for the project and bugs are written using user stories.
   2. Set the priority for the user stories or features for the projects.
2. Spring planning:
   1. Spring generally 1 to 4 week.
   2. Strum team member select the high priority features to complete first etc.
   3. A clear spring goal to set.
3. Spring (spring execution or iteration)
   1. Scrum team developer and tester the product or small module to complete with that sprint.
   2. Every day we do daily scrum meeting / standup meeting (10 to 15 min).
      1. What did you yesterday
      2. What is the current status
      3. What is today plan
4. Spring review
   1. Team demos the completed work to stakeholder
   2. Feedback is gathered and added new or any change base upon client requirement as a backlog in next spring with priority.

Agile concept implementation tools

1. Jira
2. Trello (Kanban style)
3. Slack
4. Micro soft team

Agile framework

1. Scrum
2. Kanban
3. XP (Extreme programming)
4. SAFe (Scaled Agile Framework)

**Java:** Java pure object oriented and platform independent programming language.

Initial name of the java is Oak. Later on they rename to Java. Java develop by James gosling and team. Java was part of sun micro system. now it is a part of oracle.

Features of the Java

1. Simple : it follow same C or C++ syntax.
2. Compile once and run any where. Plat form independent programming language
3. Pure object oriented programming language.
4. Portable
5. Exception handling
6. Muti threading

object :

object is any real world entity.

Have --🡪 variables / fields -🡪property

Person

Do / does --🡪 method/ functions 🡪 behaviour

Bank

Car

Customer

Employee

Object is a concept.

class : blue print of an object or template of an object. collection of objects which have same property and behaviour

syntax

class ClassName {

variable declaration;

method declaration;

}

class Test {

public static void main(String args[]) {

System.out.println(“Welcome Java…”);

}

}

javac Test.java java compiler it is use to compile the program

java Test java interpreter to run the program.

**Variable** : variable is name which hold the value and value can change during the execution of a program.

**Data types** : Data type is a type of data which tells what type of value it can hold.

Data types mainly divided into 2 types.

1. Primitive data types : it is use to store only value.

8 types

* 1. byte 1 byte
  2. short 2 byte
  3. int 4 byte
  4. long 8 byte

without decimal

* 1. float 4 byte
  2. double 8 byte

with decimal

* 1. char 2 byte any single character
  2. boolean 1 bit true or false value

**type casting :** converting one data type to another data type is known as type casting.

2 types.

1. Implicit type casting : automatically convert
2. Explicit type casting : explicitly we need to convert.

int family

----------------------------🡪. Implicit type casting ---------🡪

byte short int long

🡨-----------------------------explicit type casting -------------------

Int to float or float int

-------------------------🡪 implicit type -----------------------🡪

int float

🡨----------------explicit -----------------------------

By default any decimal number consider as double.

Operators :

* 1. Arithmetic operator : +, -, \*,/, %
  2. Conditional operator : >, >=, <, <=, =, !=
  3. Assignment operator : =
  4. Logical operator : &&, ||, !
  5. Increment and decrement operator ++, --
  6. Bitwise operator &, |,
  7. Ternary operator : condition ? true : false; (react js)

Conditional statement

1. simple if statement
2. if else
3. nested if
4. if else if
5. switch statement

Looping : it is use to execute set of statement continuously till the condition become false.

1 while loop it is also known as entry loop

initialization

while(condition) {

body of the loop

increment or decrement

}

2 do while loop it is also known as exit loop

initialization

do {

body of the loop

increment or decrement

} while(condition);

3 for loop 1 2 4

for(initialization;condition;increment/decrement) {

body of the loop 3

}

Taking the value through keyboard in java

Using Scanner class : Scanner is a pre defined class part of util package. package is a collection of classes and interfaces. This class provided lot of pre defined methods which help to scan the value through keyboards.

Scanner sc =new Scanner(System.in);

do {

1: block1, 2 : block2 3: block3

Enter your choice.

switch() {

case 1: block1;

break;

case 2: block2;

break;

case 3: block3;

break;

default : wrong block

break;

}

Do you want to continue() 1 🡪 yes 0 🡪no

}while();

User need to visit each block mandatory and it must be visit only one time not more than one time.

1. Non primitive data types or reference data types: it is use to store value as well as reference of another data types.