**Course 2 - Backend and Database Development**

**Day 9: 20 Dec 2024**

**Multithreading :**

Program: set of instruction to perform specific task.

Processor : Processor is responsible to execute the code.

Process : time taken to execute the code. Process known as heavy weighted.

Thread : small execution of a code within a process. Thread is known light weighted process. Thread is a part of process.

Java is by default thread base programming language. Inside main method default thread always get execute.

Java provided Thread class part of lang package. Thread class contains set of methods. currentThread() is a static method which provide default about current thread running inside main method.

Thread t = Thread.currentThread();

t -🡪 Thread[main,5,main]

main -🡪 name of the thread

5🡪 priority of the thread

main 🡪 group of the thread

t.setName(“My Thread”);

t.setPriority(1); we can set the priority between 1 to 10

Thread.MAX\_PRIORITY=10 t.setPriority(Thread.MAX\_PRIORITY);

Thread.MIN\_PRIORITY=1

Thread.NORM\_PRIORITY=5

Multi tasking :

Process base

Task1 Task2 Task3

Thread base

Task1 Task2 Task3

In Java we can create more than one thread using different ways.

1. Extends Thread class.
   1. If we want to create more than one thread. Create user defined class and that class must be extends Thread class.
   2. Then in main method you need to create Thread class object. ie user defined class object that class extends Thread class.
   3. Using object call start() method. start() is pre-defined method which help to start the thread.
   4. start() is pre defined method internally call run() method part of Thread class. run pre-defined method contains empty body. So if we want to execute some custom logic we need to override run methods.

1. Implements Runnable interface
   1. We need to make user defined class and that class must be implements Runnable interface.
   2. Runnable is a pre defined interface part of lang package which contains one method ie run method (it is an abstract method).
   3. Then in main class we need to create Thread class object. while creating thread class object we need call parameter constructor and pass the object of that class which implements Runnable interface.
   4. Using thread object call start() method and start method internally call run method.

Start() : this method is use to start the thread

Run() : this method is use to provide logic to execute for user defined thread.

Sleep() : this method is use to pause thread execution flow base upon time we pass.

Join(): this method is use to join from parent thread to child thread. So parent thread wait till child thread get destroy.

Synchronization :

Synchronization is use to block thread or lock thread or allow only one thread to access all resource at time.

To achieve synchronization java provided synchronized keyword. this keyword we can use with method or inside a method we can use more than one synchronized block.