DAY-19

# JAVA:

## MULTI-THREADING IN JAVA:

It is a process of executing multiple threads simultaneously.

MULTI-TASKING:

* It is the process of executing multiple tasks simultaneously. We use multitasking to utilize the CPU.
* It can be achieved in two ways:
  1. Process-based multitasking (Multiprocessing)
  2. Thread-based multitasking (Multithreading)

1. Multiprocessing

* Each process has an address in memory.
* The process is heavy weight.
* The cost of communication between the processes is high.

1. Multithreading

* Threads share the same address space.
* A Thread is light weight.
* The cost of communication between the threads is low.

THREAD:

* A Thread is a lightweight process, the smallest unit of processing.
* Threads are independent.
* If an exception occurs in one thread, it doesn’t affect the other threads.
* At one time, one thread is executed only.

JAVA THREAD CLASS:

* It provides constructors and methods to create and perform operations on a thread.
* Thread class extends object class and implements runnable interface.

THREAD STATES:

1. New
2. Runnable
3. Blocked
4. Waiting
5. Timed waiting
6. Terminated

JAVA THREAD CLASS METHODS:

start ()

run ()

sleep ()

CurrentThread ()

join ()

getpriority(), ......

THREAD LIFE CYCLE:

1. New
2. Active
3. Blocked or Waiting
4. Timed Waiting
5. Terminated

THREAD CREATION:

1. BY CREATING THE NEW THREAD:

Creating the thread by extending the Thread class.

class Multi extends Thread

{

public void run ()

{

System.out.println (“running”);

}

public static void main ()

{

Multi t1 = new Multi ();

t1. start ();

}

}

1. BY IMPLEMENTING THE RUNNABLE INTERFACE:

class Multi implements Runnable

{

public void run ()

{

System.out.println (“running”);

}

public static void main ()

{

Multi m1 = new Multi ();

Thread t1 = new Thread (m1);

t1. start ();

}

}

THREAD SCHEDULER IN JVA:

* A component of Java that decides which thread to run or execute and which thread to wait for is called a thread scheduler in java.
* In java, a thread is only chosen by a thread scheduler if it is in a runnable state.
* There are two factors for scheduling a thread.

i.e.; priority and Time of Arrival.

* Priority: - priority of each thread lies between 1 to 10.
* Time of Arrival: - If two threads have the same priority. Then in such case, the arrival time of the thread is considered by the thread scheduler.

THREAD.SLEEP ():

Java provides two variants of the sleep () method.

1. It accepts only arguments.
2. It accepts two arguments

This method doesn’t return anything.

NAMING THREAD:

* Each thread has a name by default as Thread-0, Thread-1
* We can change the name of a thread by using setName() method
* public string getName(); // is used to return the name of the thread.
* public void setName(Strong name) // is used to change the name of a thread