**Multithreading**

**Program : Set of instruction to perform specific task.**

**Process : Process takes some time (t time ) to execute the code. Program in execution.**

**Processor : processor is responsible to execute the code.**

**Thread : Thread is small execution of a code within a process. Thread also known as light weighted process.**

**Java is by default thread based programming language. Inside a main method always one default thread is running.**

**Thread t = Thread.currentThread();**

**System.out.println(t); thread group, priority and name of thread**

**Thread is a pre defined class part of lang package which contains set of methods . currentThread is statc method which provide current thread details. currentThread method return type is thread class reference.**

**Multitasking :**

**We can achieve multi tasking using**

**process base**

**thread base process 2 min**

**Task1 Task2 Task3**

**10 min 10 min 10 min**

**In java we can crate more than one thread using different ways.**

1. **Extends Thread class**
2. **Implements Runnable interface**

**Runnable interface contains run method. which class implements Runnable interface we need to override run method mandatory. But when class extends Thread class not required(optional)**

**Thread life cycle**

**sleep()**

**isAlive()**

**join()**

**wait()**

**notify()**

**notifyAll()**

**Create ----🡪 Ready to run --🡪 Running ---🡪Destroy**

**runnable state**

**obj1, obj2 obj1.start() run method i=10**

**t1,t2 t1.start()**

**synchronization : synchronization is uses to block or lock or allow only one thread at access resource at time. to achieve synchronization we can use synchronized keyword. this keyword we can use with method or we can use many block inside a method.**

**inner thread communication**

**consumer and producer**

**put and get**

**pay the amount and get the ticket**

**to achieve this concept we need to use 3 methods**

1. **wait() : this method is use to make the thread to wait with some conditions**
2. **notify() : this method is use to resume waited thread.**
3. **notifyAll() : this method is use to resume more than one thread**

**more than one thread is a part of same memory or same resource object.**

**these all methods are part of object class we can call directly.**

**Method must be synchronized.**

**wait()**

**notify() or notifyAll()**

**lang package classes**

**String**

**In Java String is pre defined class part of lang package. we can create the object of String class using 2 ways**

1. **String str = “Welcome to Java”; object creation literal style**
2. **String str2 = new String(“Welcome to Java”); using new keyword.**

**3 object created**

**== : it check value as well as memory code**

**.equals() : it check only value doesn’t matter same memory or different memory.**

**String is known as immutable class. means we can’t change the value.**

**StringBuffer : method are synchronized : thread safe**

**StringBuilder : not a thread safe but fast compare to StringBuffer**

**These two classes are type of string class also known as mutable string class.**