

Java Thread Concepts (Part 1)

For

BCA 3rd Semester (Session 2017-20) Students (J.D. Women's College, Patna)

By

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Thread

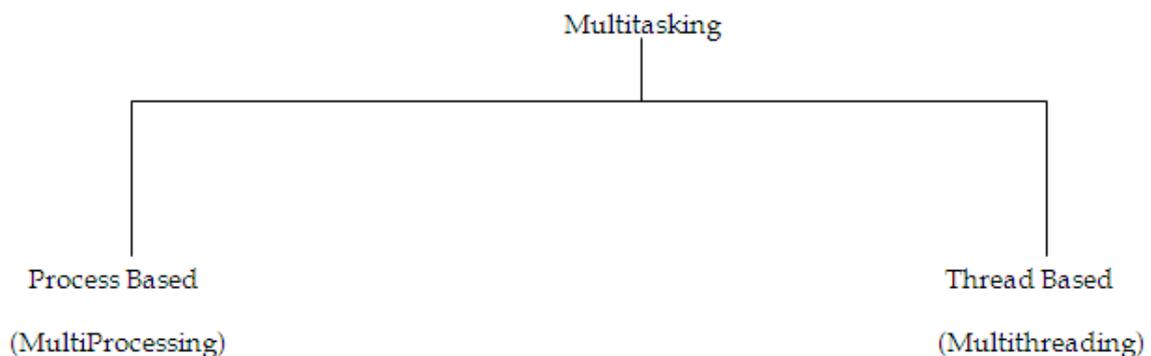
A thread is lightweight sub-process, the smallest unit of processing. Multiprocessing and Multithreading, both are used to achieve multitasking. Java Multithreading is mostly used in games, animation e.t.c. Hence we can say thread is mainly used to achieve Multitasking.

Mainly there are two types of thread

1>kernel Thread-represnts hardware section.

2>user thread-represnets software section.

MULTITHREADING



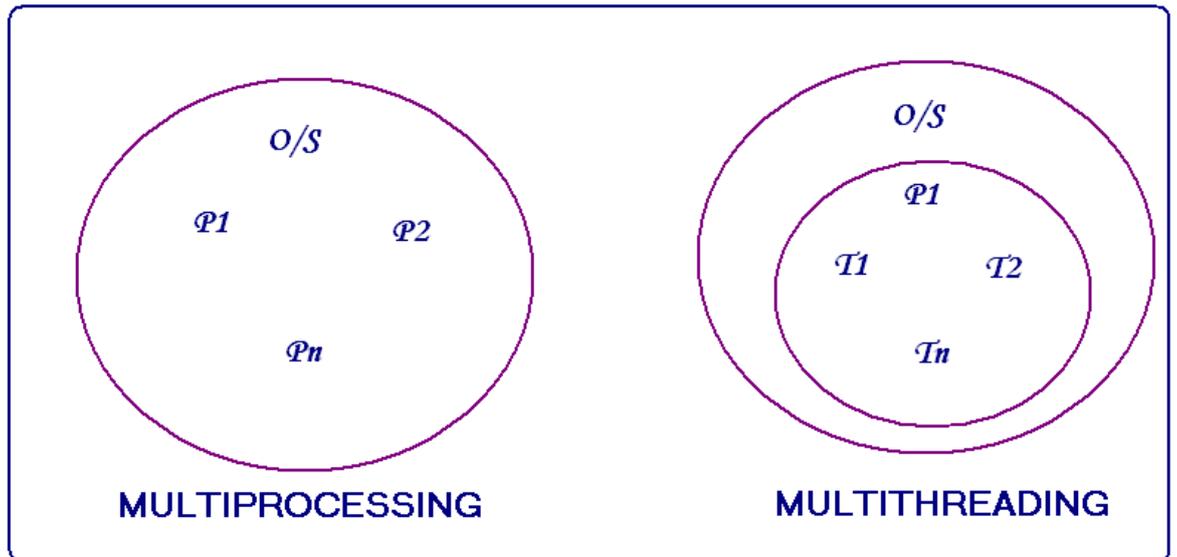
Q. What is the difference between Program & Process?

Answer

- A program represents a set of instructions which are stored in a file. In order to execute a program various resources such as memory, I/O devices, processor etc. are required. When resources are allocated to a program it becomes process.
- Multiprocessing is the facility of allocating resources to multiple programs.
- A thread is an independent module of a process that can be concurrently executed with other threads.
- The process of something to calling itself is known as recursion.
- Facility of executing multiple concurrent threads is called multithreading.

Q. Difference between multithreading and multiprocessing.

1. In Multiprocessing, each process represents an independent application whereas in Multithreading each thread represents an independent module in the application.

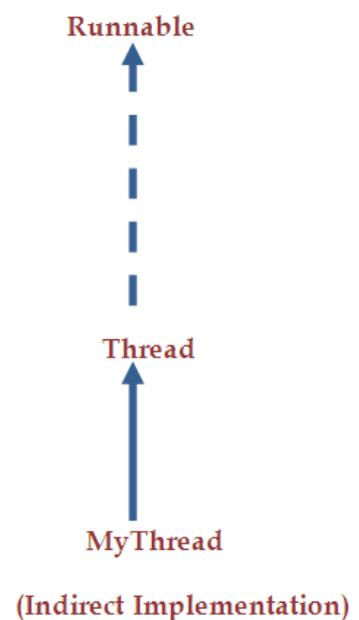
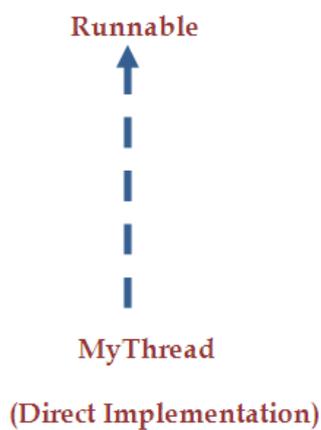


2. In case of Multiprocessing each process has its own address space whereas in case of Multithreading all the threads share a common address space .

The first requirement of multithreading is the identification of independent modules of an application. For the identification Sun Microsystems provides an interface named **Runnable** which provides a method named **run()**. This method represents a thread.

```
interface Runnable()
{
    void run();
}
```

In order to define a Java Thread implementation of this interface need to be provided. It can be done in the following 2 ways:-



Here Thread is predefined class use for maintaining and implementing thread .

Commonly used methods of Thread class

1. **getName ()** method returns the name of thread.
public String getName();
2. **setName ()** method is used to change the name of a thread.
public void setName (String name);
3. **getPriority ()** method is used to find out the priority of a thread.
public int getPriority ();
4. **setPriority ()** method is used to change the priority of a thread.
public void setPriority(int priority);
5. **sleep ()** method is used to suspend a thread for the specified time.
public static void sleep (long milliseconds) throws InterruptedException;
6. **start ()** method is used to start a thread i.e. this method loads the run method as a thread.
public void start();

Following diagram demonstrate life cycle of Thread:



```
class UserThreadInDirect extends Thread
```

```
{
```

```
    public void run()
```

```
    {
```

```
        Thread t3=Thread.currentThread();
```

```
        System.out.println("TaskOne"+t3.getName());
```

```
    }
```

```
    public static void main(String args[])
```

```
    {
```

```
        UserThreadInDirect t1=new UserThreadInDirect();
```

```
        UserThreadInDirect t2=new UserThreadInDirect();
```

```
        t1.start();
```

```
t2.start();
```

```
}
```

```
}
```