Topics

- Thread class in Java
- How to Create Threads in Java

Thread class in Java

- Defined in java.lang package
- Supplies Important Methods For Manipulating Threads
- Important Constructors

1. Thread() → Creates a Thread
2. Thread(Runnable r) → Creates a Thread from a Runnable Instance ‘r’ [Note : Runnable is an Interface in Java]
3. Thread(String threadName) → Creates a Thread with name as ‘threadName’
4. Thread(Runnable r, String threadName) → Creates a Thread from a Runnable Instance ‘r’ and assigns name as ‘‘threadName’

Thread Class (Important Method)

1. long getId() → Returns the id of the Thread [Object Method]
2. String getName() → Returns the name of the Thread [Object Method]
3. void setName(String name) → Sets the name of the Thread [Object Method]
4. int getPriority() → Returns the priority of the Thread [Object Method]
5. void setPriority(int priority) → Sets the priority of the Thread [Object Method]
6. Thread.State getState() → Returns the state of the Thread [Object Method]
7. boolean isAlive() → Returns true if the Current Thread is Alive Otherwise false [Object Method]
8. void run() → This method defines the task that a thread has to do during its time slice. [Note : If this thread was constructed using a separate Runnable run object, then that Runnable object's run method is called; otherwise, this method does nothing and returns.] [Object Method]
9. void sleep(long milliSeconds)→ Causes the current thread to sleep for mentioned no of milliseconds [class Method]
10. void sleep(long milliSeconds, long nanoSeconds)→ Causes the current thread to sleep for mentioned no of milliSeconds and nanoSeconds [class Method]
11. void start() → Used to start the thread.
12. void interrupt() → Used to interrupt a Thread [Object Method]
13. boolean isInterrupted() → Returns true if the current thread is interrupted otherwise false [Object Method]

How to Create a Thread?

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- **Two Ways of Creating a Thread**
  - **By Extending a Thread class**
  - **By Implementing a Runnable Interface**

How to Create a Thread? (By Extending a Thread class)

- Step 1:Make a your thread class a sub class of the Thread class
- Step 2 : Override the run() method in the Thread sub class
- Example

```
class MyThread      extends   Thread
{
        // Define Instance Fields
        // Add Constructors as Required
        // Add any other Method as Required
        // Override run() Method
        public  void      run()
        {
                // Provide the Code for run() Method
        }// End of Method
}// End of class
```

How to Create a Thread? (By Implementing a Runnable Interface)

- Java supports an interface named 'Runnable'
- Make a class implementing this 'Runnable' interface

Runnable interface

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

```
class MyThread      implements          Runnable
{
        // Define Instance Fields
        // Add Constructors as Required
        // Add any other Method as Required
        // Implement run() Method
        public  void      run()
        {
        // Provide the Code for run() Method
        }// End of Method
}// End of class
```

Creating and Staring Threads (Example)

- Create a Thread class named ‘GreetingThread’ with two instance fields as ‘threadId:int’ and ‘greetingMessage:String’. Add a suitable parameterized constructor in the class. Supply a run() method which prints out the greeting message on System.out ten times. After printing out the greeting message the thread sleeps for a period of 100 milliseconds. In the driver code create three instances of the ‘GreetingThread’ class with values as {1,”Hello Java”}, {2,”Java World”}, {3,”Welocme to Object-Oriented Programming”} and start all the threads.

Creating and Staring Threads (Example)

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```
class GreetingThread extends Thread
{
        private int threadId;                   // Thread id instance field
        private String greetingMessage;         // Greeting Message that Thread Displays
        // Constructor Message
        GreetingThread(int id, String msg)
        {
                threadId = id;
                 greetingMessage = msg;
        }
        // run() Method
        public void run()
        {
                for(int i=0; i<10; i++)
                {
                  System.out.println("Thread Id:" + threadId + "Message:" + greetingMessage);
                  try
                  {
                          Thread.sleep(100);
                  }
                  catch(InteruptedException e) { }
                }
        }// End of Method
}// End of class
```

Creating and Staring Threads (Example …)


```
class GreetingThread Test
{
        public      static      void        main(String args[])
        {
          // Creating Thread
          GreetingThread t1 = new GreetingThread(1, “Hello Java”);
          GreetingThread t2 = new GreetingThread(2, “Java World”);
          GreetingThread t3 = new GreetingThread(3, “Welcome to Object-Oriented Programming”);

                  // Displaying the Priorities of Thread
                  System,out.println(t1.getPriority());
                  System,out.println(t2.getPriority());
                  System,out.println(t3.getPriority());

                  // Starting Threads
                  t1.start();
                  t2.start();
                  t3.start();

        }// End of Method
}// End of class
```

Thank You