STIWK3014 REAL TIME PROGRAMMING
TUTORIAL/EXERCISE 4: Thread States

TASK 1: ThreadNew

```
package Week_04;

class ThreadNew {

   public static void main(String[] args) {
Thread t = new Thread();
      System.out.println(t.getState());
   }
}
```

TASK 2: ThreadRunnable

```
package Week_04;

class ThreadRunnable {

   public static void main(String[] args) {
Thread t = new Thread();
      t.start();
      System.out.println(t.getState());
   }
}
```

TASK 3: ThreadStates

```
package Week_04;

class ThreadStates {

   public static void main(String[] args) {
      Thread t = new Thread();
      Thread.State e = t.getState();
Thread.State[] ts = e.values();        for
(int i = 0; i < ts.length; i++) {
```

```
            System.out.println(ts[i]);
        }
    }
}
```

TASK 4: ThreadStatesInJava

```
package Week_04;

class ThreadStatesInJava {

    public static void main(String[] args) {
Thread.State[] states = Thread.State.values();

        for (Thread.State state : states) {
            System.out.println(state);
        }
    }
}
```

TASK 5: ThreadWaiting

```
package Week_04;

class ThreadWaiting {

    public static void main(String[] args) {

        Thread t1 = new Thread() {
            public void run() {
try {
                Thread.sleep(2000);                }
catch (InterruptedException e) {
e.printStackTrace();
                }
            }
        };

        Thread t2 = new Thread() {
            public void run() {
try {
```

```
                t1.join();
            } catch (InterruptedException e) {
e.printStackTrace();
            }
        }
    };
    t2.start();
t1.start();

    try {
        Thread.sleep(100);        } catch
(InterruptedException e) {
e.printStackTrace();
    }

    System.out.println(t2.getState());
  }
}
```

TASK 6: ThreadTimedWaiting

```
package Week_04;

class ThreadTimedWaiting {

  public static void main(String[] args) {

    Thread t = new Thread() {
        public void run() {
try {
                Thread.sleep(5000);              }
catch (InterruptedException e) {
e.printStackTrace();
            }
        }
    };

    t.start();

    try {
```

```
        Thread.sleep(2000);        }
catch (InterruptedException e) {
e.printStackTrace();
      }

      System.out.println(t.getState());
   }
}
```

TASK 7: Shared (This is Blocked States feature)

```
package Week_04;

class Shared {

   synchronized void methodOne(Shared s) {
      try {
         Thread.sleep(2000);        }
catch (InterruptedException e) {
e.printStackTrace();
      }
      s.methodTwo(this);
   }

   synchronized void methodTwo(Shared s) {
      try {
         Thread.sleep(2000);        }
catch (InterruptedException e) {
e.printStackTrace();
      }
      s.methodOne(this);
   }
}

class ThreadBlocked {

   public static void main(String[] args) {

      final Shared s1 = new Shared();
final Shared s2 = new Shared();
```

```
        Thread t1 = new Thread() {
@Override            public void
run() {
              s1.methodOne(s2);
           }
        };

        Thread t2 = new Thread() {
@Override            public void
run() {
              s2.methodTwo(s1);
           }
        };

        t1.start();
t2.start();

        try {
           Thread.sleep(3000);        }
catch (InterruptedException e) {
e.printStackTrace();
        }

        System.out.println("state t1 = " + t1.getState());
        System.out.println("state t2 = " + t2.getState());
    }
}
```

TASK 8: ThreadTerminated

```
package Week_04;

class ThreadTerminated {

    public static void main(String[] args) {
        Thread t = new Thread() {
@Override            public void run()
{               for (int i = 0; i <= 10; i++)
{
                  System.out.println(i);
              }
           }
```

```
        };

        t.start();

        try {
            Thread.sleep(2000);         }
catch (InterruptedException e) {
e.printStackTrace();
        }
        System.out.println(t.getState());
    }
}
```

Output

ThreadNew.java

```
Run    ThreadNew
"C:\Program Files\Java\openjdk-24_windows-x
NEW

Process finished with exit code 0
```

ThreadRunnable.java

```
Run    ThreadRunnable
"C:\Program Files\Java\openjdk-24_windo
RUNNABLE

Process finished with exit code 0
```

ThreadStates.java

```
Run    ThreadStates
"C:\Program Files\Java\openjdk-24_windows-
NEW
RUNNABLE
BLOCKED
WAITING
TIMED_WAITING
TERMINATED

Process finished with exit code 0
```

ThreadStatesInJava.java

```
Run    ThreadStatesInJava
"C:\Program Files\Java\openjdk-24_windows-x64_bin\jdk
NEW
RUNNABLE
BLOCKED
WAITING
TIMED_WAITING
TERMINATED

Process finished with exit code 0
```

ThreadWaiting.java

```
Run    ThreadWaiting
"C:\Program Files\Java\openjdk-24_windows-x64
WAITING

Process finished with exit code 0
```

ThreadTimeWaiting.java

```
Run    ThreadTimeWaiting
"C:\Program Files\Java\openjdk-24_windows-x
TIMED_WAITING

Process finished with exit code 0
```

Shared.java

```
Run    ThreadBlocked
"C:\Program Files\Java\openjdk-24_windows
state t1 = BLOCKED
state t2 = BLOCKED
```

ThreadTerminated.java

```
Run    ThreadTerminated    ThreadBlocked
"C:\Program Files\Java\openjdk-24_wind
0
1
2
3
4
5
6
7
8
9
TERMINATED

Process finished with exit code 0
```