

NUR AZYYATI BITNI ABU BAKAR | 291560

TUTORIAL 4 :

THE CODE:

ThreadNew.java

```
package Week_04;

public class ThreadNew {

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

THE OUTPUT:

```
C:\Program Files\Java\jdk-16.0.1\bin>java ThreadNew
NEW
Process finished with exit code 0
```

ThreadRunnable.java

```
package Week_04;

public class ThreadRunnable {

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

THE OUTPUT:

```
C:\Program Files\Java\jdk-16.0.1\bin>java ThreadRunnable
RUNNABLE
Process finished with exit code 0
```

ThreadStates.java

```
package week_04;

public 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]);
        }
    }
}
```

THE OUTPUT:

```
C:\Program Files\Java\jdk-10.0.1\
NEW
RUNNABLE
BLOCKED
WAITING
TIMED_WAITING
TERMINATED

Process finished with exit code 0
```

ThreadStatesInJava.java

```
package week_04;

public class ThreadStatesInJava {

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

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

THE OUTPUT:

```
C:\Program Files\Java\jdk-10.0.1\bin
NEW
RUNNABLE
BLOCKED
WAITING
TIMED_WAITING
TERMINATED

Process finished with exit code 0
```

ThreadWaiting.java

```
package week_04;

public class ThreadWaiting {
    public static void main(String[] args) {

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

        Thread t2 = new Thread() {
            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());
    }
}
```

THE OUTPUT:

```
"C:\Program Files\Java\jdk-16.0.1\
WAITING

Process finished with exit code 0
```

ThreadTimedWaiting.java

```
package Week_04;
public class ThreadTimedWaiting {

    public static void main(String[] args) {

        Thread t = new Thread() {
            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());
    }
}
```

THE OUTPUT:

```
"C:\Program Files\Java\jdk-16.0.1\
TIMED_WAITING

Process finished with exit code 0
```

ThreadTimedWaiting.java

```
package Week_04;

public class Shared { 6 usages

    synchronized void methodOne(Shared s){ 2 usages
    {
        try{
            Thread.sleep( millis: 2000);
        } catch (InterruptedException e) {
            e.printStackTrace();
        }
        s.methodTwo( s: this);
    }

    synchronized void methodTwo(Shared s){ 2 usages
    {
        try{
            Thread.sleep( millis: 2000);
        } catch (InterruptedException e) {
            e.printStackTrace();
        }
        s.methodOne( s: this);
    }
}

class ThreadBlocked {
    public static void main(String[] args) {
        final Shared s1 = new Shared();
        final Shared s2 = new Shared();

        Thread t1 = run() -> { s1.methodOne(s2); };
        Thread t2 = run() -> { s2.methodTwo(s1); };

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

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

        System.out.println("state 1 =" + t1.getState());
        System.out.println("state 2 =" + t2.getState());
    }
}
```

THE OUTPUT:

```
"C:\Program Files\Java\jdk-16.0.1\bin
state 1 =BLOCKED
state 2 =BLOCKED

Process finished with exit code 130
```

ThreadTerminated.java

```
package Week_04;
public class ThreadTerminated {

    public static void main(String[] args) {
        Thread t = new Thread() {
            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());
    }
}
```

THE OUTPUT:

```
"C:\Program Files\Java\jdk-16.0.1\bin
0
1
2
3
4
5
6
7
8
9
TERMINATED

Process finished with exit code 0
```