

Process  
Thread: Light-weighted Process

# Threads

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# A Basic Example

```
1  class HelloThread extends Thread {
2      int num;
3      HelloThread(int n){ num = n; }
4      public void run() {
5          for(int t = 0; t < 10; t++){
6              System.out.println(t + ":_Hello_from_thread_" + num);
7          }
8      }
9
10     public class ThreadDemo1{
11         public static void main(String [] argv){
12             HelloThread[] tarr = new HelloThread[5];
13             for(int i=0;i<5;i++){
14                 tarr[i] = new HelloThread(i);
15                 tarr[i].start();
16             }
17         }
18     }
```

# Another Route: Runnable

```
1  class HelloRunnable implements Runnable {
2      int num;
3      HelloRunnable(int n){ num = n; }
4      public void run() {
5          for(int t = 0; t < 10; t++)
6              System.out.println(t + ":_Hello_from_thread_" + num);
7      }
8  }
9
10 public class ThreadDemo2{
11     public static void main(String[] argv){
12         Thread[] tarr = new Thread[5];
13
14         for(int i=0;i<5;i++){
15             HelloRunnable r = new HelloRunnable(i);
16             tarr[i] = new Thread(r);
17             tarr[i].start();
18         }
19     }
20 }
```

# Slow Things Down: `sleep`

```
1 public class ThreadDemo3{
2     public static void main(String[] argv)
3         throws InterruptedException{
4
5         for(int i=0;i<10;i++){
6             System.out.println(i);
7             Thread.sleep(1000);
8         }
9     }
10 }
```

# Wake Up: interrupt

```
1  class HelloThread extends Thread {
2      int num; Thread tr;
3      HelloThread(int n, Thread _tr){ num = n; tr = _tr; }
4      public void run() {
5          for(int t = 0; t < 10; t++){
6              System.out.println(t + ":_Hello_from_thread_" + num);
7              tr.interrupt();
8              try{ Thread.sleep(500); }
9              catch(InterruptedException e){
10                 System.out.println("the_sleep_of_" + num + "_interrupted");
11             }
12         }
13     }
14 }
15 public class ThreadDemo4{
16     public static void main(String[] ar) throws InterruptedException{
17         HelloThread[] tarr = new HelloThread[5];
18         for(int i=0;i<5;i++){
19             tarr[i] = new HelloThread(i,
20                 (i == 0? Thread.currentThread() : tarr[i-1]));
21             tarr[i].start();
22         }
23     }
24 }
```