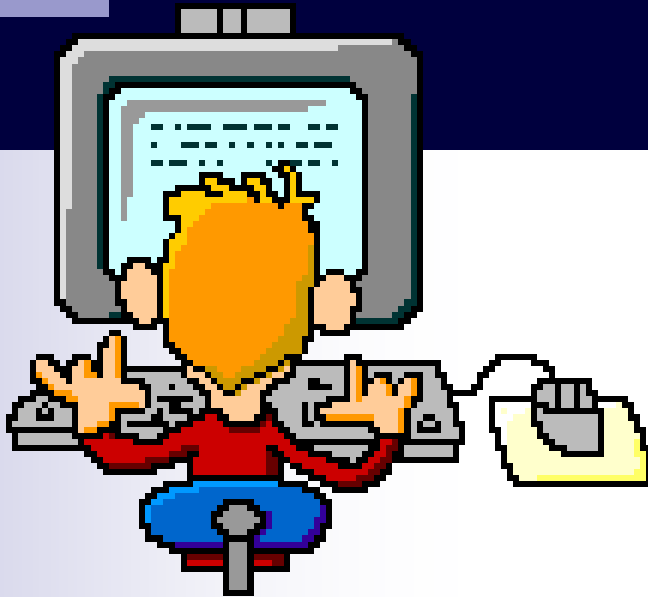


CN4001/ CD4001

Software Development

Topic 5: Programming with Loops

Part 2a




The 'for' loop



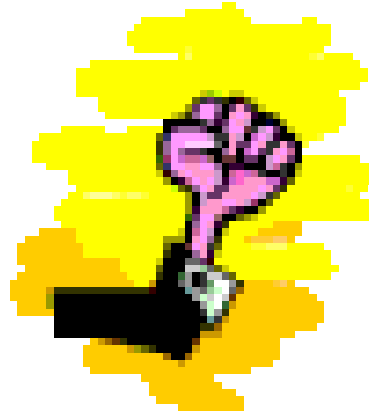


```
for (           ;           ;           )  
{  
    // instruction(s) to be repeated go here  
}
```

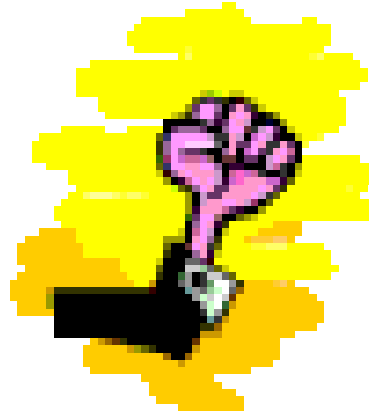


```
for (           ;           ;           )  
{  
    System.out.println("*****");  
}
```

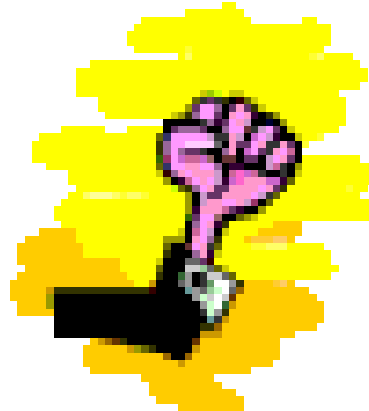
```
for ( start counter ; test counter ; change counter )  
{  
    System.out.println("*****");  
}
```



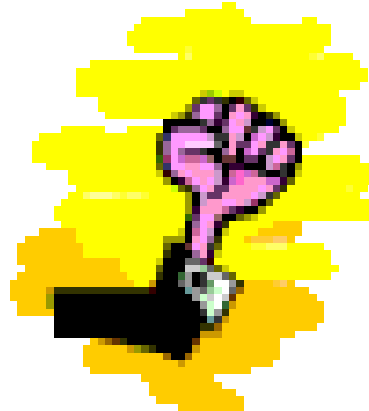
```
for ( i = 1 ; test counter ; change counter )  
{  
    System.out.println("*****");  
}
```



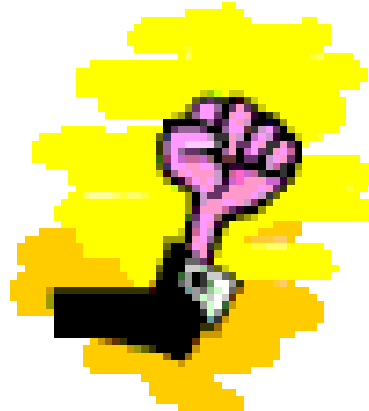
```
for ( i = 1 ; test counter ; i = i + 1 )  
{  
    System.out.println("*****");  
}
```



```
for ( i = 1 ; test counter ; i++ )  
{  
    System.out.println("*****");  
}
```

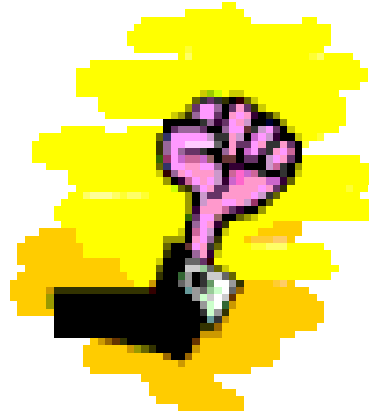



```
for ( i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

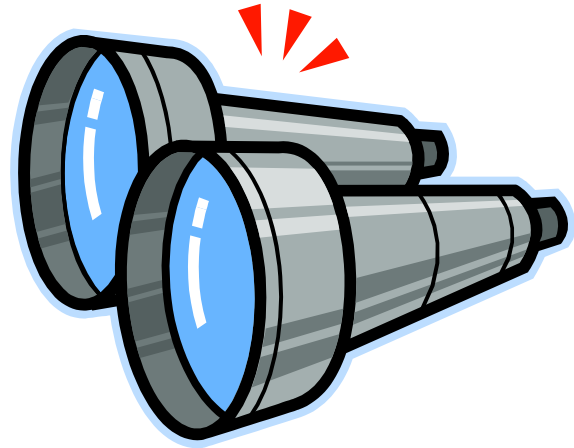


int i;

```
for (    i = 1    ;    i <= 5    ;    i++    )  
{  
    System.out.println("*****");  
}
```



Variable **Scope**



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

```
{
```

```
    int x;
```

```
}
```



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

```
{
```

```
    int x;
```

```
    x = 10;
```

```
    if ( /* some test */)
```

```
    {
```


```
        int y;
```

```
    }
```

```
}
```

```
public static void main (String [ ] args)
{
    int x;
    x = 10;
    if ( /* some test */)
    {
        int y;
    }
}
```

```
public static void main (String [ ] args)
{
    int x;
    x = 10;
    if ( /* some test */)
    {
        int y;
        y = x+1;
    }
}
```



```
public static void main (String [ ] args)
{
    int x;
    x = 10;
    if ( /* some test */)
    {
        int y;
        y = x+1;
    }
    System.out.print(x);
    System.out.print(y);
}
```



```
public static void main (String [ ] args)
{
    int x;
    x = 10;
    if ( /* some test */)
    {
        int y;
        y = x+1;
    }
    System.out.print(x);
    System.out.print(y);
}
```

```
public static void main (String [ ] args)
{
    int x;
    x = 10;
    if ( /* some test */)
    {
        int y;
        y = x+1;
    }
    System.out.print(x);
    System.out.print(y);
}
```



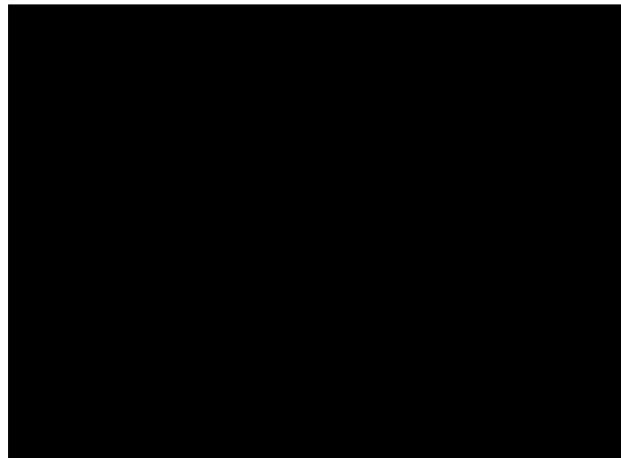
```
int i;
```

```
for ( i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

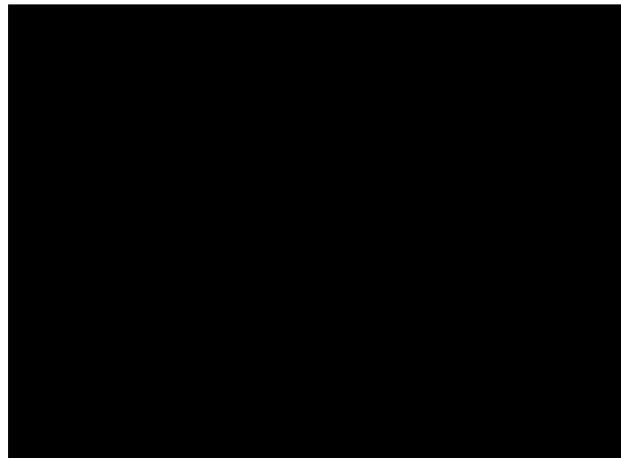
RUN

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```



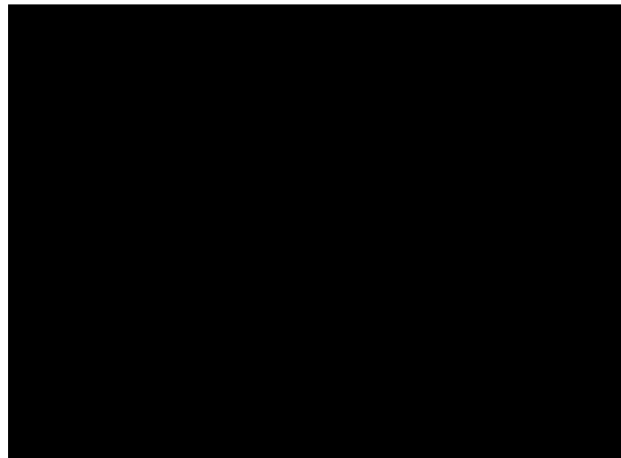
i 1

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```



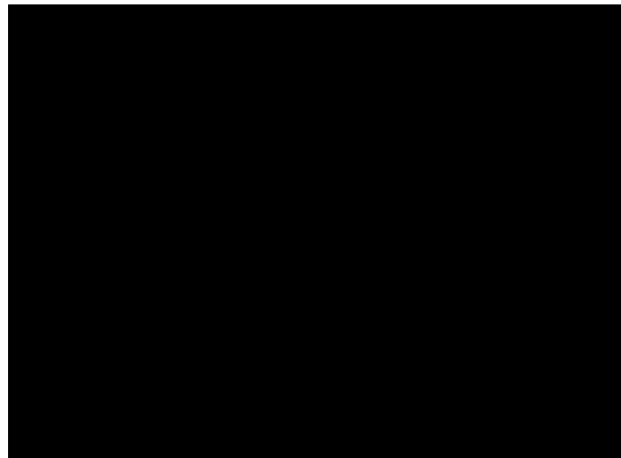
i 1

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```



i 1

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```



i 1

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

i 1

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

i 2

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

i **2**

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

i 2

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

i 2

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

i **2**

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

i 3

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

i **3**

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

i 3

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

i 3

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

i 3

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

i 4

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

i 4

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

i 4

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

i 4

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

i 4

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

```
*****  
*****  
*****  
*****
```

i **5**

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

```
*****  
*****  
*****  
*****
```

i **5**

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

```
*****  
*****  
*****  
*****
```

i 5

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

i 5

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

```
*****  
*****  
*****  
*****  
*****
```

i 5

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

```
*****  
*****  
*****  
*****  
*****
```

i 6

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

```
*****  
*****  
*****  
*****  
*****
```

i 6

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

```
*****  
*****  
*****  
*****  
*****
```


i 6

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

```
*****  
*****  
*****  
*****  
*****
```

```
for ( int i = 1 ; i <= 5 ; i++ )  
{  
    System.out.println("*****");  
}
```

```
*****  
*****  
*****  
*****  
*****
```

Activity

```
for ( int i = 1      ;      i <= 5      ;      i++      )  
{  
    System.out.println("*****");  
}
```

How do you print **20**
rows of stars?



Activity

```
for ( int i = 1      ;      i <= 20      ;      i++      )  
{  
    System.out.println("*****");  
}
```

How do you print **20**
rows of stars?



Activity

```
for ( int i = 0 ; i <= 20 ; i++ )  
{  
    System.out.println("*****");  
}
```

How many rows will
be printed now?



Activity

Counter
goes from
0

```
for ( int i = 0 ; i <= 20 ; i++ )  
{  
    System.out.println("*****");  
}
```

How many rows will
be printed now?



Activity

to 20

```
for ( int i = 0 ; i <= 20 ; i++ )  
{  
    System.out.println("*****");  
}
```

How many rows will
be printed now?



Activity

So loop
repeats
21 times

```
for ( int i = 0 ; i <= 20 , i++ )  
{  
    System.out.println("*****");  
}
```

How many rows will
be printed now?



Different ways of using the loop counter

