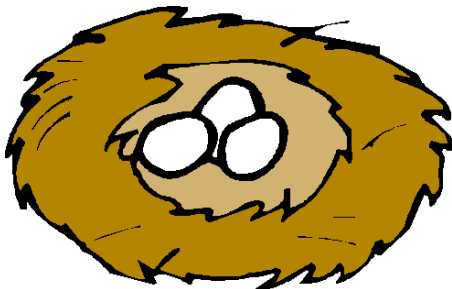# A+ Computer Science
NESTED LOOPS

Nested Loop

A nested loop is a loop with another loop inside.   Each time the outer loop runs one time, the inner loop runs to completion.

Nested Loop

```
for(int o=1; o<=6; o++)
{
    for(int i=1; i<=6; i++)
        System.out.print("*");
    System.out.println( );
}
```

OUTPUT
******
******
******
******
******
******

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nestedforbox.java

Nested Loop

```
int o=1;
        //start     //stop     //increment
for(o=1;        o<=2;     o++)
{
          //start    //stop    //incr
  for(int i=1;    i<=2;     i++)
     out.println( o + " " + i );
  out.println();

}
```

OUTPUT
1 1
1 2

OUTPUT
2 1
1 1
2 2
1 2

nestedfor.java

Nested Loop

```
for(int r=1; r<=3; r++)
{
  for(int c=1; c<=r; c++)
    System.out.print("*");
  System.out.println();
}
```

r	c	output
1	1	*
1	2	
2	1	
2	2	**
2	3	
3	1	
3	2	
3	3	***
3	4	
4		

Nested Loop

```java
int stop=5;
for(int r=1; r<=stop; r++)  //rows
{
  for(int c=1; c<=r; c++)   //columns
    System.out.print("*");
  System.out.println();
}
```

OUTPUT
```
*
**
***
****
*****
```

Nested Loop

```java
int stop=3;
String output="";
for(int r=1; r<=stop; r++)  //rows
{
  for(int c=1; c<=r; c++)   //columns
    output+="<";
  output+="\n";
}
System.out.println(output);
```

OUTPUT
```
<
<<
<<<
```

nestedfortri.java
nestedfortristring.java

Nested Loop

```
int outer=1;
while(outer<=2)
{
  int inner=1;
  while(inner<=3)
  {
      out.println(outer + " " + inner);
      inner++;
  }
  System.out.println( );
  outer= outer+1;
}
```

OUTPUT
```
1 1
1 2
1 3

2 1
2 2
2 3
```

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nestedwhile.java
nesteddowhile.java

Work on Programs!

Crank Some Code!

Just For Fun

Break
Continue

Break

break is a reserved word that allows you to shut down the loop.

```
int run;
for(run=1; run<=20; run++)
{
  if (run%3==0)
      break;
}
System.out.println(run);
```

<table>
<tr><td>OUTPUT</td></tr>
<tr><td>3</td></tr>
</table>

break.java

Continue

continue is a reserved word that allows you to skip statements.

```
int cnt=0;
for(int run=1; run<=20; run++)
{
    if(run%3==0)
        continue;
    cnt++;
}
System.out.println(cnt);
```

OUTPUT

14

continue.java

Character
StringBuffer

Character
frequently used methods

Name	Use
isUpperCase(c)	checks if c is upper case – returns true/false
isLowerCase(c)	checks if c is lower case – returns true/false
isDigit(c)	checks if c is a digit – returns true/false
toUpperCase(c)	returns uppercase version of c
toLowerCase(c)	returns lowercase version of c

Character

```
char c ='A';
out.println(isUpperCase(c));
out.println(isLowerCase(c));
out.println(isDigit(c));
out.println(toUpperCase(c));
out.println(toLowerCase(c));
```

OUTPUT
true
false
false
A
a

charone.java
chartwo.java

StringBuffer

frequently used methods

Name	Use
All of the String methods plus more.	
setCharAt(x, c)	set char at x to value c
setLength(c)	change the length to x
reverse()	reverse the order of all chars

StringBuffer

StringBuffer s = new StringBuffer("abc");
out.println(s);
s.setCharAt(0,'X');
out.println(s);
s.setLength(10);
s.setCharAt(9,'0');
out.println(s);
s.reverse();
out.println(s);

<div>

OUTPUT
abc
Xbc
Xbc   0
0   cbX

</div>

sbufferone.java

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