Repetition

Types of loops

- Conditional loop
  - while loop
  - do-while loop

- Counted loop
  - for loop

while loop

- repeats operations by looping through the operations while the condition is true

Syntax

while(<condition>)

{

   <operations to be completed while the condition is true>

}

An example

```
int n = 4;

while (n != 0) {
    n = n - 1;
    System.out.println ( n );
}


OUTPUT
3
2
1
0
```

do-while loop

Syntax

do {

    <operations to be completed while the condition is true>

} while (<condition>);

Notice: since the condition is not evaluated until the end, the operations in the loop are executed at least once

An example

```
int c = 2;

do {
    System.out.println ( c );
    c = c + 2;
} while (c != 10);

OUTPUT
2
4
6
8
```

for loop

Syntax

```
for( <initializer>; <condition>;
    <incrementer>)
{
    <operations to be completed while the
    condition is true>
}
```

Recall: An example using a *while* loop

```
int n = 0;
int length = 5;

while (n != length) {
    n = n + 1;
    System.out.println ( n );
}
```

OUTPUT
1
2
3
4
5

- We will now rewrite the previous *while loop* using a *for loop*

int length = 5;

for (int i = 1; i <= length; i++) {
    System.out.println(i);
}

OUTPUT
1
2
3
4
5

manipulate the previous _for loop_ to do the following

what if I wanted to print 2 to 5

what if I wanted to print 1 to 3

what if I wanted to print "Hi there" 10 times

- Define a decreasing counted loop.
  - Write a program that uses a decreasing counted loop.
- Define a jumping counted loop.
  - Write a program that uses a jumping counted loop.
- Define a nested loop.
  - Write a program that uses a nested loop.