

Subject 5: Lesson Notes

Program Loops

Program Loops are essential to writing less code while doing more in certain situations.

It is really cool to be able to set variables and execute code conditionally, however taking our code to the next level is adding loops when making use of larger datasets.

**** NOTE:** This week we are just looking at simple loops that are printing statements over and over, but in Subject-8 we will be learning about some simple data-structures that will allow us to store like data at which point we can loop through it, performing actions in a streamlined and efficient way. So more to come on looping.

Loop Structure:

For Loops:

Useful for iterating through a list of things

OR

Performing the same action a set number of times

```
for ( int i = 0 ; i < 5 ; i++ ) {  
    System.out.println( "Iteration " + i ) ;  
}
```

So we have a loop counter (variable i)

We have a Condition (i < 5)

Then i iterates (i++)

So the loop is going to be run 5 times resulting in:

OUTPUT:

```
Iteration 0  
Iteration 1  
Iteration 2  
Iteration 3  
Iteration 4
```

While Loops:

Performing a loop based on a conditional (*Better if an unknown number of loops is required*)

```
int i = 0;          // Iteration Counter
boolean continueFlag = true;

while ( continueFlag ) {
    System.out.println( "Iteration " + iteration ) ;

    System.out.print("Do you want to continue? (y/n) "); // Ask User
    inputChar = scanner.nextLine().charAt(0);           // Get Answer
    if (inputChar != 'y' && inputChar != 'Y') {
        continueFlag = false;                          // IF !yes don't continue
    }
}
```

The while loop however works based on just a simple boolean condition (continueFlag)

So the above would result in:

OUTPUT:

```
Iteration 0
Do you want to continue? (y/n) y

Iteration 1
Do you want to continue? (y/n) y

Iteration 2
Do you want to continue? (y/n) n
```

So in this case, we didn't know how many loops of the code we wanted because we were asking the user.

That's why it ended after the third loop when the user responded with 'n'