CS620
Structured Programming
Introduction to Java

Day 3 - Lecture 2

Day 2 Lab solutions

Lab Exercises - Day 2

- Write a program that prints a message telling the user whether one number variable is greater than, less than or equal to another.

```
1  // Compares two integers to determine which is bigger, smaller, etc.
2  class D2L2Q1
3  {
4      public static void main(String[] args)
5      {
6          int x = 3;
7          int y = 10;
8
9          System.out.println("X: " + x + ", Y: " + y);
10
11         if ( x > y )
12         {
13             System.out.println("X is greater than Y");
14         }
15         if ( x < y )
16         {
17             System.out.println("X is less than Y");
18         }
19         if ( x == y )
20         {
21             System.out.println("X is equal to Y");
22         }
23     }
24 }
```

A More efficient version of D2L2Q1

```
1  /*
2      This program compares two integers values and determines
3      which is the bigger number.
4
5  */
6  class D2L2Q1_efficient
7  {
8
9      public static void main(String []args)
10     {
11
12         int x = 3;
13         int y = 10;
14
15         System.out.println("X:  " + x + ", Y:  " + y);
16
17         if (x > y)
18         {
19             System.out.println("X is greater than Y");
20
21         } else if (x < y)
22         {
23             System.out.println("X is less than Y");
24
25         } else
26         {
27             System.out.println("X is equal to Y");
28         }
29
30     } // end of main
31
32 } // end of class
```

Lab Exercises - Day 2

- Let’s rewrite D2L2Q1 to print the boolean results of the number comparisons directly instead of writing strings

- Instead of:
  - `System.out.println(“some string describing the expression”);`

- We’ll do:
  - `System.out.println(“Less-than: “ + (someVar < someOtherVar) );`

Printing the boolean expression in D2L2Q1

```
1  /*
2      This program compares two integers values and determines
3      which is the bigger number.
4
5  */
6  class D2L2Q1_BoolExp
7  {
8
9      public static void main(String []args)
10     {
11
12         int x = 3;
13         int y = 10;
14
15         System.out.println("X:  " + x + ", Y:  " + y);
16
17         if (x > y)
18         {
19             System.out.println("X is greater than Y:" + (x>y));
20
21         } else if (x < y)
22         {
23             System.out.println("X is less than Y : " + (x<y));
24
25         } else
26         {
27             System.out.println("X is equal to Y : " + (x==y));
28         }
29
30     } // end of main
31
32 } // end of class
33
```

Checking if a number is even or odd D2L2Q2

```
1  /*
2   This program determines if a number is odd or even. It uses that fact that
3   the any number x modulo 2 gives a result of zero if x is an even number
4   otherwise x is an odd number.
5   e.g. 10 % 2 -> 0   (10 is an even number)
6   e.g. 3 % 2 -> 1    (3 is an odd number)
7
8  */
9  class D2L2Q2
10 {
11     public static void main(String []args)
12     {
13
14         int x = 3;
15
16         if (x % 2 == 0)
17         {
18             System.out.println("The number " + x + " is even: ");
19
20         } else
21         {
22
23             System.out.println("The number " + x + " is odd: ");
24         }
25
26     } // end of main
27
28 } // end of class
```

Randomness

- Doing the even/odd check on random numbers instead of hard-coded integers:

```
1  class RandomEvenOdd
2  {
3      public static void main(String[] args)
4      {
5          // Generate a random number (double), typecast it to an integer, store in variable
6          int randomNumber = (int)(Math.random() * 100);
7
8          // Use modulo to check even/odd
9          if(randomNumber % 2 == 0)
10         {
11             System.out.println("The number (" + randomNumber + ") is even");
12         }
13         else
14         {
15             System.out.println("The number (" + randomNumber + ") is odd");
16         }
17     }
18 }
```