Exercise 3 – Control Flow

Objective

The objective of this exercise is to reuse the equality and boolean statements from before to write some more complicated programs using if, switch and looping!

Overview

Either create a new project in eclipse, or just create a new class to put your code in. Remember we need a main method for the code to run

For all these exercises practice with the debugger to see what is going on while your code is running. See if you can get it to show you the specific values at each step of execution.

Looping

1. Write a while loop that prints out pairs of numbers that show the current value of n and the value of n + 10 as long as n is less than 10
2. Then, write a while loop that prints out pairs of numbers that show n and 2^n as long as n is less than 10
    a. You don't need to use the Math.pow function for this, just base it on the previous value and multiply it by 2
    b. Remember how scoping works when saving a value between one loop and the next
3. Rewrite these two loops using the for loop
4. Which do you prefer?

Conditionals

5. Write an if statement that based on a number between 1 and 7 prints out if today is a week day or a weekend.
6. Now rewrite this as a switch statement.
7. If you don't use the break keyword in a switch statement, the execution continues onto the next case regardless of whether it applied. Can you use this to make your switch statement simpler?
8. Write a loop which goes from 1 to 7 and prints out if today is a week day or the weekend!

If we get time...

The rules for working out if a particular year is a leap year are:

- If the year is divisible by four AND
    - The year is not divisible by 100 OR
    - The year is divisible by 400

Write some code that prints out the year and whether it was a leap year between 1900 and today.

Glossary of key terms

Control Flow

It describes the ways the program runs

Ternary operator

It is an another form of if statement

Switch statements

These statements can have multiple possible execution paths

Looping/Loop

Executing the programme statements repeatedly until a certain condition is reached