



PGCert IT: Programming for Industry

Control Flow

Exercise One: if statements on paper

Do the following **on paper**!

1. Write a Java "if" statement that prints out "Healthy weight" if the value of the variable, `bmi`, is between 19 and 25 (inclusive).
2. Write a line of Java code which declares a boolean variable named `hasFinished` with an initial value of `false`. Then, write some Java code which calls the `printResults()` method if the boolean variable `hasFinished` is `true`. You may assume that the `printResults()` method has been implemented elsewhere.

Exercise Two: boolean expressions on paper

Do the following **on paper**!

1. Write a Java boolean expression which tests whether the value of the char variable, `userResponse`, is equal to either 'y' or 'Y'.
2. Write a Java boolean expression which tests whether the value of the int variable, `amount`, is odd (i.e. not evenly divisible by 2).
3. Write a Java boolean expression which tests whether the String variable, `firstName`, begins with the letter 'A' or 'a'.
4. Write a Java boolean expression which tests whether the String variable, `singer`, is equal to "Taylor Swift". (Hint: remember that Strings are objects, not primitive types.)
5. Write a Java boolean expression which tests whether the value of the int variable `yearBorn`, is greater than 1978 but is not equal to 2013.

Exercise Three: if ... else if statements on paper

Do the following **on paper**!

Complete the `getGender()` method below so that it assigns the correct value to the `gender` variable according to the code passed in as a `char` parameter.

The gender will be determined as follows:

- If code is equal to 'F' or 'f' the method should assign "Female" to gender
- else if the code is equal to 'M' or 'm', then the method should assign "Male" to gender
- else the method should assign "Unknown" to the gender variable.

```
private String getGender (char code) {
    String gender;
    // TODO write your code here

    return gender;
}
```

Exercise Four: while loops on paper

What is the output produced by the following code fragment? Do this exercise **on paper!**

```
int number = 5;
while (number < 15) {
    System.out.print (3 * number + " ");
    number += 4;
}
System.out.println();
System.out.println("Number is now: " + number);
```

Exercise Five: for loops on paper

Do the following **on paper!**

Using a for loop, complete the printRowOfAmpersands() method so that it prints a row of ampersands (&). The number of ampersands it should print is passed via the int parameter, howMany.

For example, when called by: printRowAmpersands(5);
The method prints: &&&&&

```
private void printRowOfAmpersands (int howMany) {
    // Write your code here

    System.out.println();
}
```

Exercise Six: Converting a while loop into a for loop

Do the following **on paper!**

Translate the following **while** loop into a **for** loop.

```
int i = 0;
while (i < 7) {
    System.out.print(2 * i + 3);
    i++;
}
```

Exercise Seven: Guessing game using a while loop

Write a program so that the user can play the game of guessing a number between 1 and 100. Use the following pseudocode to write the code:

- Generate a random number between 1 and 100 and store in a variable named `goal`
- Declare a variable named `guess`
- Initialise `guess` to 0
- While the user's guess is not correct (i.e. `while guess != goal`):
 - Ask the user to enter their guess
 - Store the guess in the `guess` variable
 - If the `guess` is greater than the `goal`, print "Too high, try again"
 - Else if the `guess` is less than the `goal`, print "Too low, try again"
 - Else print the message "Perfect!!"
- Print "Goodbye"

Here is an example of the output of the game:

```
Enter your guess (1 - 100): 50
Too low, try again
Enter your guess (1 - 100): 75
Too high, try again
Enter your guess (1 - 100): 70
Perfect!
Goodbye
```

The skeleton code is found in:

`ictgradschool.industry.controlflow.guessing.GuessingGame.java`