Introduction to Programming - Lab Exercises for Week 03

1. Copy your *HelloWorld4* program from last week and use the copy as a starting point for *HelloWorld5*. In this exercise we will use some of the methods of the String class.

   Once your program has obtained the user's forename and surname, age and height, have the program do the following things:

   - Display a message that tells the user what their first initial is (the first letter of their forename).
   - Display a message that tells the user how many letters there are in their surname.
   - Display the user's name as their initial and their surname.
   - Display a message that shows the user their name entirely in upper case letters.

   Update the comments at the top of the program to state what the revised program does.

2. Write a program that asks the user to enter a number between 1 and 26 inclusive. The program should read the number from the keyboard and display this output (where the values output depend on what the user has typed, of course):

   ```
   The number you entered was 9
   9 divided by 2 is 4 remainder 1
   9.0 divided by 2 is 4.5
   9 squared is 81
   The letter that is number 9 in the alphabet is i
   ```

   Write comments at the top of the program to state what the program does.

   [**Hint**: you may find it useful to create a String that contains the letters of the alphabet for this exercise).

   The questions below are from the end of chapter 2 of the textbook (question 3 is adapted for UK rather than US coinage).

3. Write a program that helps the user count their change. The program should ask how many of each denomination of coin the user has – two-pound, pound, 50 pence, 20 pence, 10 pence, 5 pence, 2 pence and 1 pence coins. The program should tell the user how much money they have in change, expressed in pounds.

4. If you have N eggs, then you have N/12 dozen eggs, with N%12 eggs left over. (This is essentially the definition of the / and % operators for integers.) Write a program that asks the user how many eggs she has and then tells the user how many dozen eggs she has and how many extra eggs are left over.

   A gross of eggs is equal to 144 eggs. Extend your program so that it will tell the user

how many gross, how many dozen, and how many left over eggs she has. For example, if the user says that she has 1342 eggs, then your program would respond with

```
Your number of eggs is 9 gross, 3 dozen, and 10
```

since 1342 is equal to 9*144 + 3*12 + 10.