Coding week 1

Exercise 1 - numbers and arithmetic operators

1. Create two variables, called number1 and number2, and assign each a numerical value.
2. Print the sum of the two variables, number1 & number2.
3. Calculate the product of number1 and number2 and store the result as a new variable. Then print the result.
4. Overwrite the value of the variable you just created with a new number. Print the variable to demonstrate this has worked.
5. Find the remainder when number1 is divided by number2. Print the result.
   HINT: remember the % operator is used for division with a remainder.
6. Below is a diagram that represents a field. Create variables to represent the length and width of the field.

7. A farmer wants to fertilise this field. Fertiliser costs £1200 per square acre. Use code to calculate the cost to fertilise this field, saving the answer as a variable and then printing it.

Exercise 2 – strings

1. Make some new variables: one called word1 with the value ‘hello’ and a second called word2 with the value ‘world.’
2. Create a new variable and use arithmetic operators to combine the above to give ‘helloworld.’
3. Using indexing, print the ‘w’ from ‘helloworld.’
4. Using indexing, print the last three letters of the same variable.

Exercise 3 - operators

1. Write code that prints 'True' if your variable number1 is bigger than number2. Try and change one of these variables so that this code returns 'False'.
2. Write code that prints 'True' if the type of number 1 is the same as number 2.
3. Using indexing, check if the first letter of word1 is the same as word2.
4. Write code that that outputs true if both number1 AND number 2 are even. Change the values of number1 and number2 to see how this affects the output.
5. Write further code that outputs true if either number1 OR number2 are even.
6. Try using arithmetic operators on the Boolean values True and False. What happens?

Exercise 4 – if statements

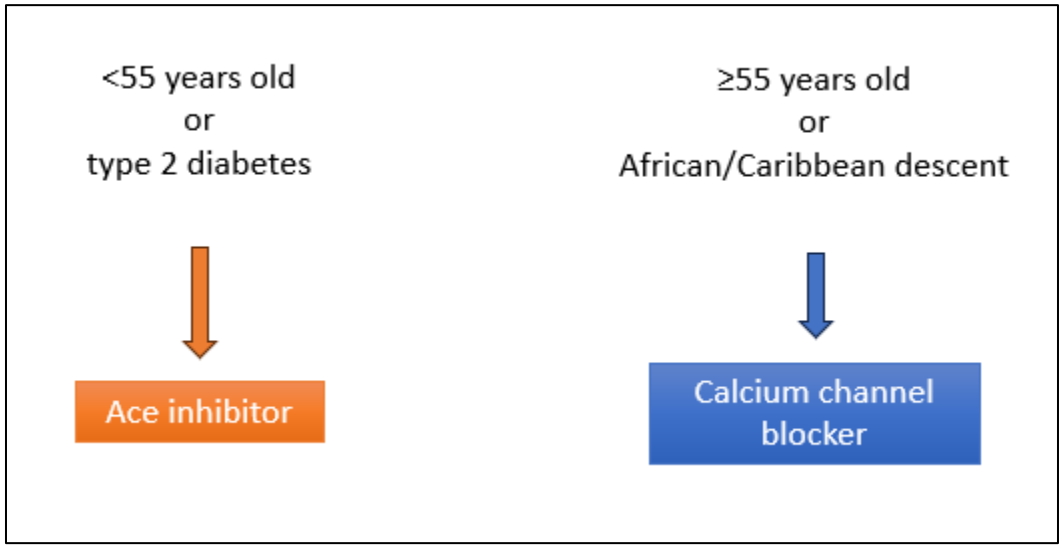
1. Write an if statement that prints the string "this number is >10" if number1 is bigger than 10. Alter the value of number1 to make sure your code works.
2. Add an else statement that prints the string "this number is <10" if number1 is smaller than 10. Alter the value of number1 to make sure you code works.
3. For what number will the above code not print any output for? How could you fix this?
4. Create a new variable: word3 = 'elephant'. Write code that checks if word3 starts with a vowel, and prints out the vowel it starts with. Change word3 to 'olive' and run the code again.
5. Create 2 new variables that represent students' marks for an exam, assign each a numerical value between 1-100. Create another variable to represent the pass mark, set it to 50.
6. Write code that checks if both students have passed the exam, and prints "both students have passed!"
7. Add to your code so that it will additionally output either "one student has passed!" or "no students have passed!" appropriately. Alter the students' marks to make sure your code works.

Exercise 5 – user input

1. Write code that asks a user to input their name, then prints “your name is:” followed by their name.
2. Write code that asks a user to input a number and saves it as a variable. Then squares it and print the result.
   HINT: you may need to change the type of your variable
3. Write code that asks the user to input a number and saves the result as a new variable. Then ask the user to input a second number, add the two numbers together and print them.

Exercise 6 – putting it all together

1. Write code that asks users to input a number, then checks whether the number is odd or even, and prints “this number is odd” or “this number is even”
2. Create a short program that will calculate and return a person’s BMI. Begin by asking the user to input their weight in kg and storing this as a variable, then ask the user to input their height in m and store this as another variable. Calculate the person’s BMI, save it as a variable and print “your BMI is...”
   HINT: BMI = kg/m^2
3. Now, using a series of if/elif statements, calculate if the person’s BMI puts them in the underweight, normal, overweight or obese category. Print the result.
   HINT: think about the sequence by which the code will run through a series of if/elif/else statements
4. Create a short program that takes a user inputted systolic blood pressure and tells them if they have hypertension (for our purposes >140).
5. Using three input functions, ask the user to input their age, if they have type 2 diabetes, or of African/Caribbean descent. Save each as a variable
   HINT: for the last two, you can ask a user to input set values e.g. ‘yes’ or ‘no’
6. Based on their responses to the last two questions, recommend either an ace inhibitor or calcium channel blocker based on the below criteria. Remember, you should sort by African/Caribbean descent and type 2 diabetes first, as they overrule the guidelines on age.


<55 years old
or
type 2 diabetes
Ace inhibitor
≥55 years old
or
African/Caribbean descent
Calcium channel blocker