Q 4

a. Write a code fragment to create a file named **matokeo.xls** with fields as shown below **(5 marks)**

Registration Number	Year of study	GPA	Class

b. Write a program that will accept from users through the keyboard students' results and fill them into the file created in 'a' above. The field 'class' depends on the GPA. If GPA is greater than 4.4 class value will be First, GPA between 4.4 and 3.5 the class value will be Upper Second, GPA between 2.5 and 3.4 – class value will be Lower Second while below 2.5 the class value will be 'Pass'. Note that the number of students will be provided by the user. **(12 marks)**

c. Write a program that reads from the keyboard and write to a file, call it **exam.txt** every character until the end of a file character or when the number of characters is 160. **(8 marks)**

Q 5

a. Define a structure that has the following fields, a string for ID of a person, mass of type float and height of type float **(4 marks)**

b. Declare a variable called patient whose type is the structure you have created in 'a' above **(3 marks)**

c. Write a program that uses the structure in 'a' above to accept data and compute the Body Mass Index for a list of individuals, the number of which will be provided by the user.
The formula for the Body Mass Index (BMI) is **BMI = mass / ((height) X (height))**.
These data should then be written in three different spreadsheet files depending on the value of BMI. If the BMI is less than 18.5 then the data should be stored in a file called **underweight**, and if the BMI is between 18.5 and 25, the data should be stored a spreadsheet called **normal** and if the BMI is greater than 25, the data should be printed into a file called **overweight**. **(18 marks)**

Q 6

a. With examples, describe the relationship between arrays and pointers **(4 marks)**

b. Describe three ways an array can be initialized **(6 marks)**

c. Write a program that accepts students marks, put them in an array and compute **the mean mark**, and **the average deviation from the mean**, i.e. the difference between the mean and each mark, and then find the average of these differences . **(15 marks)**

Q!0.) Given a linked list of the nodes defined by the following structure:

```
struct listing {

float datavalue;

struct listing
*next;

}
```

a) Define a function that adds an element in the beginning of the list by taking in the value to be added as a data value and the address of the first element of the list; and returns the address of the first element. **(7 marks)**

b) Write the main program that prompts for the data from the user and use the above function to add it to the list. **(5 marks)**