Week 5: C Programming Practical

a) Study the following code, learn how to enter/define a string.

```
#include <stdio.h>
#include <string.h>    //string header file
int main()
{
      char a[20]="C Programming!";
      char b[]={'C',' ', 'P','r','o','g','r','a','m','m','i','n','g','\0'};
      char c[20];

      printf("Please enter a string: ");
      gets(c);              //reads a string from standard input
      printf("Length of string a is: %d \n",strlen(a)); //string length
      printf("Length of string b is: %d \n",strlen(b));
      printf("Length of string c is: %d \n",strlen(c));
      printf("a string is %s\n",a);
      printf("b string is %s\n",b);
      printf("c string is %s\n",c);
      getch();
      return 0;
}
```

b) Global and Local Variables

A local variable is declared inside a function. A global variable is declared outside all functions. A local variable can only be used in the function where it is declared. A global variable can be used in all functions. Study the following example:

```
#include<stdio.h>
// A and B are Global variables
int A;
int B;
int Addition()    //user function
{return A + B;}

int main()      //main function
{
     int sum; // Local variable
     A = 8;
     B = 19;
     sum = Addition();
     printf("%d+%d=%d\n",A,B,sum);
     getch();
     return 0; }
```

1. Write a C program to calculate Sum and Product of three floating-point numbers using two user defined functions.

2. Write a function, pass your own Sussex candidate number and an array as arguments, and then extract the digits of your Sussex candidate number and store them into the array. Please note that the size of the array should be 6. Do NOT use scanf() to get the candidate number, just pass the number as an argument.

3. Write a C program to print the second smallest number in a one-dimensional integer array. This array has 11 elements which are entered by a user. Passing this array as an argument, use a function to find the second smallest number.

4. Write a C code to convert decimal integer number to binary using a user defined function

Info: How to convert decimal to binary:

1.Divide the decimal number by 2.
2.Get the integer quotient for the next iteration.
3.Get the remainder for the binary digit.
4.Repeat the steps until the quotient is equal to 0.

For example, convert 13 to binary:

Division by 2	Quotient	Remainder	Bit #	
13/2	6	1	0	
6/2	3	0	1	
3/2	1	1	2	
1/2	0	1	3	

Therefore 13 (decimal) = 1101 (binary)

Submission Requirement

(1) This coursework has 4 problems. Please prepare one source file (.c file) per problem.

(2) Make sure that each source file can be compiled without error, and the corresponding executable file can produce the expected result.

(3) You can either submit 4 individual source files, or compress the source files in a zip file (or a rar file) and submit the compressed file.

(4) The submission link is **Report T1 Week 10:** https://canvas.sussex.ac.uk/courses/25884/assignments/100789

(5) The due time is 4 Dec by 17:00 (UK time).

About plagiarism

(1) Do not copy the code of other students. Do not let other students copy your own code.

(2) Do not ask other students for their codes.

(3) Do not show or send your codes to other students. Do not allow other students to take photos of your codes.

(4) Protect your personal computer and electronic products. Set passwords wherever necessary to prevent your documents from being stolen. Report to the police ASAP if your computers and electronic products get stolen.