Daffodil International University

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Mid-Term Examination, Semester Fall 2019
Course Code: CSE 122 Course Title: Programming and Problem Solving
Section: All Course Teachers: All

Time: 1:30 hours **Full Marks: 25**

1. Program analysis: What will be the output of the following code segments? 2x2.5=5

a) Assume that address of x is *7105*

```
void main() {
  int  x=5, *p= &x;
  printf("1. x=%d\n", x);
  printf("2.&x=%d\n",&x);
  printf("3. p=%d\n", p);
   (*p)++;
  printf("4.*p=%d\n",*p);
  printf("5. x=%d\n", x);
}
```

b)
```
int fun(int a, int *b, int c) {
  *b=a+c;
   return a+(*b)+c;
}

void main() {
 int a=3, b=5, c=7, sum=9;
 sum=fun(a , &b, c);
 printf("A=%d B=%d C=%d Sum=%d",a,b,c,
sum);
}
```

2. Problem solving: Write C programs to solve each of the following problems. Answer all. 5x4=20

a) A journey of a thousand miles must begin with a single step. Let us start with an easy problem to start this Section! Write a C program that:
   a) asks for two integers and outputs them and their sum.
   b) asks for two floats and outputs them and their product.

Sample Input and Output

```
Enter two integers: 12    5
You entered 12 and 5, their sum is: 17
Enter two floats: 3.14    2
You entered 3.1400 and 2.0000, their product is: 6.2800
```

b) Write a C program that ask for an integer and, if the number is divisible by two, divides it by two, otherwise multiplies it by three and output the result, if the number is zero than it should say "You should not enter Zero!"

Sample Input and Output

```
Enter an integer: 14
Result is: 7
Enter an integer: 11
Result is: 33
Enter an integer: 0
Result is: You should not enter Zero!
```

c) Loops are used to execute a statement or a block of code multiple times. Your task is to write a C program that ask for a number than prints the number squared. This repeats until the 0 is entered.

Sample Input and Output

```
Give a number: 2
The square of 2 is 4
Give a number: 5
The square of 5 is 25
Give a number: 9
The square of 9 is 81
Give a number: 0
You entered zero.
```

d) Functions are a great way to make code reusable, improve the structure of the code and isolate errors. Your task is to write functions for the four basic mathematical operations addition, subtraction, multiplication and division. Each function has two numbers as parameters and returns the result. Write also a main function that asks the user for numbers a and b, and then use these numbers as arguments for your functions and print the result on the screen.

Sample Input and Output

```
Enter a: 11
Enter b: 5
11 + 5 = 16
11 - 5 = 6
11 * 5 = 55
11 / 5 = 2
```

e) Write a **C** program that will take input an array of 10 integer number and print only the numbers that are between **3** and **7** in **reverse** of their appearance!

Sample Input: 1 3 5 4 9 8 3 10 4 9 Sample Output: 4 3 4 5 3	Sample Input: 2 1 3 5 2 6 1 2 4 9 Sample Output: 4 5 3

Explanation: In the first sample, numbers between 3 and 7 has appeared [3 5 4 3 4] in this way, but you have to print in reverse, [4 3 4 5 3].