Daffodil International University

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

Time: 2:00 hours **Full Marks: 40**

1. Output Tracing: What will be the output of the following code segments? **3x2=6**

a)
```
#include <stdio.h>

void JustF(int  a, int p) {
    a*=2;
    printf("%d %d \n", a, p);
}

void NotF(int *a, int p) {
    JustF(*a, p);
    p = 0;
    return;
    printf("\n %d %d", *a, p);
}

int main() {
    int p = 6 ,q = 3,*a;
     a = &q;
    *a  = p+q;
    NotF(a, p);
    printf("%d %d \n", p, q);
}
```

b)
```
int main()
{
char note[]="Practice makes
perfect";

  char *p;
  p = note;
  p += 2;
  printf("1. %s\n", p);
  printf("2. %s\n", ++p);
  printf("3. %s\n", note);
  note[8] = '\0';
  printf("4. %c\n", note[9]);
  printf("5. %s\n", ++p);
  return 0;
}
```

2. Comprehension and code Segment Writing: **3+6 = 9**

a) What is the difference between the constants **7**, **'7'**, and **"7"** ?

b) Write a structure to store the name (max 20 characters), account number (integer) and balance (double) of customers. Create an array of this structure to store 50 customers and write main function to store their information, also write -

- a function to print the names of all the customers having balance less than ৳200.
- a function to add ৳100 in the balance of all the customers having more than ৳1000 in their balance and then print the incremented value of their balance.

3. Problem solving: Solve the following problems. **5 x 5 = 25**

a) Let us start with an easy problem to start this Section. Find out the largest value of three numbers a, b and c and print the result. So write the necessary **C** code for doing it! You have to take user input three integers **a , b & c** and print the largest value. That's it!

Input Sample	Output Sample
3 2 7	7
8 9 5	9

b) Write a program which reads a number ***n***, and then read ***n*** numbers of type double, i.e., input data are

$$n \quad x_1 \quad x_2 \quad x_3 \ldots\ldots \quad x_n$$

The program should write out the average of the positive values. If the number of positive values is less than 2, the text "**too few numbers**" should be written..

Input Sample	Output Sample
10.5 -15.2 3.5	7
-2.5 1.2 -4.5	too few numbers

c) Write a C program that will read a string of no more than 100 characters and print the frequency of the vowels in that string.

Input Sample	Output Sample
programming is easy	a=2, e=1, i=2, o=1, u=0
stupid is as stupid does	a=1, e=1, i=3, o=1, u=2

d) Read 10 integers and store them in an array. Now swap the adjacent numbers in each pair in the same array.

Input Sample	Output Sample
2 5 7 3 1 5 9 8 2 6	5 2 3 7 5 1 8 9 6 2
0 1 2 3 4 5 6 7 8 9	1 0 3 2 5 4 7 6 9 8

e) Write codes for two functions named **ArraySum** and **ArrayAvg** with appropriate parameter and return type to find out the sum and average from an integer array. Call these functions from the main function, pass the integer array of size 5 and print the returned sum and average in the main function.

Hint: If you pass an array which has `3, 1, 4, 2, 5` as its elements than ArraySum will return 15 and ArrayAvg will return 3