

PF LAB ASSIGNMENT

Instructions to follow:

Assignment will be submitted on SLATE.

You have to submit the assignment's Section B and C in softcopy(on SLATE) and Section A of the assignment will be submitted in a file in hardcopy(Print out).

Student ID and Name along with your section should be present on 1st page of the file as cover page.

Regarding submission, Remember that you have to submit BOTH softcopy & hardcopy before the deadline.

Deadline is 25th November, 2019 --- Before 4:00pm

There will be no extension in the deadline. After the Deadline, no one will be entertained.

(Section A) QUESTION ANSWERS

Note: This section doesn't require any implementation. You have to solve this whole section on paper, NOT on DEV C++.

Question # 1:

a) Define the following in context of programming:

- 1) Array
- 2) Recursive function
- 3) Iterations
- 4) String
- 5) Pointer

b) Write output for the following code:

- 1)

```
#include<stdio.h>
#include<conio.h>
main()
{
    int i=0;
    for(i=5;i<100;i=i*4)
    {
        printf("%d %d ",i,i-2);
        i=i-2;
    }
    getch();
}
```
- 2)

```
#include<stdio.h>
#include<conio.h>
main()
{
    int i=0,j=0,k=0,x=0;
```

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```
for(i=0;i<3;i++)
{
    k=3-i-1;
    x=k;
    while(k!=0)
    {
        printf(".");
        k--;
    }
    for(j=x;j<5-x;j++)
    {
        if((i+j)%2==0)
            printf("%d",j);
        else
            printf("%d",i);
    }
    while(x!=0)
    {
        printf(".");
        x--;
    }
    printf("\n");
}
getch();
}
```

c) Find error from the following code and write the output:

- 1)

```
#include<stdio.h>
#include<conio.h>
main()
{
    int a=5,b=3;
    ans=(a++)+b;
    print("Answer is %d\n"ans);
    print("A is %d"a);
    getch();
}
```
- 2) Let a=5 and b=4

```
#include<stdio.h>
#include<conio.h>
main()
{
    int a=0,b=0;
```

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```
printf("Enter value of A: ");
scanf("%d",&a);
printf("Enter value of B: ");
scanf("%d",&b);
a=(a++)+b;
b=2b/2;
printf("A is %d and B is %d\n",a,b);
a==(a++)+ (--b);
printf("A is %d and B is %d\n",a,b);
}
```

d) Write a c code for the following output:

1) 1
 1 2
 1 2 3
 1 2 3 4
 1 2 3 4 5

2) 5 4 3 2 1
 4 3 2 1
 3 2 1
 2 1
 1

3) 0 1 1 1 0
 0 2 2 2 0
 3 3 3 3 3

(Section B) PROGRAMMING PROBLEMS

Q1) Transform any MxM matrix as follow:

$$\begin{bmatrix} 1 & 3 & 5 \\ 2 & 4 & 6 \\ 9 & 8 & 7 \end{bmatrix} \Rightarrow \begin{bmatrix} 7 & 8 & 9 \\ 6 & 4 & 2 \\ 5 & 3 & 1 \end{bmatrix}$$

Q2) Everyone knows about Number System which includes Binary Number System, Decimal Number System, Octal Number System, and Hexa-Decimal Number System. Make a program that allows user convert any given type to desired type.

Q3) Write a program to calculate salary of n employees, when following information is given input through keyboard:

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- 1.) If age of employee is greater than 50, experience is greater than 10 & working hours are greater than 240 then the hourly wage rate is 500rs per hour.
- 2.) If age of employee is less than equal to 50 and greater than 40, experience is less than equal to 10 and greater than 6 & working hours are greater than 200 and less than equal to 240 then the hourly wage rate is 425rs per hour.
- 3.) If age of employee is less than equal to 40 and greater than 30, experience is less than equal to 6 and greater than 3 & working hours are greater than 160 and less than equal to 200 then the hourly wage rate is 375rs per hour.
- 4.) If age of employee is less than equal to 30 and greater than 22, experience is less than equal to 3 and greater than 1 & working hours are greater than 120 and less than equal to 160 then the hourly wage rate is 300rs per hour.
- 5.) Otherwise print invalid parameters.

Q4) Design a program which implements QUEUE. User should be able to insert element into queue, delete element from queue, display elements of the queue. One thing to remember in queue is SEQUENCE.

Q5) Without using any built-in string function, design a C program having user-defined function **mySubString()** with appropriate parameters which finds substring of given length from the user in the string. Display the string and its substring as output.

(Section C) BONUS QUESTION

Implement "TIC TAC TOE" game in C language.