CP Written Assignment -I

ASSIGNMENT 1 Q1:

Write a program to that will read the value of x and evaluate the following function:

Y=1 for x>0
Y=0 for x=0
Y=-1 for x<0

```
#include<stdio.h>
#include<conio.h>

int main()
{
	int x,y;

	clrscr();

	printf("Name: Divvye Kansara\nRoll no: 2403080\nBatch: E1\n\n");

	printf("Enter the value of x: ");
	scanf("%d", &x);


	y = ((x > 0) ? 1 : ((x == 0) ? 0 : -1));

	printf("\nHence the corresponding value of y is: %d", y);

	getch();
	return 0;


}
```

```
Name: Divyye Kansara
Roll no: 2403080
Batch: E1

Enter the value of x: 10

Hence the corresponding value of y is: 1
```

ASSIGNMENT 1 Q2:

Write a menu driven program to calculate area of circle, rectangle and triangle using switch statement.

```
#include<stdio.h>
#include<conio.h>

int main()
{
	int r, s1, s2, h, b;

	int Ac, Ar, At;

	char ch;

	clrscr();

	printf("Name: Divvye Kansara\nRoll no: 2403080\nBatch: E1\n\n");

	printf("Enter (C) for area of circle, (R) for rectangle and (T) for triangle: ");
	scanf("%c", &ch);

	switch(ch)
	{
		case 'C':
		printf("\nEnter the radius of the circle: ");
		scanf("%d", &r);
		Ac=3.14*r*r;
		printf("The area of the circle is: %d", Ac);
		break;

		case 'R':
		printf("\nEnter the length and breadth of the rectangle: ");
		scanf("%d %d", &s1, &s2);
		Ar=s1*s2;
		printf("The area of the rectangle is: %d", Ar);
		break;

		case 'T':
		printf("\nEnter the height and base of the triangle: ");
		scanf("%d %d", &h, &b);
		At=0.5*b*h;
```

```
            printf("The area of the triangle is: %d", At);
            break;


            default:
            printf("\nInvalid input!");

        }

        getch();
        return 0;
}
```

```
Name: Divvye Kansara
Roll no: 2403080
Batch: E1

Enter (C) for area of circle, (R) for rectangle and (T) for triangle: R

Enter the length and breadth of the rectangle: 10 5
The area of the rectangle is: 50
```

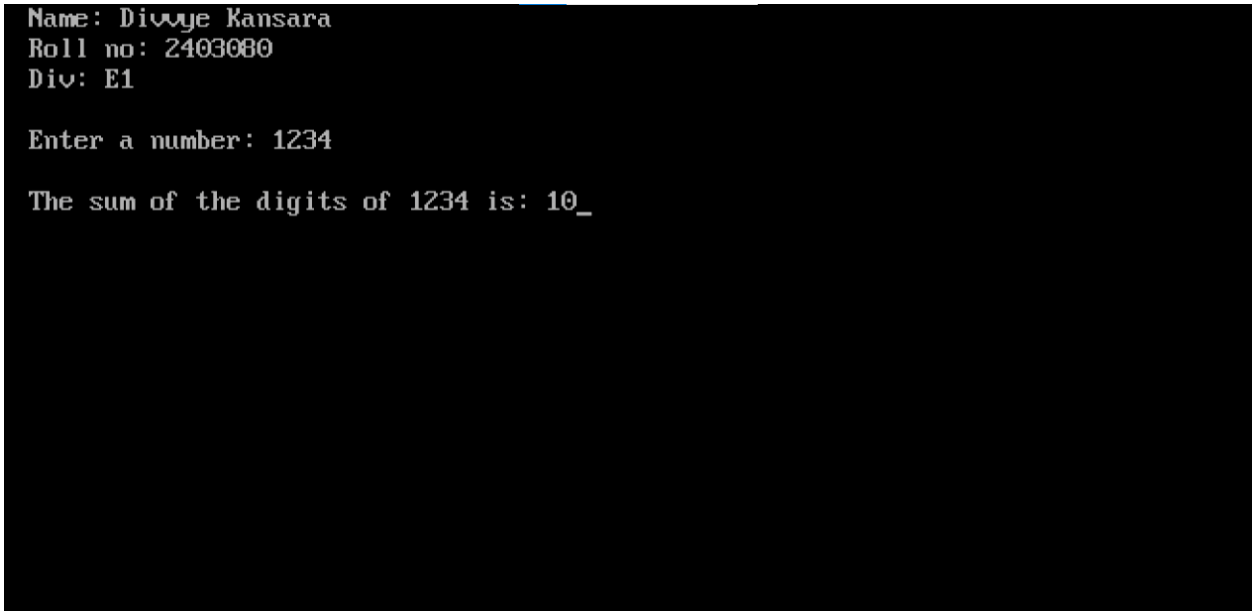
ASSIGNMENT 1 Q3: Write an algorithm for computing the sum of digits in a number.

Algorithm: Sum of Digits

1. **Input**: A number n (can be positive or negative).
2. **Initialize**: Set a variable sum to 0. This will hold the sum of the digits.
3. **While Loop**: Continue the following steps until n becomes 0:
    - Take the last digit of n using n % 10 (modulo operation).
    - Add the digit to sum.
    - Remove the last digit from n by performing integer division: n = n // 10.
4. **Output**: The value of sum contains the sum of the digits.

```
#include<stdio.h>
#include<conio.h>

int main()
{
	int x, digit;

	int sum = 0;

	int num;

	clrscr();

	printf("Name: Divvye Kansara\nRoll no: 2403080\nDiv: E1\n\n");

	printf("Enter a number: ");
	scanf("%d", &x);

	num = x;

	while(x > 0)
	{
		digit = x % 10;

		sum += digit;
```

```
            x /= 10;

        }

        printf("\nThe sum of the digits of %d is: %d", num, sum);


        getch();
        return 0;
}
```



ASSIGNMENT 1 Q4: Write a program to check the accepted character is lowercase letter, uppercase letter, digit or a special symbol.

```
#include<stdio.h>
#include<conio.h>

int main()
{
	char ch;

	int x;

	clrscr();

	printf("Name: Divvye Kansara\nRoll no: 2403080\nDiv: E1\n\n");

	printf("Input a character: ");
	scanf("%c", &ch);

	x = (int) ch;

	if(x >= 65  &&  x <= 90 )
	printf("\nThe given character is an upper-case character!");

	else if(x >= 97  &&  x <= 122 )
	printf("\nThe given character is a lower-case character!");

	else if(x >= 48  && x <= 57 )
	printf("\nThe given character is a digit!");

	else if( (x >= 33  && x <= 47)  || (x >= 58 && x <= 64) || (x>=91  && x<=96) || (x>=123
&& x<=126))
	printf("\nThe given character is a special symbol!");

	getch();
	return 0;
}
```

```
Name: Divvye Kansara
Roll no: 2403080
Div: E1

Input a character: A

The given character is an upper-case character!
```

CP Written Assignment -II

ASSIGNMENT 2 Q1: Write a C program to Shift an array element one element.
For example: Input [22,47,34,77,12],
Output [12,22,47,34,77].

```
#include<stdio.h>
#include<conio.h>

int main()
{
	int arr[100];
	int n, temp, i;

	clrscr();

	printf("Name: Divvye Kansara\nRoll no= 2403080\nDiv: E1\n\n");

	printf("Enter the size of the array: ");
	scanf("%d", &n);

	printf("Input the elements of the array: ");
	for(i=0; i<n; i++)
	{
		scanf("%d", &arr[i]);
	}

	printf("\n\nThe array after shifting by one place: ");

	temp = arr[n-1];
	for(i=n-2; i>=0; i--)
	{
		arr[i+1] = arr[i];

	}
	arr[0] = temp;
```

```
    for(i=0; i<n; i++)
    {
        printf("%d ", arr[i]);
    }

    getch();
    return 0;
}
```

```
Name: Divvye Kansara
Roll no= 2403080
Div: E1

Enter the size of the array: 6
Input the elements of the array: 11 22 33 44 55 66


The array after shifting by one place: 66 11 22 33 44 55 _
```

ASSIGNMENT 2 Q2:

2.Write a C program to create an array of structure to store details of almost 5 Cricketer and display
them in tabular form. Cricketer's details are as follows:
1.Cricketer's Name 2. Country 3. Batting score

```
#include<stdio.h>
#include<conio.h>

struct cricketer
{
	char name[200];

	char country[100];

	int score;
};

int main()
{
	struct cricketer c[5];

	int i;

	clrscr();

	printf("Name: Divvye Kansara\nRoll no: 2403080\nDiv: E1\n\n");

	for(i=0; i<5; i++)
	{
		printf("Cricketer %d name: ", i+1);
		scanf("%s", c[i].name);

		printf("Cricketer %d country: ", i+1);
		scanf("%s", c[i].country);

		printf("Cricketer %d batting score: ", i+1);
		scanf("%d", &c[i].score);
```

```
            printf("\n");
        }


        for(i=0; i<5; i++)
        {
            printf("%d. %s %s %d\n",i+1, c[i].name, c[i].country, c[i].score);

        }

        getch();
        return 0;

}
```

```
Name: Divvye Kansara
Roll no: 2403080
Div: E1

Cricketer 1 name: Dhoni
Cricketer 1 country: India
Cricketer 1 batting score: 100

Cricketer 2 name: Watson
Cricketer 2 country: Australia
Cricketer 2 batting score: 200

Cricketer 3 name: Williamson
Cricketer 3 country: Newzealand
Cricketer 3 batting score: 300

Cricketer 4 name: Stokes
Cricketer 4 country: England
Cricketer 4 batting score: 400

Cricketer 5 name: Das
Cricketer 5 country: Bangladesh
Cricketer 5 batting score: 500
```


1. Dhoni India 100
2. Watson Australia 200
3. Williamson Newzealand 300
4. Stokes England 400
5. Das Bangladesh 500

ASSIGNMENT 2 Q3:

Explain pointer to pointer using programming example.

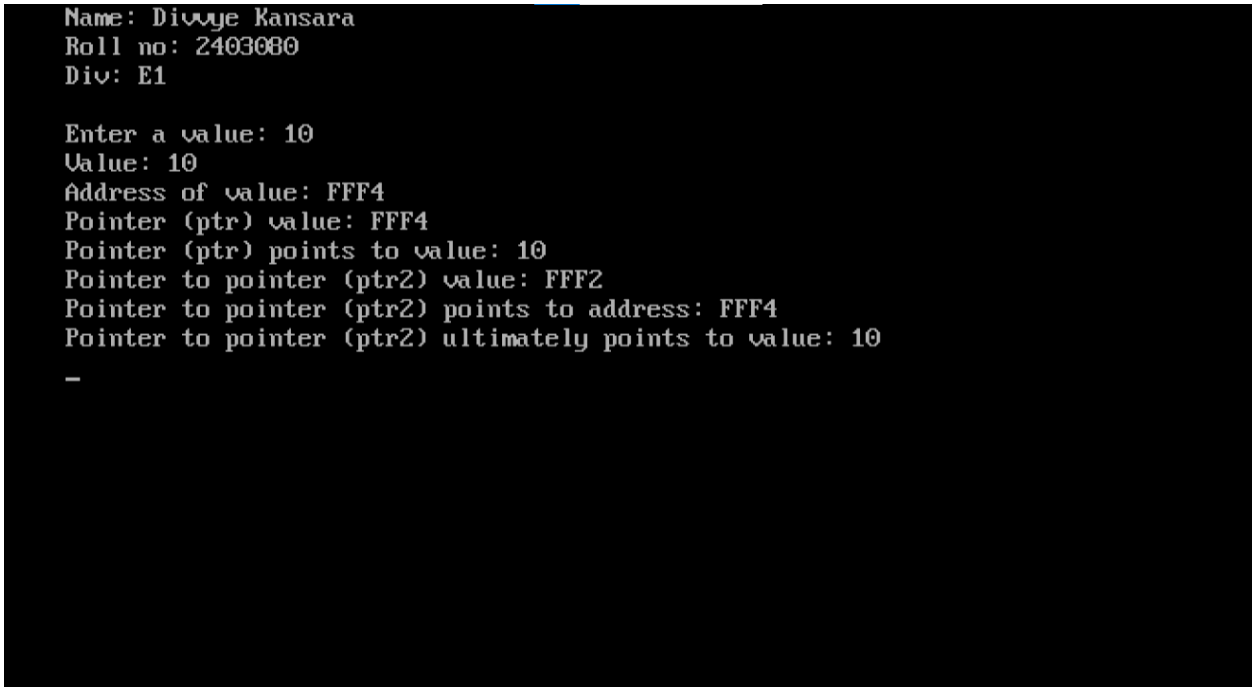
In C, a pointer to a pointer is a variable that stores the address of another pointer, which in turn points to the actual data. It allows multiple levels of indirection and is useful in scenarios like dynamic memory allocation and working with arrays of strings or pointers.

Use cases:

1. **Dynamic memory management**: Often used in dynamic memory allocation where the function returns a pointer to a pointer.
2. **Multi-dimensional arrays**: Used to handle arrays of pointers (like 2D arrays).
3. **Modifying pointer values**: A function that modifies a pointer value might need a pointer to a pointer as an argument.

```
#include <stdio.h>
#include<conio.h>

int main() {
   int value;
   int *ptr = &value;
   int **ptr2 = &ptr;

   clrscr();

   printf("Name: Divvye Kansara\nRoll no: 2403080\nDiv: E1\n\n");

   printf("Enter a value: ");
   scanf("%d", &value);

   printf("Value: %d\n", value);
   printf("Address of value: %p\n", (void*)&value);
   printf("Pointer (ptr) value: %p\n", (void*)ptr);
   printf("Pointer (ptr) points to value: %d\n", *ptr);
   printf("Pointer to pointer (ptr2) value: %p\n", (void*)ptr2);
   printf("Pointer to pointer (ptr2) points to address: %p\n", (void*)*ptr2);
   printf("Pointer to pointer (ptr2) ultimately points to value: %d\n", **ptr2);
```

```
    getch();
    return 0;
}
```



ASSIGNMENT 2 Q4:

Write a program to demonstrate following file handling operations:

1) fopen() 2) fclose() 3) fprintf() 4) fscanf()

```
#include<stdio.h>
#include<stdlib.h>


int main()
{
	int roll_no;
	char name[100];
	float marks;

	printf("Name:Divvye Kansara\nRoll no: 2403080\nDiv: E1\n\n");

	FILE *file= fopen("students.txt", "w");

	if(file == NULL)
	{
	   printf("Error opening file!\n");
	}


	printf("Enter Roll number: ");
	scanf("%d", &roll_no);

	printf("Enter the name of the student: ");
	scanf("%s", name);

	printf("Enter the marks: ");
	scanf("%f", &marks);

	fprintf(file, "%d\t%s\t%.2f\n", roll_no, name, marks);
	printf("\n\n********************\n\n");
	printf("Data entered sucessfully!\n\n**********************");
```

```
    fclose(file);

    file= fopen("students.txt", "r");
    if(file == NULL)
    {
       printf("File could not be opened or file does not exist!");
       return 0;
    }


    printf("\n\nSTUDENT'S DATA: \n\n\n");
    printf("Roll No\tName\tMarks\n");
    printf("\n\n");

    while(fscanf(file, "%d %s %f", &roll_no, name, &marks) != EOF);
    {
       printf("%d\t%-7s\t%0.2f\n", roll_no, name, marks);
    }

    fclose(file);

    return 0;

}
```

Output:

```
C:\TURBOC3\BIN>TC
Name:Divvye Kansara
Roll no: 2403080
Div: E1

Enter Roll number: 15
Enter the name of the student: Divvye
Enter the marks: 150_
```

```
Div: E1

Enter Roll number: 15
Enter the name of the student: Divvye
Enter the marks: 150


**********************

Data entered sucessfully!

**************************

STUDENT'S DATA:


Roll No Name    Marks


15      Divvye  150.00
```


STUDENTS.TXT - Notepad
File Edit Format View Help
15 Divvye 150.00
Ln 1, Col 1
100%
Windows (CRLF)
UTF-8