OOPS

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Q1) Write a C program to perform addition and multiplication of two numbers using all four types of

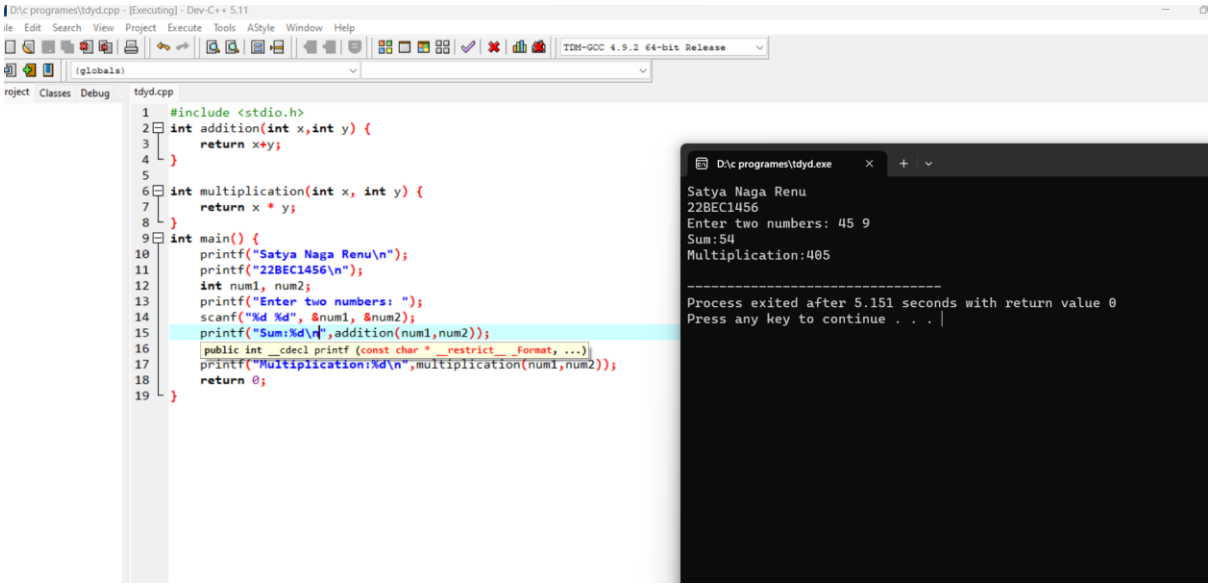
function definitions (Passing arguments and return value).

CODE:

```
#include <stdio.h>
int addition(int x,int y) {
        return x+y;
}

int multiplication(int x, int y) {
   return x * y;
}
int divison(int x,int y){
        return x/y;
}
int subraction(int x,int y){
        return x-y;
}
int main() {
        printf("Satya Naga Renu\n");
        printf("22BEC1456\n");
   int num1, num2;
        printf("Enter two numbers: ");
   scanf("%d %d", &num1, &num2);
        printf("Sum:%d\n",addition(num1,num2));
        printf("Multiplication:%d\n",multiplication(num1,num2));
```

}

Output:



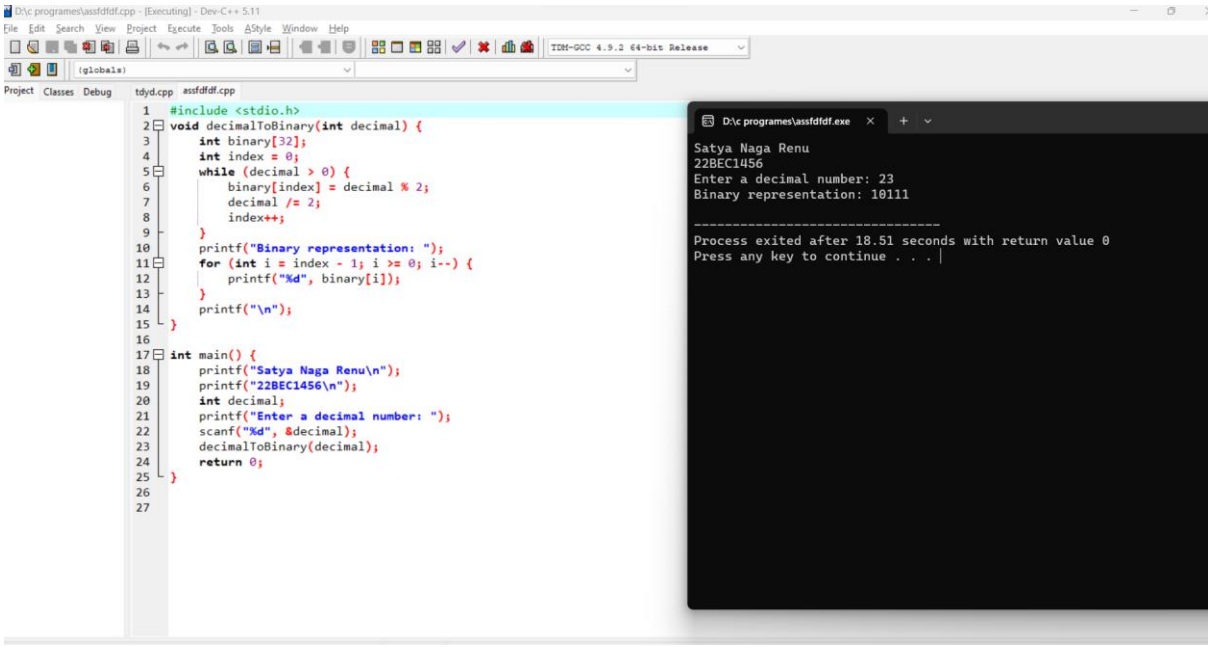
Q2) Write a C program to convert a decimal number to binary using functions.

CODE:

```
#include <stdio.h>
void decimalToBinary(int decimal) {
    int binary[32];
    int index = 0;
    while (decimal > 0) {
        binary[index] = decimal % 2;
        decimal /= 2;
        index++;
    }
    printf("Binary representation: ");
    for (int i = index - 1; i >= 0; i--) {
        printf("%d", binary[i]);
    }
    printf("\n");
```

```
}

int main() {
        printf("Satya Naga Renu\n");
        printf("22BEC1456\n");
    int decimal;
    printf("Enter a decimal number: ");
    scanf("%d", &decimal);
    decimalToBinary(decimal);
    return 0;
}
```

OUTPUT:



Q3) Write a C program to insert an element into an array by passing an array to the function.

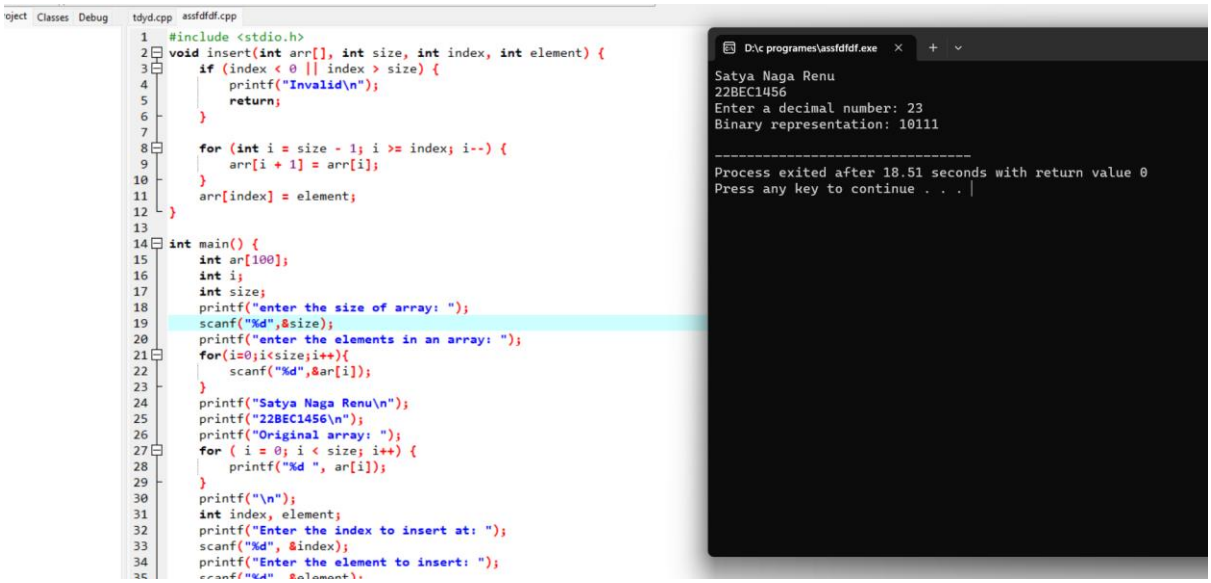
CODE: #include <stdio.h>

void insert(int arr[], int size, int index, int element) {

```
    if (index < 0 || index > size) {
        printf("Invalid\n");
        return;
    }

    for (int i = size - 1; i >= index; i--) {
        arr[i + 1] = arr[i];
    }
          arr[index] = element;
}

int main() {
    int ar[100];
    int i;
    int size;
    printf("enter the size of array: ");
    scanf("%d",&size);
    printf("enter the elements in an array: ");
    for(i=0;i<size;i++){
          scanf("%d",&ar[i]);
          }
    printf("Satya Naga Renu\n");
          printf("22BEC1456\n");
    printf("Original array: ");
    for ( i = 0; i < size; i++) {
        printf("%d ", ar[i]);
```

```
    }
    printf("\n");
        int index, element;
    printf("Enter the index to insert at: ");
    scanf("%d", &index);
    printf("Enter the element to insert: ");
    scanf("%d", &element);
        insert(ar, size, index, element);
    size++;
        printf("Updated array: ");
    for (int i = 0; i < size; i++) {
       printf("%d ",ar[i]);
    }
    printf("\n");

    return 0;
}
```

OUTPUT:



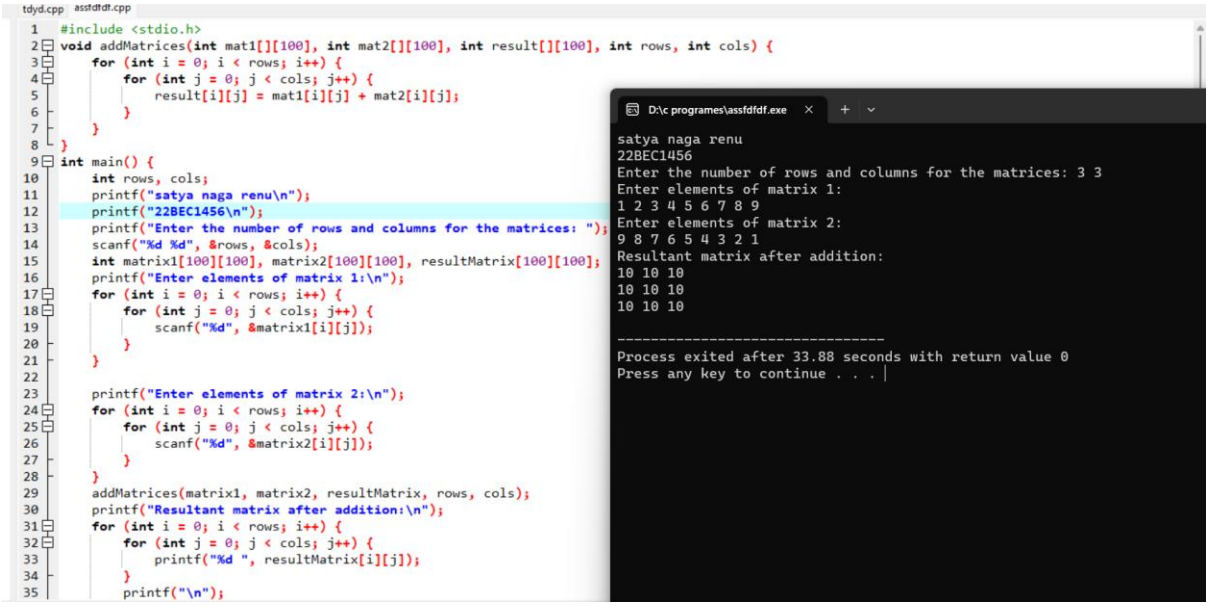
Q4) Write a C program to add two matrices by passing the two matrices to a function.

CODE:

```
#include <stdio.h>

void addMatrices(int mat1[][100], int mat2[][100], int result[][100], int rows, int cols) {
   for (int i = 0; i < rows; i++) {
      for (int j = 0; j < cols; j++) {
         result[i][j] = mat1[i][j] + mat2[i][j];
      }
   }
}
int main() {
   int rows, cols;
   printf("satya naga renu\n");
   printf("22BEC1456\n");
   printf("Enter the number of rows and columns for the matrices: ");
   scanf("%d %d", &rows, &cols);
         int matrix1[100][100], matrix2[100][100], resultMatrix[100][100];
         printf("Enter elements of matrix 1:\n");
   for (int i = 0; i < rows; i++) {
      for (int j = 0; j < cols; j++) {
         scanf("%d", &matrix1[i][j]);
      }
   }

   printf("Enter elements of matrix 2:\n");
```

```
    for (int i = 0; i < rows; i++) {
        for (int j = 0; j < cols; j++) {
            scanf("%d", &matrix2[i][j]);
        }
    }
    addMatrices(matrix1, matrix2, resultMatrix, rows, cols);
    printf("Resultant matrix after addition:\n");
    for (int i = 0; i < rows; i++) {
        for (int j = 0; j < cols; j++) {
            printf("%d ", resultMatrix[i][j]);
        }
        printf("\n");
    }

    return 0;
}
```

OUTPUT:



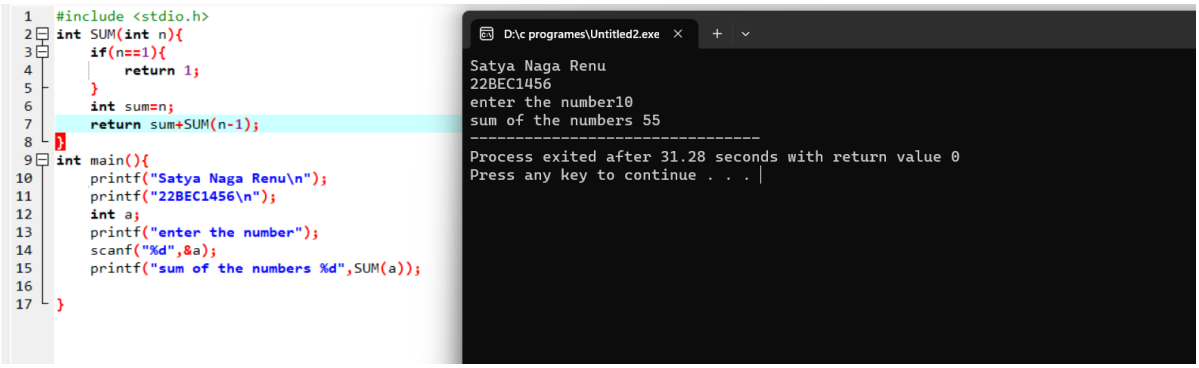
Date:19-08-2023

Q1) Write a C program using recursive functions to find the sum of numbers from 1 to n.

CODE:

```
#include <stdio.h>
int SUM(int n){
        if(n==1){
                return 1;
        }
        int sum=n;
        return sum+SUM(n-1);
}
int main(){
        printf("Satya Naga Renu\n");
        printf("22BEC1456\n");
        int a;
        printf("enter the number");
        scanf("%d",&a);
        printf("sum of the numbers %d",SUM(a));

}
```

OUTPUT:



```c
#include <stdio.h>
int SUM(int n){
    if(n==1){
        return 1;
    }
    int sum=n;
    return sum+SUM(n-1);
}
int main(){
    printf("Satya Naga Renu\n");
    printf("22BEC1456\n");
    int a;
    printf("enter the number");
    scanf("%d",&a);
    printf("sum of the numbers %d",SUM(a));

}
```

```
D:\c programes\Untitled2.exe
Satya Naga Renu
22BEC1456
enter the number10
sum of the numbers 55
--------------------------------
Process exited after 31.28 seconds with return value 0
Press any key to continue . . .
```

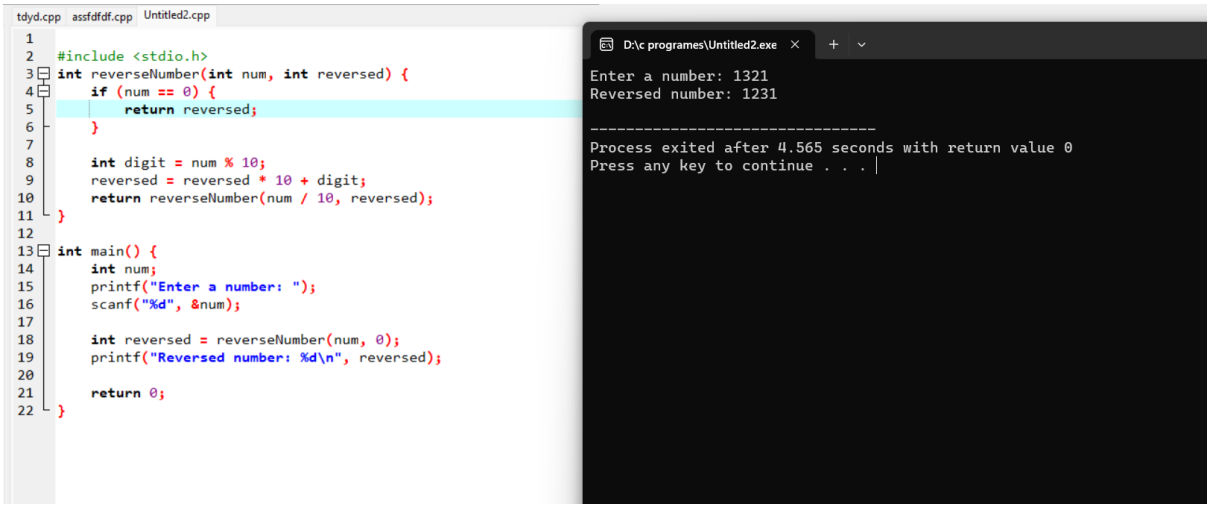
2. Write a C program to reverse a number using recursive function.

CODE:

```c
#include <stdio.h>
int reverseNumber(int num, int reversed) {
    if (num == 0) {
        return reversed;
    }

    int digit = num % 10;
    reversed = reversed * 10 + digit;
    return reverseNumber(num / 10, reversed);
}

int main() {
    int num;
    printf("Enter a number: ");
    scanf("%d", &num);

    int reversed = reverseNumber(num, 0);
    printf("Reversed number: %d\n", reversed);
```

```
    return 0;
}
```

OUTPUT:



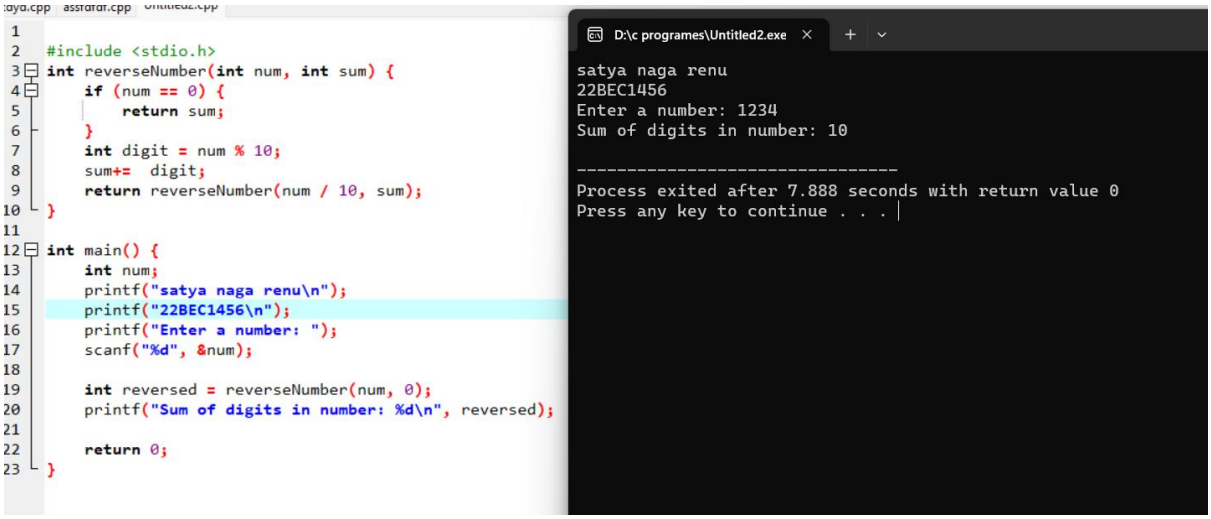
3. Write a C program to find the sum of the digits of a number using recursive function.

CODE:

```
#include <stdio.h>
int reverseNumber(int num, int sum) {
    if (num == 0) {
        return sum;
    }
    int digit = num % 10;
    sum+=  digit;
    return reverseNumber(num / 10, sum);
}

int main() {
    int num;
    printf("satya naga renu\n");
```

```
    printf("22BEC1456\n");
    printf("Enter a number: ");
    scanf("%d", &num);

    int reversed = reverseNumber(num, 0);
    printf("Sum of digits in number: %d\n", reversed);

    return 0;
}
```

OUTPUT:



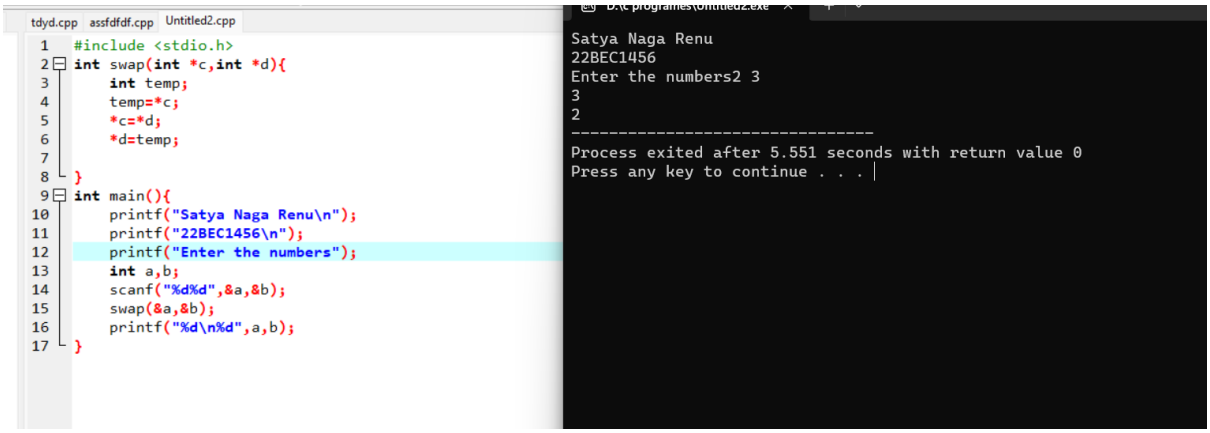
4. Write a C program to swap two numbers using pass by reference.

CODE:

```
#include <stdio.h>
int swap(int *c,int *d){
        int temp;
        temp=*c;
        *c=*d;
        *d=temp;
```

```
}
int main(){
        printf("Satya Naga Renu\n");
        printf("22BEC1456\n");
        printf("Enter the numbers");
        int a,b;
        scanf("%d%d",&a,&b);
        swap(&a,&b);
        printf("%d\n%d",a,b);
}
```

OUTPUT:



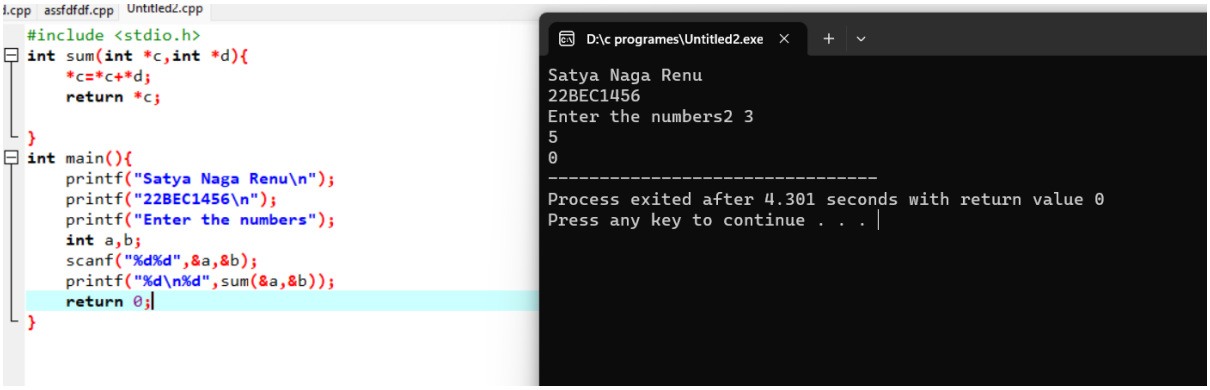
5. Write a C program to add two numbers using pointers.

CODE: #include <stdio.h>

```
int sum(int *c,int *d){
        *c=*c+*d;
        return *c;

}
```

```
int main(){
        printf("Satya Naga Renu\n");
        printf("22BEC1456\n");
        printf("Enter the numbers");
        int a,b;
        scanf("%d%d",&a,&b);
        printf("%d\n%d",sum(&a,&b));
        return 0;
}
```

OUTPUT:



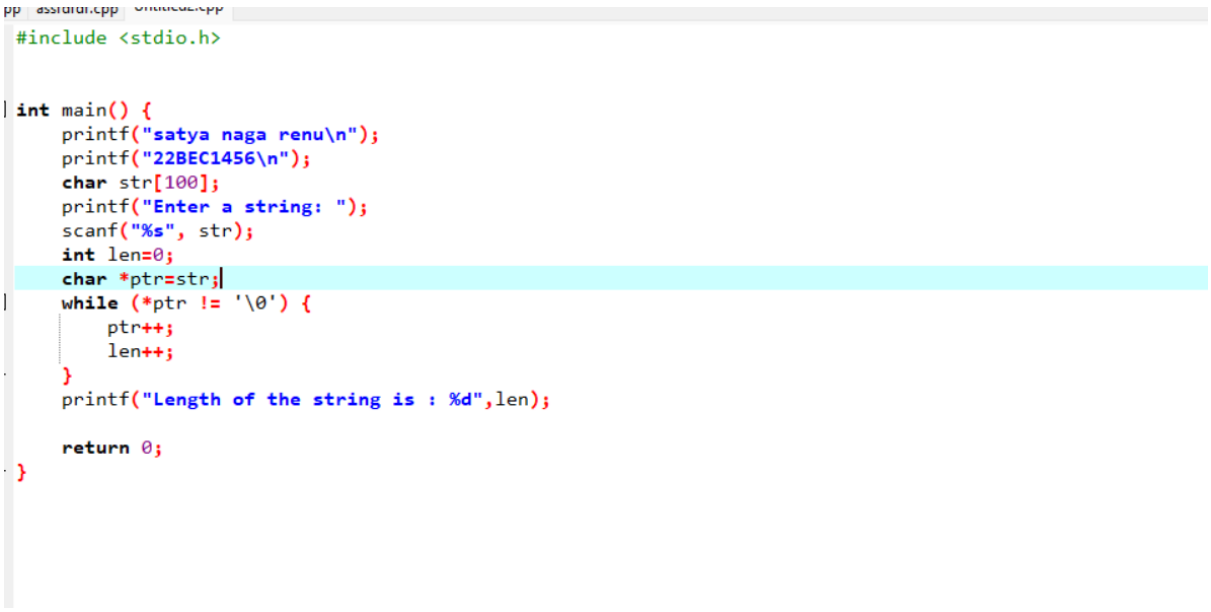
6. Write a C program to find the length of the string and print the string using pointers.

CODE:

```
#include <stdio.h>
int main() {
        printf("satya naga renu\n");
    printf("22BEC1456\n");
    char str[100];
    printf("Enter a string: ");
    scanf("%s", str);
```

```
        int len=0;
    char *ptr=str;
    while (*ptr != '\0') {
        ptr++;
        len++;
    }
    printf("Length of the string is : %d",len);


    return 0;
}
```

OUTPUT:



```c
#include <stdio.h>


int main() {
    printf("satya naga renu\n");
    printf("22BEC1456\n");
    char str[100];
    printf("Enter a string: ");
    scanf("%s", str);
    int len=0;
    char *ptr=str;
    while (*ptr != '\0') {
        ptr++;
        len++;
    }
    printf("Length of the string is : %d",len);

    return 0;
}
```

Date: 24-08.2023

1.Write a C program to calculate of the sum of squares and sum of cubes of first n natural numbers. Get n as input from the user. Define two functions to compute the sum of squares and

sum of cubes. Use function pointers to call the function.

CODE:

```
#include<stdio.h>
int sumsquare(int n){
	int sum1,i;
	for(i=1;i<=n;i++){
		sum1+=i*i;

	}
	return sum1;
}
int cube(int n){
	int sum2,j;
	for(j=1;j<=n;j++){
		sum2+=j*j*j;
	}
	return sum2;
}
int main(){
	int k;
	scanf("%d",&k);
	int(*ptr1)(int);
	ptr1=sumsquare;
	int(*ptr2)(int);
	ptr2=cube;
	printf("%d\n",(*ptr1)(k));
	printf("%d",(*ptr2)(k));
```

}

OUTPUT:

```c
#include<stdio.h>
int sumsquare(int n){
    int sum1,i;
    for(i=1;i<=n;i++){
        sum1+=i*i;

    }
    return sum1;
}
int cube(int n){
    int sum2,j;
    for(j=1;j<=n;j++){
        sum2+=j*j*j;
    }
    return sum2;
}
int main(){
    int k;
    scanf("%d",&k);
    int(*ptr1)(int);
    ptr1=sumsquare;
    int(*ptr2)(int);
    ptr2=cube;
    printf("%d\n",(*ptr1)(k));
    printf("%d",(*ptr2)(k));


}
```