CSA0672 SLOT D –DAA

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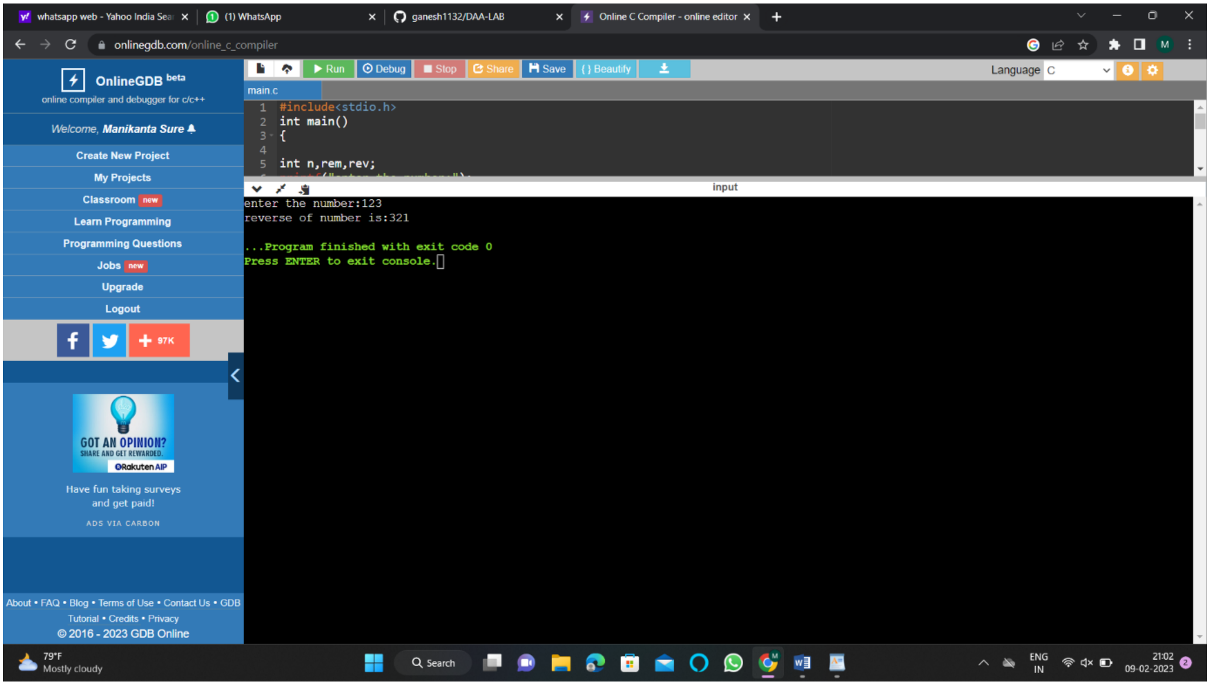
DAY 1[6-15]

Q.7 Write a program to generate all the reverse of a prime should be prime

program

```
#include<stdio.h>
int main()
{

int n,rem,rev;
printf("enter the number:");
scanf("%d",&n);
while(n!=0)
{
 rem=n%10;
 rev=rev*10+rem;
 n=n/10;
 }
 printf("reverse of number is:%d",rev);
 return 0;
```

}



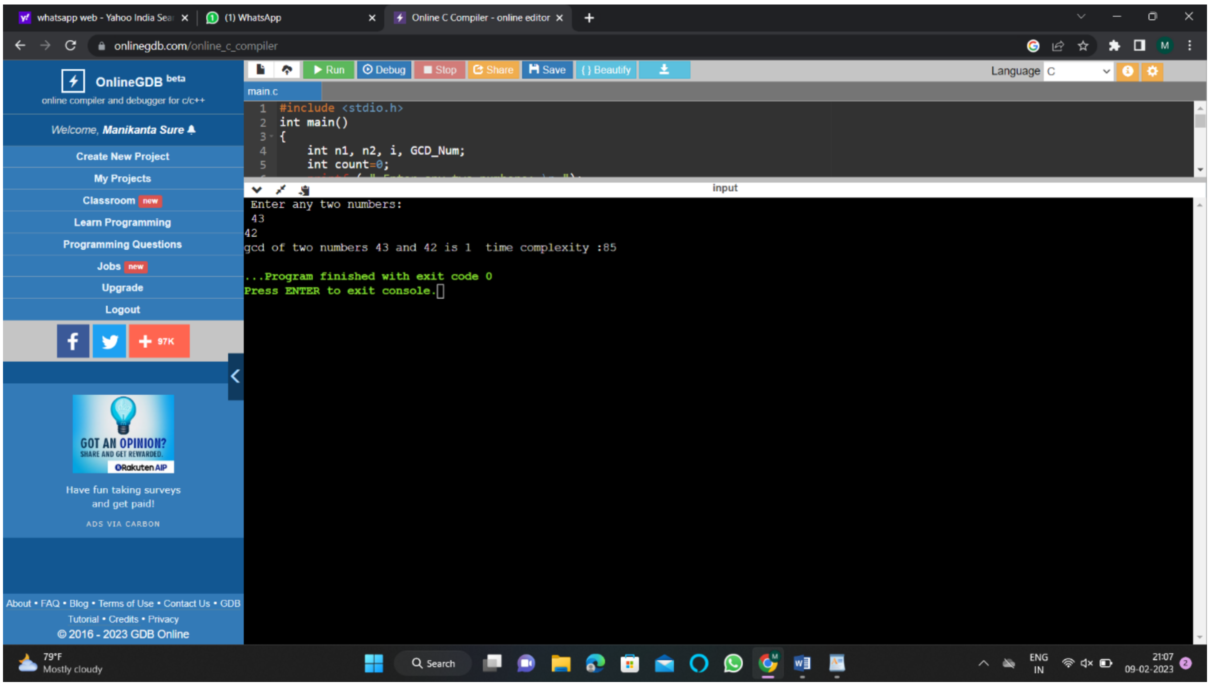
```
#include<stdio.h>
int main()
{

int n,rem,rev;
```

```
enter the number:123
reverse of number is:321

...Program finished with exit code 0
Press ENTER to exit console.
```

Q.8 Compute the program to find the GCD of two numbers. And also find the finf of time Recursion

Program

```
#include <stdio.h>
int main()
{
    int n1, n2, i, GCD_Num;
    int count=0;
    printf ( " Enter any two numbers: \n ");
    scanf ( "%d %d", &n1, &n2);

    for( i = 1; i <= n1 && i <= n2; ++i)
    {
        count++;
        if (n1 % i ==0 && n2 % i == 0)
          GCD_Num = i;
          count++;
        }
              count++;

        printf ("gcd of two numbers %d and %d is %d  ", n1, n2, GCD_Num);
        printf("time complexity :%d ",count);
        return 0;
}
```



```
#include <stdio.h>
int main()
{
    int n1, n2, i, GCD_Num;
    int count=0;
```

```
 Enter any two numbers:
 43
42
gcd of two numbers 43 and 42 is 1  time complexity :85

...Program finished with exit code 0
Press ENTER to exit console.
```

Q.9 Generate a program for Pascal triangle.

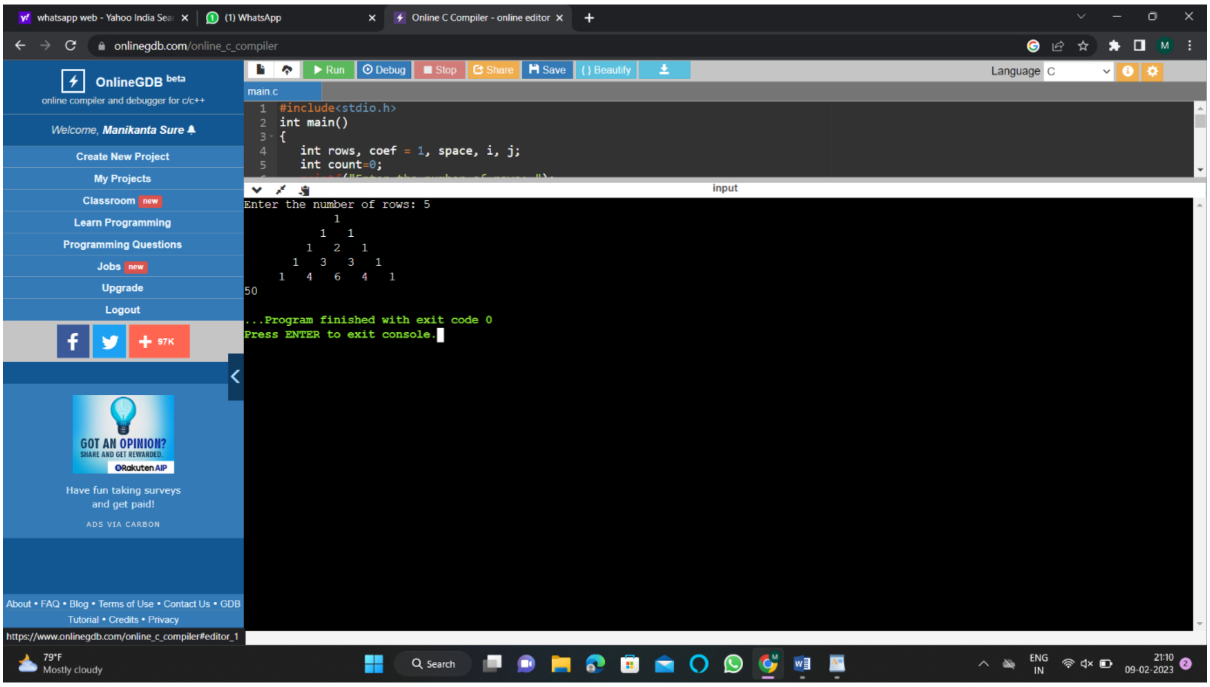
Estimate the time complexity for the row=5

```
                    1
               1         1
          1         2         1
     1         3         3         1
1         4         6         4         1
```

Program

```
#include<stdio.h>
int main()
{
   int rows, coef = 1, space, i, j;
   int count=0;
   printf("Enter the number of rows: ");
   scanf("%d", &rows);
   for (i = 0; i<rows; i++)
   {
           count++;
      for (space = 1; space <= rows - i; space++)
         printf("  ");
         count++;
      for (j = 0; j <= i; j++)
           {
                   count++;
        if(j == 0 || i == 0){
            coef = 1;
            count++;
        }

        else
         {
            coef = coef * (i - j + 1) / j;
         }
```

```
            count++;
          printf("%4d", coef);
        }
        printf("\n");
        count++;
    }
    printf("%d",count);
    return 0;
}
```



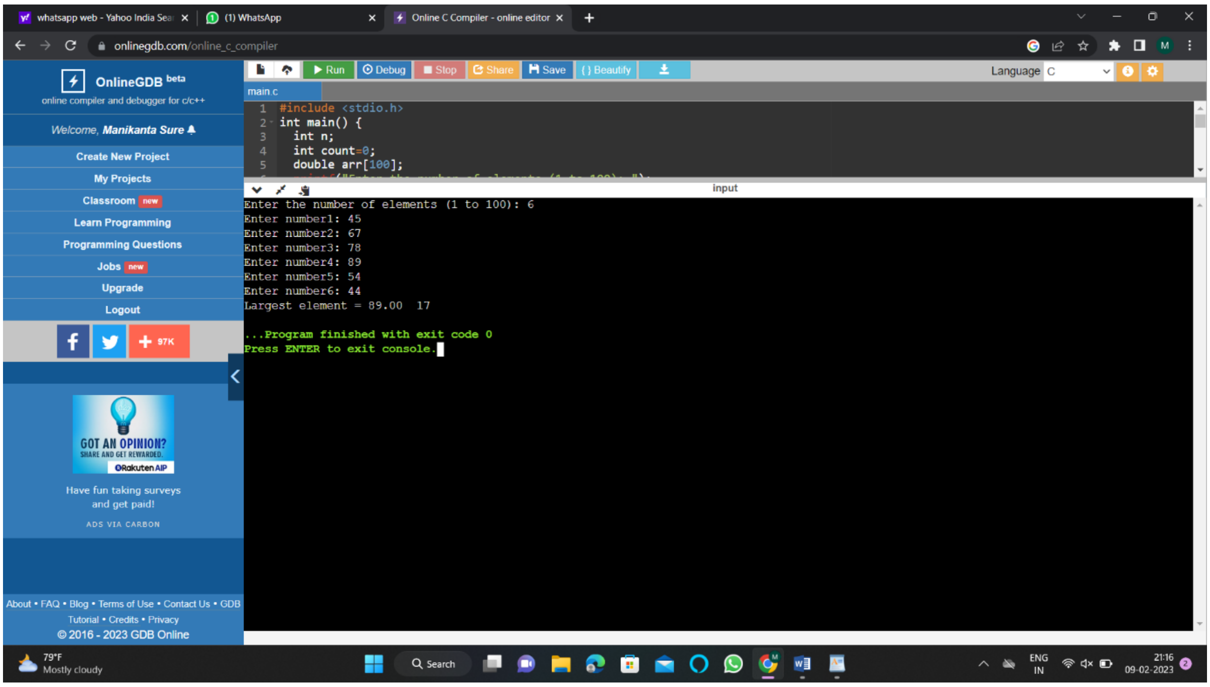
```
#include<stdio.h>
int main()
{
   int rows, coef = 1, space, i, j;
   int count=0;
```

```
Enter the number of rows: 5
             1
          1     1
       1     2     1
    1     3     3     1
 1     4     6     4     1
50

...Program finished with exit code 0
Press ENTER to exit console.
```

Q.10 Write a program to find the largest element value in an array. Estimate the time complexity and no of comparison for the given set of values.

Program

```
#include <stdio.h>

int main() {
  int n;
  int count=0;
  double arr[100];
  printf("Enter the number of elements (1 to 100): ");
  scanf("%d", &n);
  count++;
  for (int i = 0; i < n; ++i) {
        count++;
    printf("Enter number%d: ", i + 1);
    scanf("%lf", &arr[i]);
  }
  for (int i = 1; i < n; ++i) {
        count++;
    if (arr[0] < arr[i]) {
      arr[0] = arr[i];
    }
    count++;
  }

  printf("Largest element = %.2lf  ", arr[0]);
  printf("%d",count);
  return 0;
}
```



```
#include <stdio.h>
int main() {
  int n;
  int count=0;
  double arr[100];
```

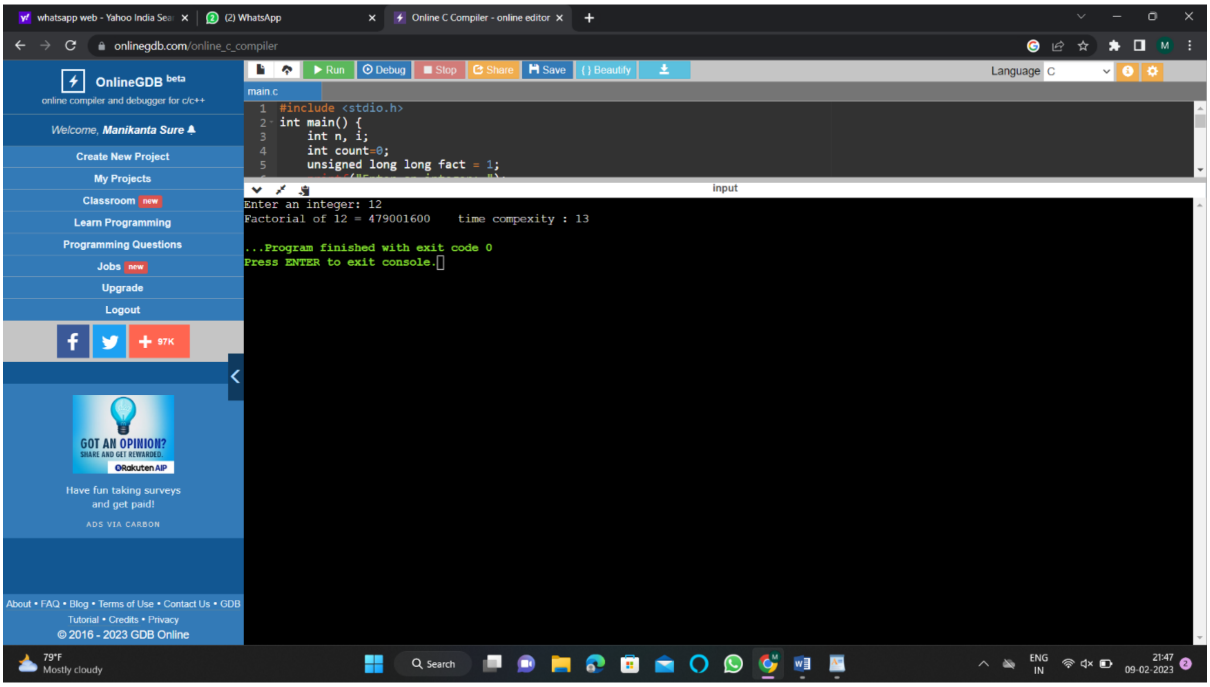
```
Enter the number of elements (1 to 100): 6
Enter number1: 45
Enter number2: 67
Enter number3: 78
Enter number4: 89
Enter number5: 54
Enter number6: 44
Largest element = 89.00  17

...Program finished with exit code 0
Press ENTER to exit console.
```

Q.11 Write a program to find the factorial (fact)of a number and to estimate time complexity.

Condition such as i. n=0, return 1 otherwise fact (n-1) * n

Program :

```
#include <stdio.h>
int main() {
    int n, i;
    int count=0;
    unsigned long long fact = 1;
    printf("Enter an integer: ");
    scanf("%d", &n);
    count++;
    if (n < 0)
        printf("Error! Factorial of a negative number doesn't exist.");
    else {
        for (i = 1; i <= n; ++i) {
            fact *= i;

            count++;

        }

        printf("Factorial of %d = %llu   ", n, fact);

        printf(" time compexity : %d ",count);

    }


    return 0;

}
```



```
#include <stdio.h>
int main() {
    int n, i;
    int count=0;
    unsigned long long fact = 1;
```

```
Enter an integer: 12
Factorial of 12 = 479001600    time compexity : 13

...Program finished with exit code 0
Press ENTER to exit console.
```

Q.12 Write a program to print the first n perfect numbers. (Hint Perfect number means a positive integer that is equal to the sum of its proper divisors)

Sample Input:

N = 3

Sample Output:

First 3 perfect numbers are: 6 , 28 , 496

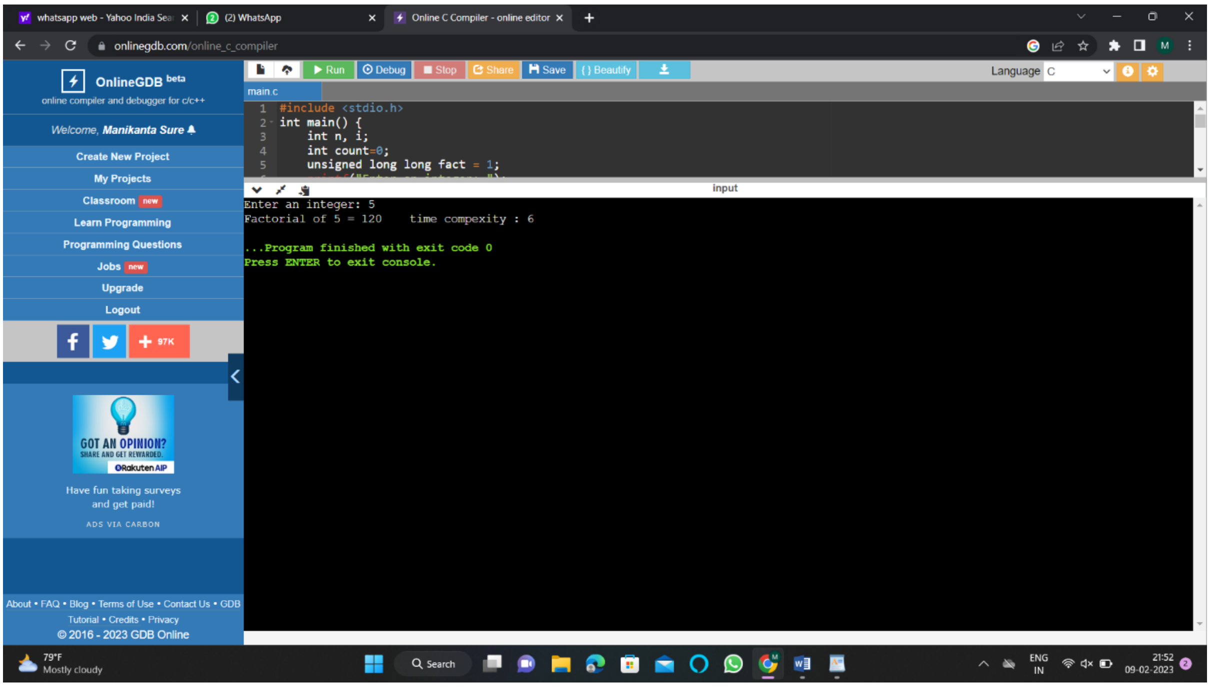
Test Cases:

1. N = 0
2. N = 5
3. N = -2
4. N = -5

N = 0.2

PROGRAM

```
#include <stdio.h>
int main() {
    int n, i;
    int count=0;
    unsigned long long fact = 1;
    printf("Enter an integer: ");
    scanf("%d", &n);
    count++;
    if (n < 0)
        printf("Error! Factorial of a negative number doesn't exist.");
    else {
        for (i = 1; i <= n; ++i) {
            fact *= i;
            count++;
        }
        printf("Factorial of %d = %llu   ", n, fact);
        printf(" time compexity : %d ",count);
    }

    return 0;
}
```



main.c

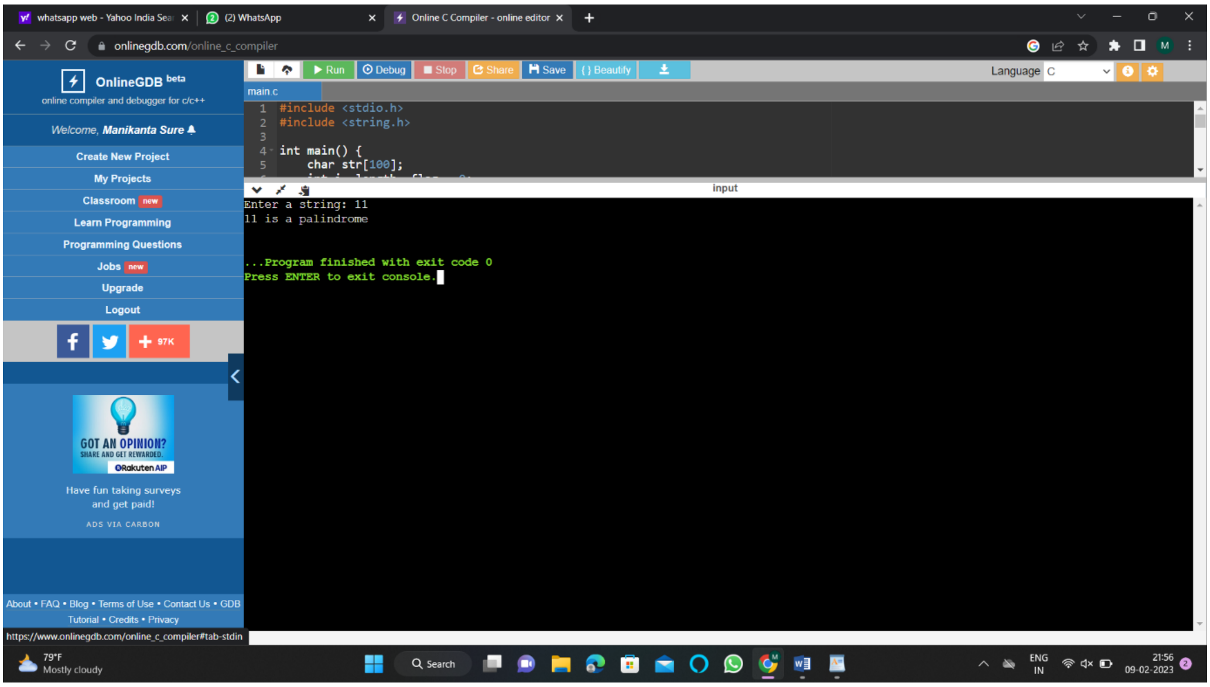
```
#include <stdio.h>
int main() {
    int n, i;
    int count=0;
    unsigned long long fact = 1;
```

```
Enter an integer: 5
Factorial of 5 = 120    time compexity : 6

...Program finished with exit code 0
Press ENTER to exit console.
```

Q.13 Write a C program to check whether is a given input is a palindrome

PROGRAM

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

int main() {
    char str[100];
    int i, length, flag = 0;

    printf("Enter a string: ");
    scanf("%s", str);
    length = strlen(str);

    for(i=0; i < length ; i++){
        if(str[i] != str[length-i-1]){
            flag = 1;
            break;
        }
    }

    if (flag)
           {
        printf("%s is not a palindrome and reverse\n", str);
    }
          else
          {
        printf("%s is a palindrome\n", str);
    }

    return 0;
}
```



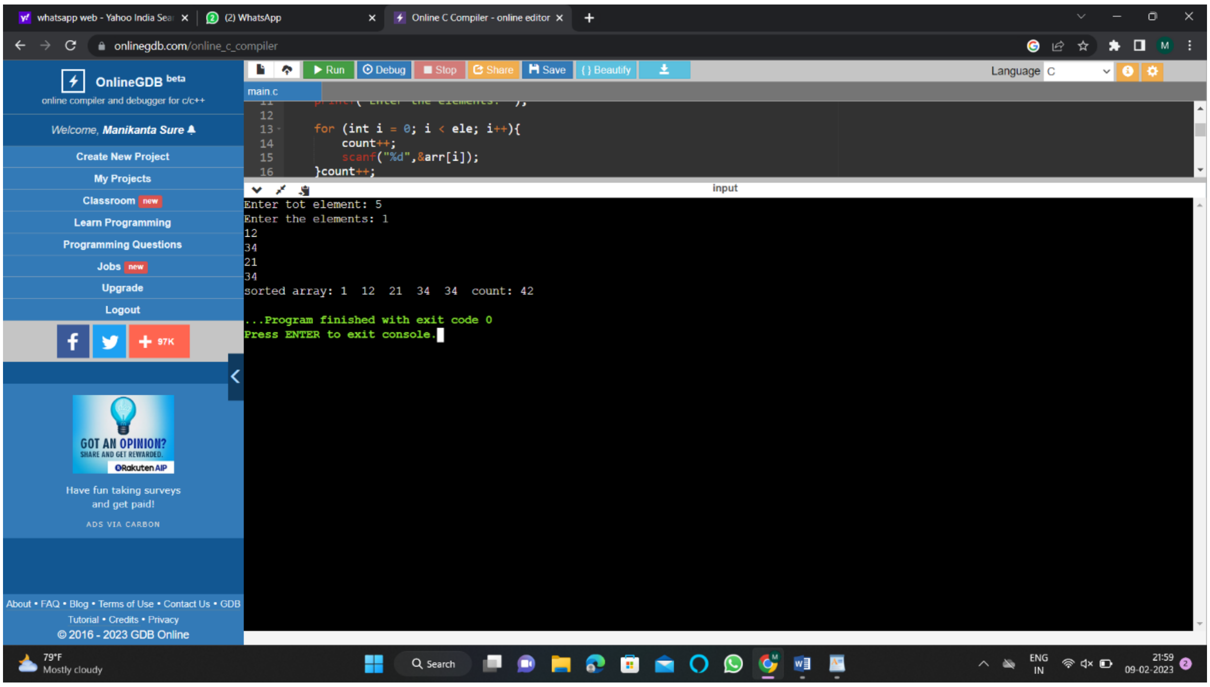
```
#include <stdio.h>
#include <string.h>

int main() {
    char str[100];
```

```
Enter a string: 11
11 is a palindrome


...Program finished with exit code 0
Press ENTER to exit console.
```

Q.14 Write a program to perform Bubble sort and estimate time Complexity

PROGRAM :

```
#include<stdio.h>


int main()
{
    int ele,count=0;


    printf("Enter tot element: ");
scanf("%d",&ele);


    int arr[ele];
    printf("Enter the elements: ");


    for (int i = 0; i < ele; i++){
        count++;
        scanf("%d",&arr[i]);
    }count++;


    for (int i = 0; i < ele; i++)
{
count++;
        for (int j =i+1; j < ele; j++)
        {
count++;
         if (arr[i]>arr[j])
         {
            count++;
            int temp=arr[i];
            count++;
            arr[i]=arr[j];
            count++;
            arr[j]=temp;
            count++;
         }
        }count++;

    }count++;

    printf("sorted array: ");
    for (int i = 0; i < ele; i++)
    {count++;
        count++;
        printf("%d  ",arr[i]);
    }count++;
    printf("count: %d",count);
}
```



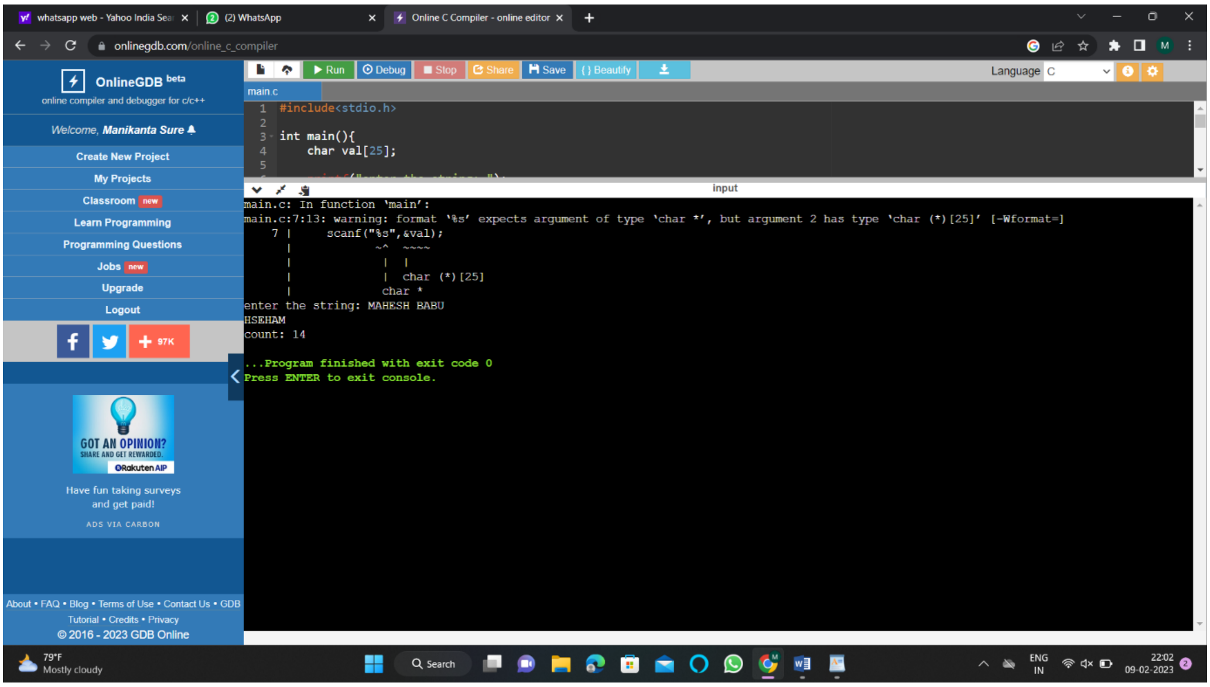
```
    printf("Enter the elements: ");

    for (int i = 0; i < ele; i++){
        count++;
        scanf("%d",&arr[i]);
    }count++;
```

```
Enter tot element: 5
Enter the elements: 1
12
34
21
34
sorted array: 1  12  21  34  34  count: 42

...Program finished with exit code 0
Press ENTER to exit console.
```

Q.15 Write a program to print the reverse of a string. And estimate the time complexity

PROGRAM

```
#include<stdio.h>


int main(){
    char val[25];


    printf("enter the string: ");
    scanf("%s",&val);


    int count=0,c=0;


    while (val[count]!='\0'){
        count++;
        c++;
    }c++;



    for(int i=count-1;i>=0;i--){
        c++;
        printf("%c",val[i]);
    }c++;
    printf("\ncount: %d",c);
}
```



```
#include<stdio.h>

int main(){
    char val[25];
```

```
main.c: In function 'main':
main.c:7:13: warning: format '%s' expects argument of type 'char *', but argument 2 has type 'char (*)[25]' [-Wformat=]
    7 |     scanf("%s",&val);
      |            ~^  ~~~~
      |             |  |
      |             |  char (*)[25]
      |            char *
enter the string: MAHESH BABU
HSEHAM
count: 14

...Program finished with exit code 0
Press ENTER to exit console.
```