

## QUESTION NO #02

### (Pointers)

#### QUESTION NO #01

Enter number of value from user to be enter and then find the mean using the pointers.

#### Code:

```
#include <iostream>

using namespace std;

int main(){

    int size = 0;

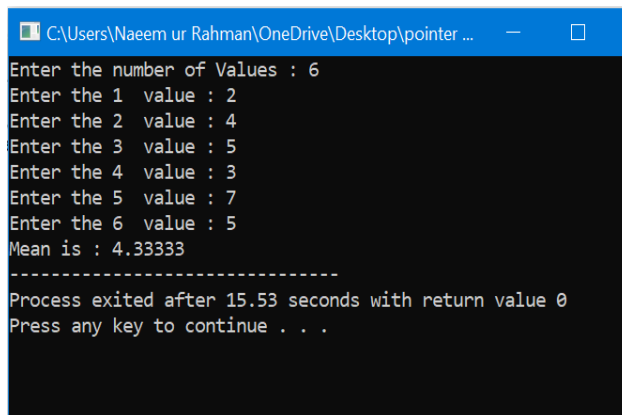
    cout << "Enter the number of Values : ";
    cin >> size ;

    float arr[size],float sum=0, * ptr = &arr[0];

    for (int a=0;a<size;a++){cout << "Enter the "<<a+1<<" value : ";

        cin >> *(a+ptr);sum+= *(a+ptr);}

    cout << "Mean is : "<<sum/size;}
```



```
C:\Users\Naeem ur Rahman\OneDrive\Desktop\pointer ...
Enter the number of Values : 6
Enter the 1 value : 2
Enter the 2 value : 4
Enter the 3 value : 5
Enter the 4 value : 3
Enter the 5 value : 7
Enter the 6 value : 5
Mean is : 4.33333
-----
Process exited after 15.53 seconds with return value 0
Press any key to continue . . .
```

Write a program to print a number which is entered from keyboard using pointer.

#### Code:

```
#include <iostream>

using namespace std;

int main(){

    cout << "Enter a Number : ";

    int n;

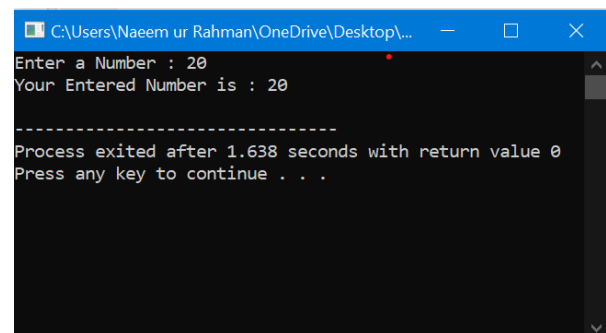
    cin >> n ;

    int* ptr;

    ptr = &n;

    cout << "Your Entered Number is : "<<*ptr<<endl;

}
```



```
C:\Users\Naeem ur Rahman\OneDrive\Desktop\...
Enter a Number : 20
Your Entered Number is : 20

-----
Process exited after 1.638 seconds with return value 0
Press any key to continue . . .
```

### QUESTION NO #03

Enter array values and get a value form a user and check in array weather it is present or not or use pointer in program.

#### Code:

```
#include <iostream>

using namespace std;

int main(){

    int s;

    cout << "Enter the Size of
Array : ";cin>>s;

    int arr[s];

    int* ptr;

    ptr = &arr[0];

    for(int a=0;a<s;a++){

        cout << "Enter
"<<a+1<<" value : ";

        cin>>*(ptr+a);

    }

    int n,flag=0;

    cout << "Enter a Number for
search : ";

    cin >>n;
```

```
for(int a=0;a<s;a++){

    if (*(ptr+a)==n){

        cout <<*(ptr+a)<<
" is at position : "<<a+1<<endl;

        flag++;

    }

}

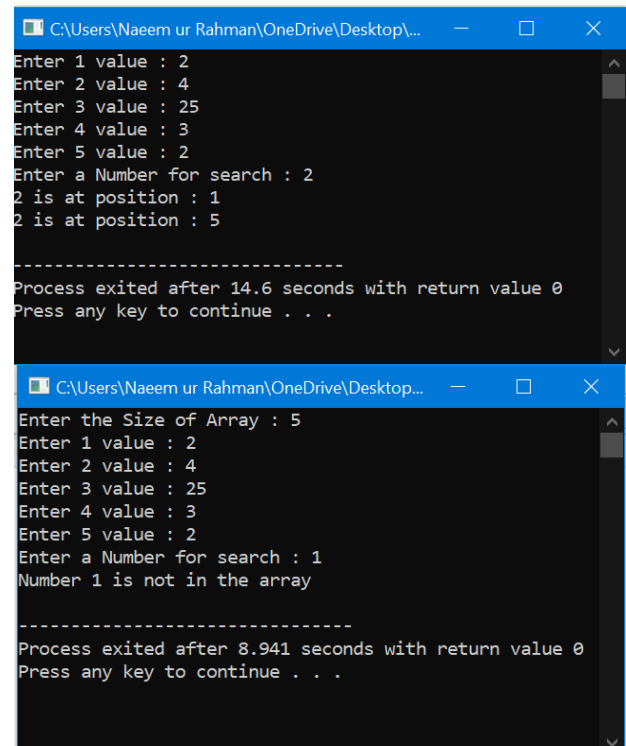
if (flag ==0){

    cout << "Number
"<<n<<" is not in the array "<<endl;

}

return 0;

}
```



```
C:\Users\Naeem ur Rahman\OneDrive\Desktop\...
Enter 1 value : 2
Enter 2 value : 4
Enter 3 value : 25
Enter 4 value : 3
Enter 5 value : 2
Enter a Number for search : 2
2 is at position : 1
2 is at position : 5
-----
Process exited after 14.6 seconds with return value 0
Press any key to continue . . .

C:\Users\Naeem ur Rahman\OneDrive\Desktop\...
Enter the Size of Array : 5
Enter 1 value : 2
Enter 2 value : 4
Enter 3 value : 25
Enter 4 value : 3
Enter 5 value : 2
Enter a Number for search : 1
Number 1 is not in the array
-----
Process exited after 8.941 seconds with return value 0
Press any key to continue . . .
```

### QUESTION NO #04

Write a function which will take pointer and display the number on screen. Take number from user and print it on screen using that function.

#### Code:

```
#include <iostream>

using namespace std;

void print(int* );

int main(){
    int x;

    cout << "Enter a Number : ";

    cin>>x;

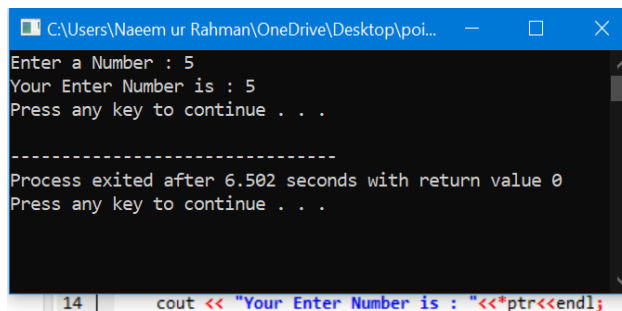
    print(&x);

    return 0;}

void print (int *ptr){

    cout << "Your Enter Number is
: "<<*ptr<<endl;

}
```



### QUESTION NO #05

Write a program in C++ to add two numbers using pointers.

#### Code:

```
#include <iostream>

using namespace std;

int main(){

    int x,y,*xptr,*yptr;

    xptr=&x; yptr=&y;

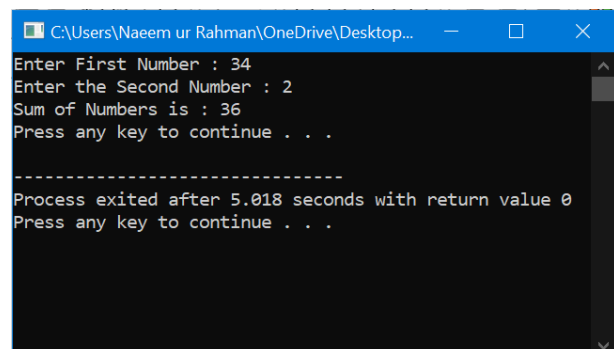
    cout << "Enter First Number :
"; cin>>*xptr;

    cout << "Enter the Second
Number : "; cin>>*yptr;

    cout << "Sum of Numbers is :
"<<*xptr+*yptr<<endl;

    system("pause");

    return 0;}
```



### QUESTION NO #06

Write a program that convert inches to centimeters using the user made function and pass value by pointer.

#### Code:

```
#include <iostream>

using namespace std;

int main(){

    void centimeter(double*);

    double n;

    cout << "Enter the Value in inches : ";

    cin>>n;

    centimeter(&n);

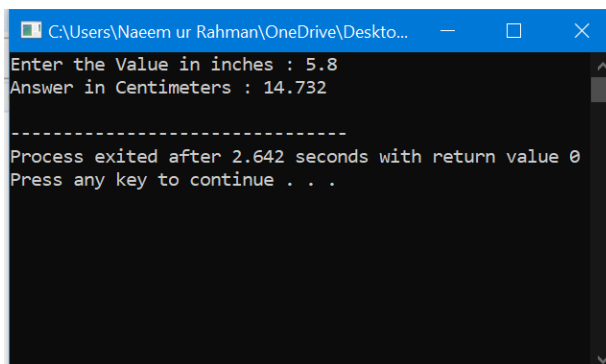
    cout << "Answer in Centimeters : "<<n<<endl;

    return 0;

}

void centimeter(double* ptr){

    (*ptr)*= 2.54 ;}
```



```
C:\Users\Naeem ur Rahman\OneDrive\Desktop... - _ □ ×
Enter the Value in inches : 5.8
Answer in Centimeters : 14.732
-----
Process exited after 2.642 seconds with return value 0
Press any key to continue . . .
```

### QUESTION NO #07

Enter value in array and print array both by the user define function and pass array by pointer to the function.

#### Code:

```
#include <iostream>

using namespace std;

void input(int*,int &);

void print(int*,int &);

int main(){

    int s;

    cout << "Enter the Size of Array : ";

    cin>>s;

    int arr[s];

    input(arr,s);

    print(arr,s);

    return 0;

}

void input(int* ptr,int&s){

    for(int a=0;a<s;a++){
```

```

        cout << "Enter "<<
a+1<< " Value : ";cin>>*(ptr+a);

    }

}

void print(int* ptr,int&s){

    cout << endl<<"----Array----
"<<endl;

    for(int a=0;a<s;a++){

        cout <<*(ptr+a)<<" ";

    }

}

```

```

C:\Users\Naeem ur Rahman\OneDrive\Desktop...
Enter the Size of Array : 5
Enter 1 Value : 2
Enter 2 Value : 5
Enter 3 Value : 1
Enter 4 Value : 3
Enter 5 Value : 4

----Array----
2 5 1 3 4

Process exited after 7.752 seconds with return value 0
Press any key to continue . . .

```

**QUESTION NO #08**

Swap the two numbers by using user define swap function and pass variables through pointers.

**Code:**

```

#include <iostream>

using namespace std;

int main(){

    void swap(int*,int*);int x, y;

    cout << "Enter 1st Number :
";cin>>x;

    cout << "Enter 2nd Number :
";cin>>y;

    swap(&x,&y);

    cout << "After swap !"<<endl;

    cout << "Enter 1st Number :
"<<x<<endl;

    cout << "Enter 2nd Number :
"<<y<<endl;return 0;}

void swap(int* ptr1,int* ptr2){

int t = *ptr1;*ptr1 = *ptr2;*ptr2 = t; }

```

```

C:\Users\Naeem ur Rahman\OneDrive\Desktop...
Enter 1st Number : 3
Enter 2nd Number : 4
After swap !
Enter 1st Number : 4
Enter 2nd Number : 3

Process exited after 2.117 seconds with return value 0
Press any key to continue . . .

```

**QUESTION NO #09**

Write a program in C++ to print all the alphabets using a pointer

**Code:**

```
#include <iostream>

using namespace std;

int main(){

    int s=26;

    char arr[s];

    char* ptr;

    ptr = arr;

    for(int a=0;a<s;a++){

        *(ptr+a)=a+'A';

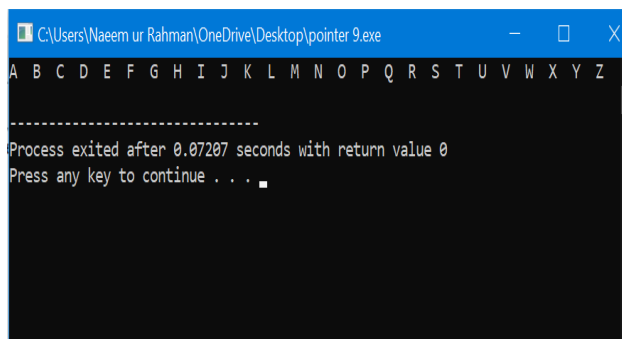
    }

    for(int a=0;a<s;a++){

        cout << *(ptr+a)<<" ";

    } cout << endl;

    return 0; }
```

**QUESTION NO #10**

Write a C++ program to find the max of an integral data set. The program will ask the user to input the number of data values in the set and each value. The program prints on screen a pointer that points towards max value.

**Code:**

```
#include<iostream>

using namespace std;

int main(){

    int s; cout <<"Enter Size :";cin >>s;

    cout <<"Enter "<<s<<" values in array "<<endl; int arr[s];

    for(int i=0;i<s;i++) {

        cin>>arr[i]; }

    int max = arr[0];

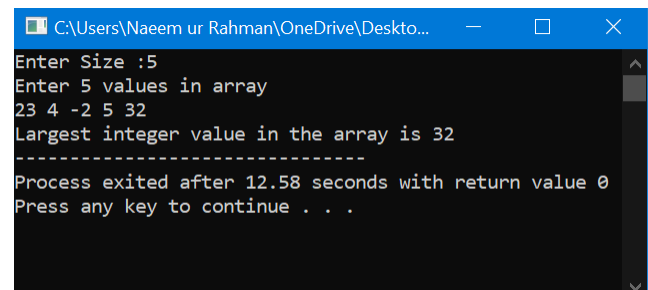
    for(int i=0;i < s;i++){

        if (arr[i]>max) max=arr[i]; }

    int *ptr = &max ;

    cout <<"Largest integer value in the array is "<<*ptr;

    return 0; }
```



**QUESTION NO #11**

A string used as a function argument. The function simply prints the string, by accessing each character in turn

**Code:**

```
#include <iostream>

using namespace std;

int main(){

    void display (char*);

    char st[] = "Winter is Coming
!";

    display(st);

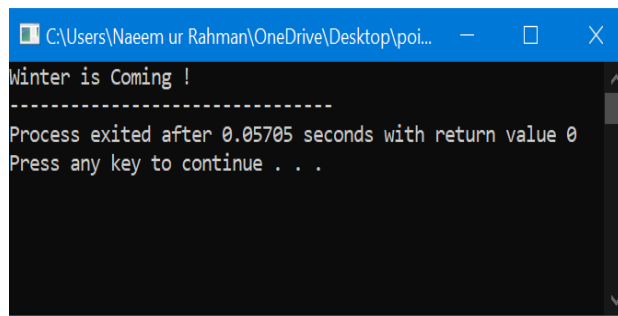
    return 0;

}

void display(char* ptr){

    while (*ptr){

        cout << *ptr++;    }    }
```

**QUESTION NO #12**

Enter a c-string and print through the user define function and pass by pointer reference.

**Code:**

```
#include <iostream>

using namespace std;

int main ()

{

    void str(char *);

    int s=200;

    char string[s];

    cout << "Enter the String : ";

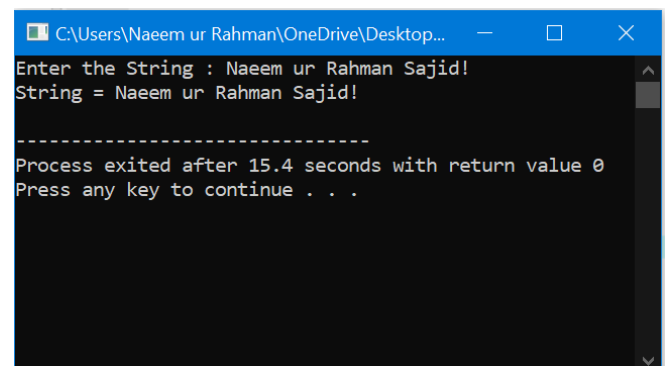
    cin.getline(string,s);

    str(string);

    return 0;}

void str(char* str1)

{cout << "String = "<<str1<<endl;}
```



### QUESTION NO #13

Write C++ program to find length of string using pointer.

#### Code:

```
#include <iostream>

using namespace std;

int main() {

    int s=100;

    char text[s];

    char * ptr = text;

    int count = 0;

    cout<<"Enter a string :
";cin.getline(text,s);

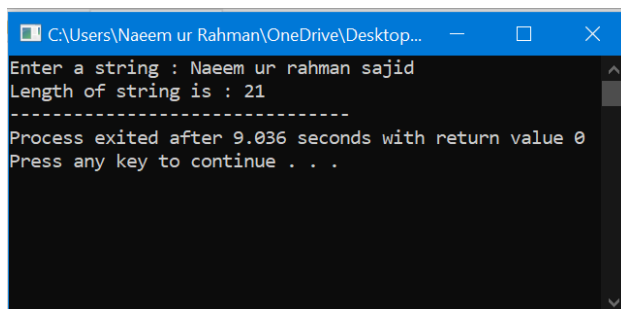
    while(*ptr) {

        count++; *ptr++;

    }

    cout<<"Length of string is :
"<<count;

    return 0;}
```

A screenshot of a Windows command prompt window. The title bar shows the file path 'C:\Users\Naeem ur Rahman\OneDrive\Desktop...'. The prompt displays the output of the program: 'Enter a string : Naeem ur rahman sajid', 'Length of string is : 21', followed by a dashed line separator and 'Process exited after 9.036 seconds with return value 0'. It ends with 'Press any key to continue . . .'.

```
C:\Users\Naeem ur Rahman\OneDrive\Desktop...
Enter a string : Naeem ur rahman sajid
Length of string is : 21
-----
Process exited after 9.036 seconds with return value 0
Press any key to continue . . .
```

### QUESTION NO #14

Write C++ program to copy one string to another string.

#### Code:

```
#include <iostream>

using namespace std;

int main() {

    int s = 200;

    char text1[s], text2[s];

    char* ptr1 = text1; char* ptr2 =
text2;

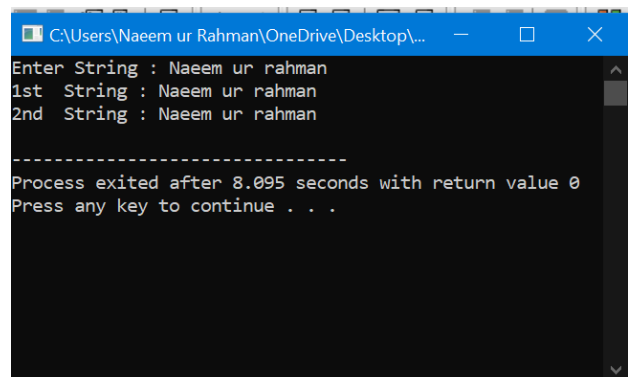
    cout<<"Enter String :
";cin.getline(text1,s);

    while(*ptr1){

        *(ptr2)++ = *(ptr1)++;}

    cout<<"1st String :
"<<text1<<endl;;

    cout<<"2nd String :
"<<text2<<endl; return 0;}
```

A screenshot of a Windows command prompt window. The title bar shows the file path 'C:\Users\Naeem ur Rahman\OneDrive\Desktop...'. The prompt displays the output of the program: 'Enter String : Naeem ur rahman', '1st String : Naeem ur rahman', '2nd String : Naeem ur rahman', followed by a dashed line separator and 'Process exited after 8.095 seconds with return value 0'. It ends with 'Press any key to continue . . .'.

```
C:\Users\Naeem ur Rahman\OneDrive\Desktop...
Enter String : Naeem ur rahman
1st String : Naeem ur rahman
2nd String : Naeem ur rahman
-----
Process exited after 8.095 seconds with return value 0
Press any key to continue . . .
```



**QUESTION NO #15**

Write C++ program to print the elements of the array in reverse order using a pointer

**Code:**

```
#include <iostream>

using namespace std;

int main(){

    int s; cout << "Enter the Size : ";cin>>s;

    int arr[s], * ptr = arr;

    cout<<"Enter "<<s<<" numbers separated by space ! "<<endl;

    for (int i=0;i<s;i++){

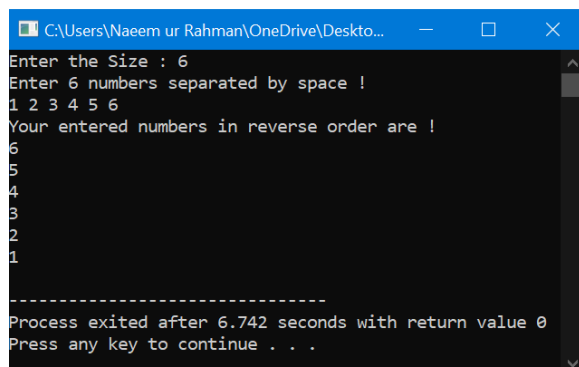
        cin >> *(ptr+i); }

    cout<<"Your entered numbers in reverse order are !"<<endl;

    for(int i=s-1;i>=0;i--)

        cout<<*(ptr+i)<<endl;}

    return 0;}
```

A screenshot of a Windows command prompt window. The title bar shows the path 'C:\Users\Naeem ur Rahman\OneDrive\Desktop...'. The prompt displays the following text: 'Enter the Size : 6', 'Enter 6 numbers separated by space !', '1 2 3 4 5 6', 'Your entered numbers in reverse order are !', and then the numbers '6', '5', '4', '3', '2', '1' printed on separate lines. At the bottom, it says 'Process exited after 6.742 seconds with return value 0' and 'Press any key to continue . . .'.

```
C:\Users\Naeem ur Rahman\OneDrive\Desktop...
Enter the Size : 6
Enter 6 numbers separated by space !
1 2 3 4 5 6
Your entered numbers in reverse order are !
6
5
4
3
2
1
-----
Process exited after 6.742 seconds with return value 0
Press any key to continue . . .
```

**QUESTION NO #16**

Write a C++ program to demonstrate example of structure pointer.

**Code:**

```
#include <iostream>

using namespace std;

struct item

{

    char Name[100];

    int qty;

    float price;

    float amount;

};

int main(){

    struct item i;

    struct item *ptr;

    ptr = &i;

    cout<<"Enter product name : ";

    cin.getline(ptr->Name,100);

    cout<<"Enter price : ";

    cin>>ptr->price;

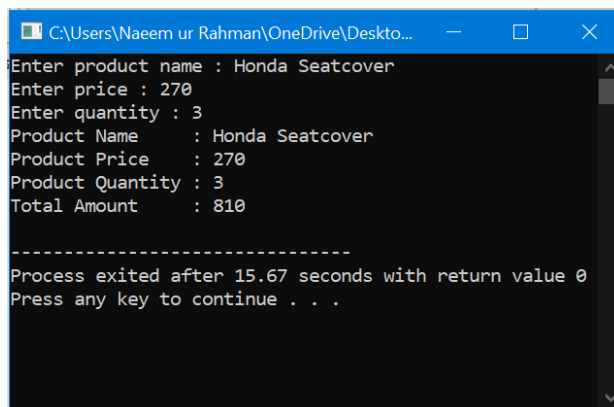
    cout<<"Enter quantity : ";

    cin>>ptr->qty;
```

**QUESTION NO #17**

```
ptr->amount = (float) ptr->qty * ptr->price;
```

```
    cout<<"Product Name    :  
"<<ptr->Name<<endl;  
  
    cout<<"Product Price   :  
"<<ptr->price<<endl;  
  
    cout<<"Product Quantity :  
"<<ptr->qty<<endl;  
  
    cout<<"Total Amount    :  
"<<ptr->amount<<endl;  
  
    return 0;  
}
```



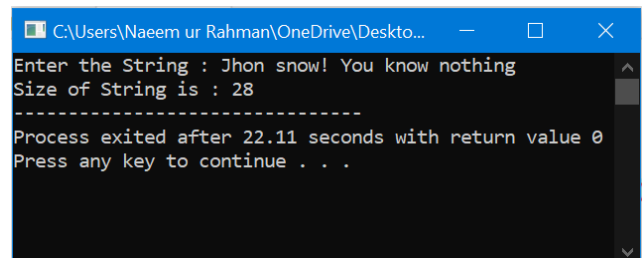
A screenshot of a Windows command prompt window showing the output of a C++ program. The user has entered 'Honda Seatcover' for the product name, '270' for the price, and '3' for the quantity. The program has calculated the total amount as 810. The output is as follows:

```
C:\Users\Naeem ur Rahman\OneDrive\Desкто...  
Enter product name : Honda Seatcover  
Enter price : 270  
Enter quantity : 3  
Product Name      : Honda Seatcover  
Product Price     : 270  
Product Quantity  : 3  
Total Amount      : 810  
  
-----  
Process exited after 15.67 seconds with return value 0  
Press any key to continue . . .
```

Print size of different types Using Pointer in C++.

**Code:**

```
#include <iostream>  
  
using namespace std;  
  
int main(){  
  
    int s=300;char str[s];  
  
    cout << "Enter the String :  
";cin.getline(str,s);  
  
    char* ptr;  
  
    ptr = str;  
  
    int size=sizeof(*ptr);  
  
    while(*ptr){  
        size+=sizeof(*ptr);ptr++;  
    }  
  
    cout << "Size of String is :  
"<<size;  
  
    return 0;  
}
```



A screenshot of a Windows command prompt window showing the output of a C++ program. The user has entered 'Jhon snow! You know nothing' for the string. The program has calculated the size of the string as 28. The output is as follows:

```
C:\Users\Naeem ur Rahman\OneDrive\Desкто...  
Enter the String : Jhon snow! You know nothing  
Size of String is : 28  
  
-----  
Process exited after 22.11 seconds with return value 0  
Press any key to continue . . .
```

### QUESTION NO #18

Simple Program for Increment and Decrement Integer Using Pointer in C++

#### Code:

```
#include <iostream>

using namespace std;

int main(){

    int a, *ptr=&a;

    cout << "Enter a Number : ";cin>>a;

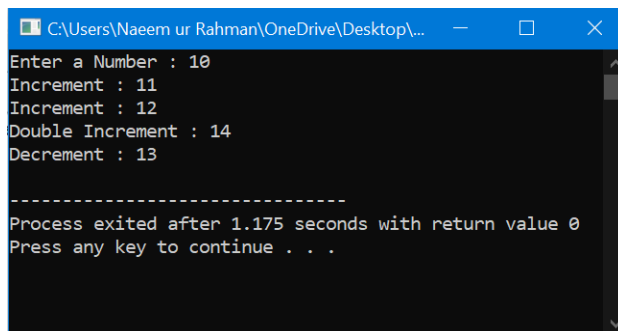
    cout << "Increment : ";
    cout << ++(*ptr)<<endl;

    cout << "Increment : ";
    cout << ++(*ptr)<<endl;

    cout << "Double Increment : ";
    cout << ++(*ptr)<<endl;

    cout << "Decrement : ";
    cout << --(*ptr)<<endl;

    return 0;}
```



```
C:\Users\Naeem ur Rahman\OneDrive\Desktop\...
Enter a Number : 10
Increment : 11
Increment : 12
Double Increment : 14
Decrement : 13

-----
Process exited after 1.175 seconds with return value 0
Press any key to continue . . .
```

### QUESTION NO #19

Simple Program for Count vowels String Using Pointer in C++

#### Code:

```
#include <iostream>

using namespace std;

int main(){

    int s=300,count=0,l=0;char
    str[s],*ptr=str;

    cout << "Enter a String : ";cin.getline(str,s);

    while(*ptr){

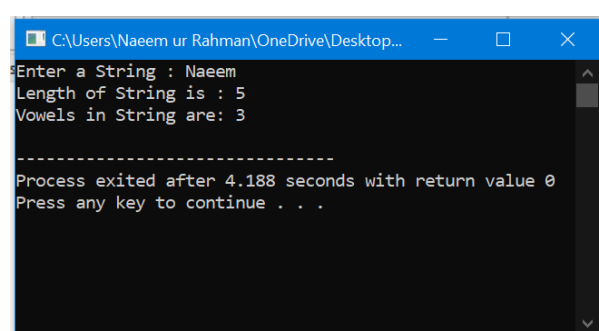
        if(*ptr == 'a' || *ptr == 'e'
        || *ptr == 'i' || *ptr == 'o' || *ptr == 'u'){

            count++;}

        l++;ptr++;}

    cout << "Length of String is : ";
    cout << l<<endl;

    cout << "Vowels in String are: ";
    cout << count<<endl;return 0;}
```



```
C:\Users\Naeem ur Rahman\OneDrive\Desktop\...
Enter a String : Naeem
Length of String is : 5
Vowels in String are: 3

-----
Process exited after 4.188 seconds with return value 0
Press any key to continue . . .
```

## QUESTION NO #20

Simple Example Program for Area Of Circle  
Using Pointer In C++

### Code:

```
#include <iostream>

using namespace std;

int main(){

    float area(float*), r;

    cout << "Enter the Radius : ";
    cin >> r;

    cout << "Area of Circle is : ";
    cout << area(&r) << endl;

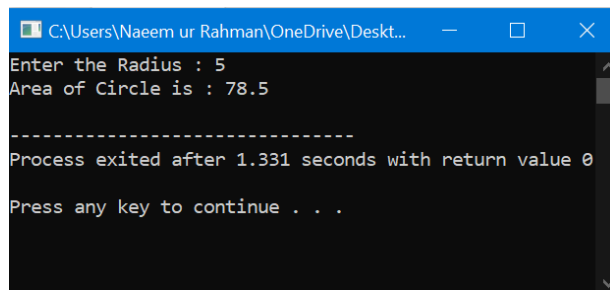
    return 0;

}

float area(float* ptr){

    return (*ptr)*(*ptr)*3.14;

}
```

A screenshot of a Windows command prompt window. The title bar shows the file path 'C:\Users\Naeem ur Rahman\OneDrive\Desktop...'. The prompt displays the output of the program: 'Enter the Radius : 5' followed by 'Area of Circle is : 78.5'. Below this, it shows 'Process exited after 1.331 seconds with return value 0' and 'Press any key to continue . . .'.

```
C:\Users\Naeem ur Rahman\OneDrive\Desktop...
Enter the Radius : 5
Area of Circle is : 78.5

Process exited after 1.331 seconds with return value 0
Press any key to continue . . .
```

## OOP (Classes)

## QUESTION NO #01

Simple Class Example Program For Find Prime  
Number In C++

### Code:

```
#include <iostream>

using namespace std;

class prime{

    int a,k;

public: prime(int x){ a=x; }

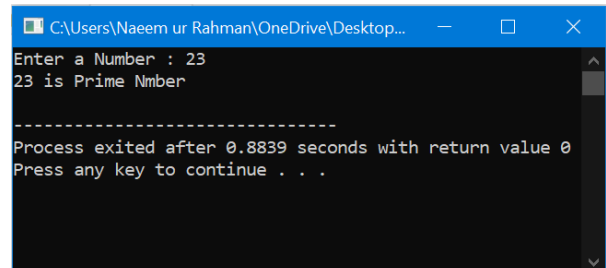
    void check (){ k=0; for(int i=2;i<a;i++){ if(a%i==0){ k++; } } }

    void result(){

        if(k==0){ cout<<a<<" is Prime Number " << endl; }

        else{ cout<<a<<" is not Prime Number " << endl; } } };

int main(){ int n; cout << "Enter a Number : "; cin >> n; prime p = prime(n); p.check(); p.result(); return 0; }
```

A screenshot of a Windows command prompt window. The title bar shows the file path 'C:\Users\Naeem ur Rahman\OneDrive\Desktop...'. The prompt displays the output: 'Enter a Number : 23' followed by '23 is Prime Number'. Below this, it shows 'Process exited after 0.8839 seconds with return value 0' and 'Press any key to continue . . .'.

```
C:\Users\Naeem ur Rahman\OneDrive\Desktop...
Enter a Number : 23
23 is Prime Number

Process exited after 0.8839 seconds with return value 0
Press any key to continue . . .
```

**QUESTION NO #02**

Made a user define class calculator and have 4 functions of /, \*, +, - and user can tell its choice.

**Code:**

```
#include <iostream>

#include <string>

using namespace std;

class calculate{

    float x,y;

    public:

    calculate(float a,float
b){x=a;y=b;}

    float sum(){ return x+y; }

    float sub(){ return x-y; }

    float mul(){ return x*y; }

    float div(){ return x/y; }

};

int main(){

    float i,j;char c;string ch;

    do{

        cout << "Enter the x : ";cin>>i;

        cout << "Enter the y : ";cin>>j;

        cout << "Select the operation
*,/,+,- : ";cin>>c;
```

```
        calculate cl = calculate(i,j);

        switch (c){

            case '+': cout <<

"Addition is : "<<
cl.sum()<<endl;break;

            case '-': cout <<

"Subtraction is : "<<
cl.sub()<<endl;break;

            case '/': cout <<

"Divition is : "<<
cl.div()<<endl;break;

            case '*': cout <<

"Multiply is : "<<
cl.mul()<<endl;break;

            default : cout <<

"Wrong Choice ! "<<endl;}

        cout << "If you want to use
again type 'Yes ' : ";cin>>ch;

    }while (ch=="yes");return 0;}
```

```
C:\Users\Naeem ur Rahman\OneDrive\Deskt...
Enter the x : 23
Enter the y : 24
Select the operation *,/,+,- : /
Divition is : 0.958333
If you want to use again type 'Yes ' : yes
Enter the x : 12
Enter the y : 3
Select the operation *,/,+,- : +
Addition is : 15
If you want to use again type 'Yes ' : yes
Enter the x : 23
Enter the y : 42
Select the operation *,/,+,- : %
Wrong Choice !
If you want to use again type 'Yes ' : yes
Enter the x : 24
Enter the y : 6
Select the operation *,/,+,- : *
Multiply is : 144
If you want to use again type 'Yes ' : no
-----
Process exited after 46.21 seconds with return value 0
```

### QUESTION NO #03

Define Constructor in Outside Class Example Program in C++.

#### Code:

```
#include <iostream>

using namespace std;

class MyClass{

    int a,b;

    public:

    MyClass();

    void Display(){

        cout << "a = : "<<a<<"\t
b = : "<<b<<endl;}

};

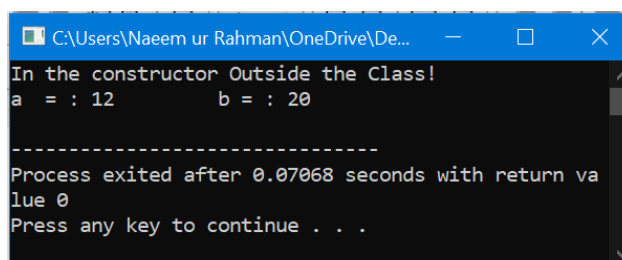
MyClass::MyClass(){

cout << "In the constructor Outside
the Class!"<<endl;

    a=12; b=20;}

int main(){

MyClass my; my.Display();}
```

A screenshot of a Windows command prompt window showing the output of the C++ program for Question #03. The output displays the constructor message, the values of a and b, and the process exit information.

```
C:\Users\Naeem ur Rahman\OneDrive\De...
In the constructor Outside the Class!
a = : 12      b = : 20

-----
Process exited after 0.07068 seconds with return va
lue 0
Press any key to continue . . .
```

### QUESTION NO #04

Simple Program for Constructor overloading Class Program in C++

#### Code:

```
#include <iostream>

using namespace std;

class Area{

    float ans;

    public:

    Area(){ cout << "I am the Constructor
with no Arrguments"<<endl;}

    Area(float r){ans=3.14*r*r;cout <<
"Area of Circle is : "<<ans<<endl;}

    Area(float x,float y){

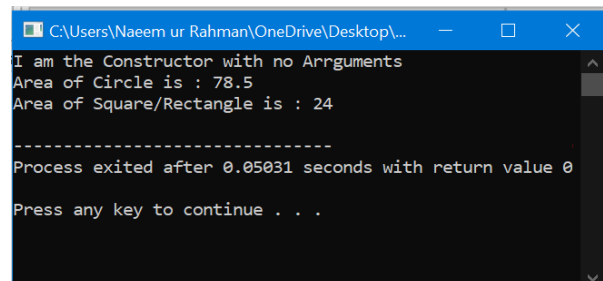
ans=x*y;

cout << "Area of Square/Rectangle is
: "<<ans<<endl;} };

int main(){

Area a1= Area();Area a2= Area(5);

Area a3= Area(4,6); return 0;}
```

A screenshot of a Windows command prompt window showing the output of the C++ program for Question #04. The output displays the constructor messages, the area of a circle, the area of a square/rectangle, and the process exit information.

```
C:\Users\Naeem ur Rahman\OneDrive\Desktop\...
I am the Constructor with no Arrguments
Area of Circle is : 78.5
Area of Square/Rectangle is : 24

-----
Process exited after 0.05031 seconds with return value 0
Press any key to continue . . .
```

### QUESTION NO #05

Made a function in class which has argument of same class and class is height with values inches and feet.

#### Code:

```
#include <iostream>

using namespace std;

class height{

    private :

    int feet; float inches;

    public :

    height() : feet(0),inches(0.0){ }

    void get_input(){

        cout << "Enter the Height Data
        !" << endl;

        cout << "Enter Feets :
        "; cin >> feet;

        cout << "Enter Inches :
        "; cin >> inches; }

    void show() {

        cout << "Height is :
        " << feet << " " << inches << " " << endl; }

    void add_heights(height, height);

};

void height::add_heights(height
a1, height a2)
```

```
{

    feet = a1.feet + a2.feet;

    inches = a1.inches + a2.inches;

    if (inches >= 12) { inches -
    = 12; feet++; }

}

int main () {

    height h1, h2;

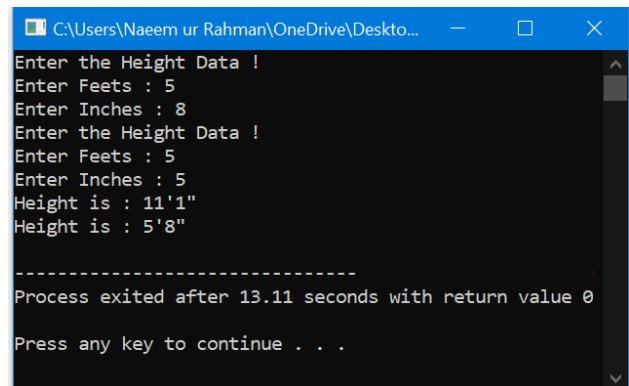
    h1.get_input();

    h2.get_input();

    h2.add_heights(h1, h2);

    h2.show(); h1.show();

    return 0; }
```



### QUESTION NO #06

Simple Example Program For Destructor In C++

#### Code:

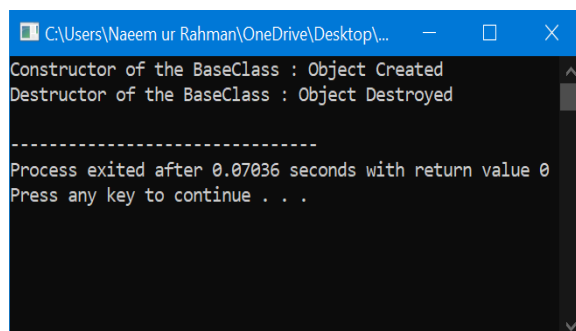
```
#include<iostream>

using namespace std;

class Class
{
public:
    Class() {
        cout << "Constructor of the
BaseClass : Object Created"<<endl;
    }
    ~Class() {
        cout << "Destructor of the
BaseClass : Object
Destroyed"<<endl; }
};

int main (){

    Class des; return 0; }
```

A screenshot of a Windows command prompt window showing the output of the C++ program for Question #06. The output displays the constructor message, followed by the destructor message, and then the process exit message. The window title is "C:\Users\Naeem ur Rahman\OneDrive\Desktop\...".

```
C:\Users\Naeem ur Rahman\OneDrive\Desktop\...
Constructor of the BaseClass : Object Created
Destructor of the BaseClass : Object Destroyed
-----
Process exited after 0.07036 seconds with return value 0
Press any key to continue . . .
```

### QUESTION NO #07

Simple Example Program For Copy Constructor In C++

#### Code:

```
#include<iostream>

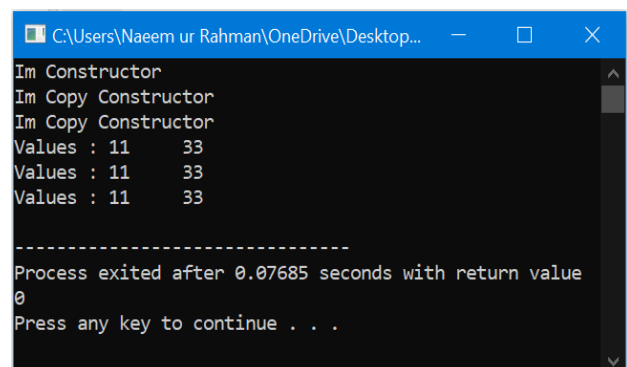
using namespace std;

class Example { int a, b; public:
    Example(int x, int y) { a = x; b = y;
        cout << "Im Constructor"<<endl; }
    Example(const Example& obj) {
        a = obj.a; b = obj.b; cout << "Im
Copy Constructor"<<endl; }
    void Display() {
        cout << "Values : " << a << "\t" <<
b<<endl; } };

int main() { Example a1(11, 33);
Example a2 (a1) ; Example a3 = a1;

a1.Display(); a2.Display();

a3.Display(); return 0; }
```

A screenshot of a Windows command prompt window showing the output of the C++ program for Question #07. The output displays the constructor message, followed by the copy constructor message, then the values of the objects, and finally the process exit message. The window title is "C:\Users\Naeem ur Rahman\OneDrive\Desktop...".

```
C:\Users\Naeem ur Rahman\OneDrive\Desktop...
Im Constructor
Im Copy Constructor
Im Copy Constructor
Values : 11      33
Values : 11      33
Values : 11      33
-----
Process exited after 0.07685 seconds with return value
0
Press any key to continue . . .
```



## QUESTION NO #08

Read and Print Student Information Class  
Example Program In C++

### Code:

```
#include <iostream>

#include <string>

using namespace std;

class Student {

    string name;

    int roll, sub1, sub2, sub3;

    float total, avg;

public:

    void read() {

        cout << "Enter Name : "; cin >>
name;

        cout << "Enter Rollno : "; cin >>
roll;

        cout << "Enter Marks for Subject
1,2 and 3 : ";

        cin >> sub1 >> sub2 >> sub3; }

    void sum() {

        total = sub1 + sub2 + sub3;

        avg = total / 3; }

    void print() {
```

```
        cout << "Name   : " << name <<
endl;

        cout << "Rollno : " << roll <<
endl;

        cout << "Marks   : " << sub1 << "
, " << sub2 << " , " << sub3 << endl;

        cout << "Total   : " << total <<
endl;

        cout << "Average : " << avg <<
endl; } };

int main() {

    Student s1, s2;

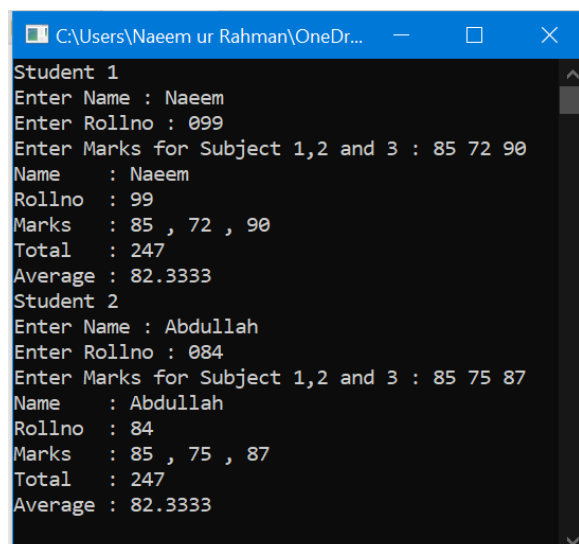
    cout << "Student 1" << endl;

    s1.read(); s1.sum(); s1.print();

    cout << "Student 2" << endl;

    s2.read(); s2.sum(); s2.print();

    return 0; }
```



```
C:\Users\Naeem ur Rahman\OneDr...
Student 1
Enter Name : Naeem
Enter Rollno : 099
Enter Marks for Subject 1,2 and 3 : 85 72 90
Name   : Naeem
Rollno  : 99
Marks   : 85 , 72 , 90
Total   : 247
Average : 82.3333
Student 2
Enter Name : Abdullah
Enter Rollno : 084
Enter Marks for Subject 1,2 and 3 : 85 75 87
Name   : Abdullah
Rollno  : 84
Marks   : 85 , 75 , 87
Total   : 247
Average : 82.3333
```

**QUESTION NO #09**

Create a class that imitates part of the functionality of the basic data type int. Call the class Int (note different capitalization). The only data in this class is an int variable. Include member functions to initialize an Int to 0, to initialize it to an int value, to display it (it looks just like an int), and to add two Int values. Write a program that exercises this class by creating one uninitialized and two initialized Int values, adding the two initialized values and placing the response in the uninitialized value, and then displaying this result.

**Code:**

```
#include <iostream>

using namespace std;

class Int{
    int i;

    public:

    Int () { i=0; }

    Int (int i1) { i=i1; }

    void add(Int a1, Int a2)
    { i=a1.i+a2.i; }

    void display()
    {
        cout << "Value
Stored in i = "<<i<<endl;
    }
};
```

```
int main()
{
    int a,b;

    cout<<"Enter 1st Integer :
";cin>>a;

    cout<<"Enter 2nd Integer :
";cin>>b;

    Int Int1(a);

    Int Int2(b);

    Int Int3;

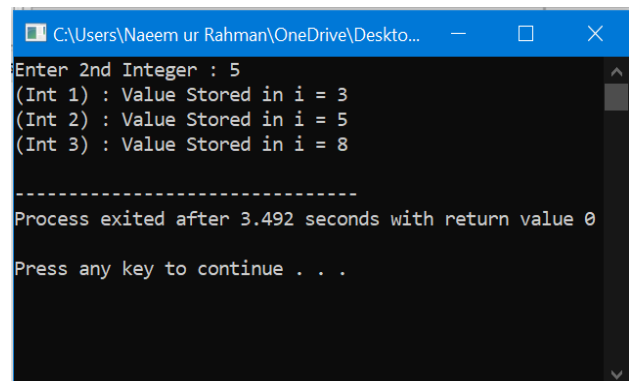
    Int3.add(Int1,Int2);

    cout<<"(Int 1) :
";Int1.display();

    cout<<"(Int 2) :
";Int2.display();

    cout<<"(Int 3) :
";Int3.display();

    return 0;}
```



```
C:\Users\Naeem ur Rahman\OneDrive\Desktop...
Enter 2nd Integer : 5
(Int 1) : Value Stored in i = 3
(Int 2) : Value Stored in i = 5
(Int 3) : Value Stored in i = 8
-----
Process exited after 3.492 seconds with return value 0
Press any key to continue . . .
```

### QUESTION NO #10

Imagine a tollbooth at a bridge. Cars passing by the booth are expected to pay a 50 cent toll. Mostly they do, but sometimes a car goes by without paying. The tollbooth keeps track of the number of cars that have gone by, and of the total amount of money collected. Model this tollbooth with a class called tollBooth. The two data items are a type unsigned int to hold the total number of cars, and a type double to hold the total amount of money collected. A constructor initializes both of these to 0. A member function called payingCar() increments the car total and adds 0.50 to the cash total. Another function, called nopayCar(), increments the car total but adds nothing to the cash total. Finally, a member function called display() displays the two totals. Make appropriate member functions const. Include a program to test this class. This program should allow the user to push one key to count a paying car, and another to count a nonpaying car. Pushing the Esc key should cause the program to print out the total cars and total cash and then exit.

#### Code:

```
#include <iostream>
#include <conio.h>
using namespace std;
const char ESC = 27; const double
Toll=0.50;
class tollbooth{
    unsigned int car; double amount;
public:
    tollbooth():car(0),amount(0){ }
    void payingCar() { car++;
    amount+=Toll; }
    void nonpayCar(){ car++;
    amount+=0; }
    void display() const {
```

```
cout << "Total Cars Passed   :
"<<car<<endl;

cout << "Total Amount Collected :
"<<amount<<endl; } };

int main() {

char c; tollbooth t;

cout<< "Enter 1 for Paying car
"<<endl;

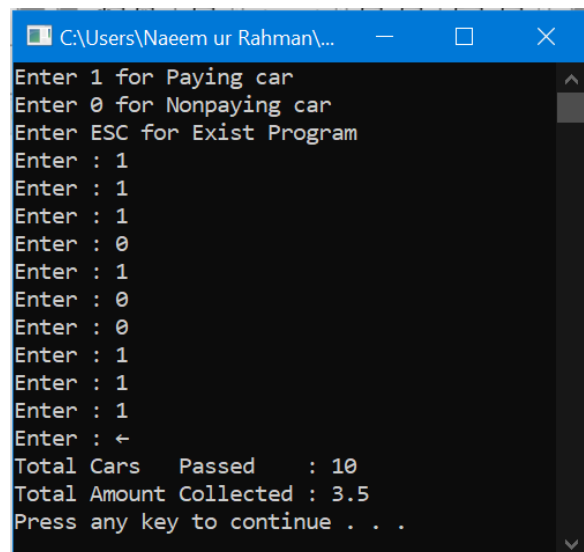
cout<< "Enter 0 for Nonpaying
car"<<endl;

cout<< "Enter ESC for Exist Program
"<<endl;

do{ cout << "Enter : "; c = getche();
if (c=='1'){ t.payingCar(); }

    if (c=='0'){ t.nonpayCar(); } }
while(c!=ESC);

    t.display(); return 0;}
```



```
C:\Users\Naeem ur Rahman\...
Enter 1 for Paying car
Enter 0 for Nonpaying car
Enter ESC for Exist Program
Enter : 1
Enter : 1
Enter : 1
Enter : 0
Enter : 1
Enter : 0
Enter : 0
Enter : 1
Enter : 1
Enter : 1
Enter : ←
Total Cars Passed   : 10
Total Amount Collected : 3.5
Press any key to continue . . .
```

**QUESTION NO #11**

Create an employee class, an employee number (type int) and the employee's compensation (in dollars; type float). Member functions should allow the user to enter this data and display it. Write a main() that allows the user to enter data for three employees and display it.

**Code:**

```
#include <iostream>

#include <iomanip>

using namespace std;

class employee{

    int num; float dollar;

    public :

    employee() : num(0),dollar(0) {

    }

    void input(){

        cout<< "Enter Employee
Number  : ";cin>>num;

        cout<< "Enter compensation in
$ : ";cin>>dollar; }

    void display() {

        cout<<setw(20)<<setiosflags(io
s::left)<<num<<setw(30)<<setiosflag
s(io::left)<<dollar<<endl; } };
```

```
void line () {

    for (int a=1;a<=40;a++) { cout
<<"-";}

    cout<<endl; }

int main () {

    employee a,b,c;

    a.input(); b.input();

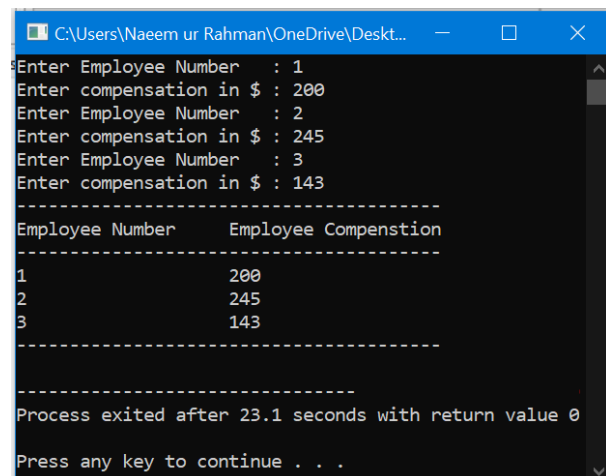
    c.input(); line();

    cout<<setw(20)<<setiosflags(io::left)
<< "Employee Number
"<<setw(30)<<setiosflags(io::left)<<
"Employee Compension"<<endl;

    line (); a.display();

    b.display(); c.display();

    line(); return 0; }
```



```
C:\Users\Naeem ur Rahman\OneDrive\Desk...
Enter Employee Number : 1
Enter compensation in $ : 200
Enter Employee Number : 2
Enter compensation in $ : 245
Enter Employee Number : 3
Enter compensation in $ : 143
-----
Employee Number      Employee Compension
-----
1                      200
2                      245
3                      143
-----
Process exited after 23.1 seconds with return value 0
Press any key to continue . . .
```

### QUESTION NO #12

Start with the date class. Its member data should consist of three ints: month, day, and year. It should also have two member functions: getdate(), which allows the user to enter a date in 29/01/2021 format, and showdate(), which displays the date.

#### Code:

```
#include <iostream>

using namespace std;

class date{
int year, mounth ,day; char d; public:
date () : year(0),mounth(0),day(0) {
}

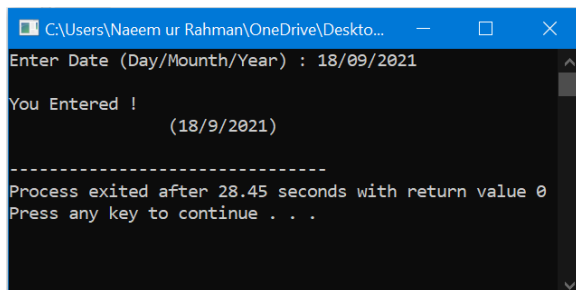
void getdate() { cout << "Enter Date
(Day/Mounth/Year) :
";cin>>day>>d>>mounth>>d>>year;
}

void showdate() {

cout << "You Entered !
"<<endl;cout<<"\t"<<"\t" <<
(" "<<day<<"/" "<<mounth<<"/" "<<year
<<")"<<endl; } };

int main () { date d1; d1.getdate();

cout << endl; d1.showdate();return
0;}
```



### QUESTION NO #13

C++ Program to find Largest of three Numbers using class.

#### Code:

```
#include<iostream>

using namespace std;

class largest { int x,y,z;

    public: void input() {

cout<<"Enter 1st number :: "; cin>>x;
cout<<"Enter 2nd number :: ";cin>>y;
cout<<"Enter 3rd number :: "; cin>>z;
} void calc() { int r;

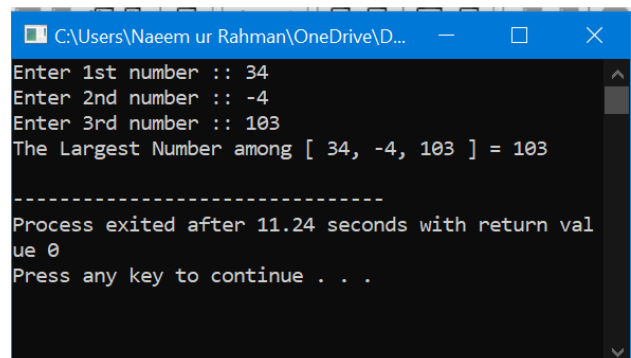
r=((x>y)&&(x>z)?x:(y>x)&&(y>z)?y
:z);

cout<<"The Largest Number among [
"<<x<< ", "<<y<< ", "<<z<< " ] =
"<<r<<endl; } };

int main() {

    largest g; g.input();

    g.calc(); return 0; }
```



### QUESTION NO #14

C++ program to find Reverse of a Number using class.

#### Code:

```
#include<iostream>

using namespace std;

class rev
{
    int n,n1,rn=0,d;

    public: void input(); void calc(); void display(); };

void rev::input() {

cout<<"Enter any positive no : ";cin>>n; }

void rev::calc() {

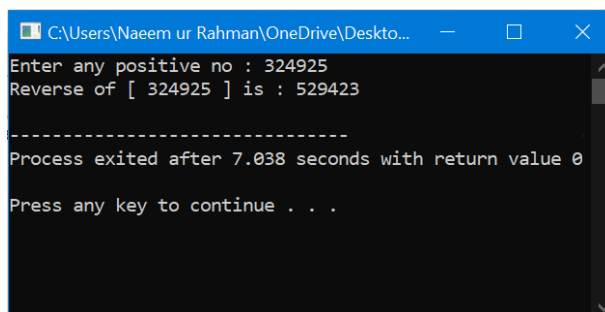
n1 = n; while(n>0) {

    d=n%10; rn=(rn*10)+d; n/=10;} }

void rev::display(){ cout<<"Reverse of [ "<n1<<" ] is : "<<rn<<endl; }

int main () { rev r; r.input();

    r.calc(); r.display(); return 0; }
```

A screenshot of a Windows command prompt window. The title bar shows the path 'C:\Users\Naeem ur Rahman\OneDrive\Desкто...'. The command prompt displays the following text: 'Enter any positive no : 324925', 'Reverse of [ 324925 ] is : 529423', a separator line of dashes, 'Process exited after 7.038 seconds with return value 0', and 'Press any key to continue . . .'.

```
C:\Users\Naeem ur Rahman\OneDrive\Desкто...
Enter any positive no : 324925
Reverse of [ 324925 ] is : 529423
-----
Process exited after 7.038 seconds with return value 0
Press any key to continue . . .
```

### QUESTION NO #15

C++ program to Add two Complex number passing objects to function

#### Code:

```
#include<iostream>

using namespace std;

class complex
{
    int re,im;

    public:

    void get(){

        cout<<"Enter Real Part : ";cin>>re;

        cout<<"Enter Imag. Part : ";cin>>im; }

    void disp() {

cout<<re<<"+"<<im<<"i"<<endl; }

    void sum(complex,complex);

};

void complex::sum(complex c1,complex c2) {

    re=c1.re+c2.re; im=c1.im+c2.im; }

int main() {

    complex c1,c2,c3;
```

```
cout<<"Enter 1st complex no.
"<<endl;

c1.get();

cout<<"Enter 2nd complex no.
"<<endl;

c2.get();

cout<<"The 1st complex no. is : ";
c1.disp();

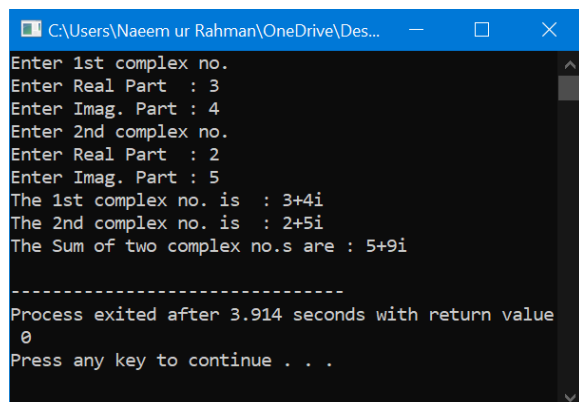
cout<<"The 2nd complex no. is : ";
c2.disp();

c3.sum(c1,c2);

cout<<"The Sum of two complex
no.s are : ";

c3.disp();

return 0;
}
```



```
C:\Users\Naeem ur Rahman\OneDrive\Des...
Enter 1st complex no.
Enter Real Part : 3
Enter Imag. Part : 4
Enter 2nd complex no.
Enter Real Part : 2
Enter Imag. Part : 5
The 1st complex no. is : 3+4i
The 2nd complex no. is : 2+5i
The Sum of two complex no.s are : 5+9i

-----
Process exited after 3.914 seconds with return value
0
Press any key to continue . . .
```

### QUESTION NO #16

Write a C++ Program to find Sum of odd numbers between 1 and 100 using class

#### Code:

```
#include<iostream>

using namespace std;

class sum {

    int n,s=0;

    public:

    void calc(); void display(); };

void sum::calc(){

    for(n=1;n<=100;n+=2)

        s+=n; }

void sum::display() {

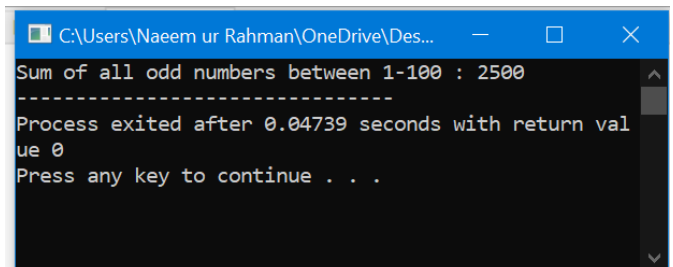
    cout<<"Sum of all odd numbers
between 1-100 : "<<s; }

int main() {

    sum s;

    s.calc();

    s.display(); }
```



```
C:\Users\Naeem ur Rahman\OneDrive\Des...
Sum of all odd numbers between 1-100 : 2500
-----
Process exited after 0.04739 seconds with return val
ue 0
Press any key to continue . . .
```

### QUESTION NO #17

C++ Program to Print Numbers from 1 to n using class

#### Code:

```
#include<iostream>

using namespace std;

class Num{

    public:

        static int i;

        Num(){

            cout<<i++<<" "; }

};

int Num::i=1;

int main(){

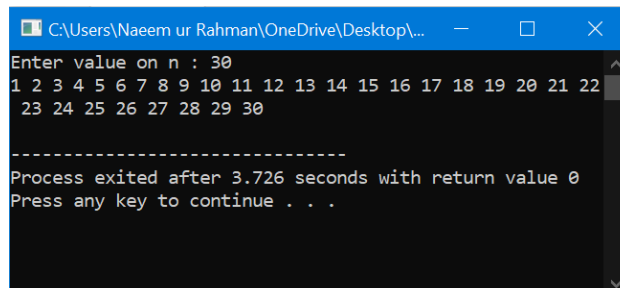
    int n;

    cout<<"Enter value on n : ";cin>>n;

    Num obj[n];

    cout << endl;

    return 0; }
```

A screenshot of a Windows command prompt window. The title bar shows the file path "C:\Users\Naeem ur Rahman\OneDrive\Desktop\...". The prompt displays the output of the C++ program for Question #17. It shows "Enter value on n : 30" followed by a space-separated list of numbers from 1 to 30. Below this, a separator line of dashes is shown, followed by the message "Process exited after 3.726 seconds with return value 0" and "Press any key to continue . . .".

### QUESTION NO #18

C++ Program to calculate Volume of Cube using constructor

#### Code:

```
#include<iostream>

using namespace std;

class cube{

    public:

        double side;

        double volume() {

            return(side*side*side); }

        cube(double side1){

            cout << "A constructor is called" << endl;

            side=side1;

        }

        cube(){

            cout << "A default constructor is called " << endl;

        }

        ~cube(){

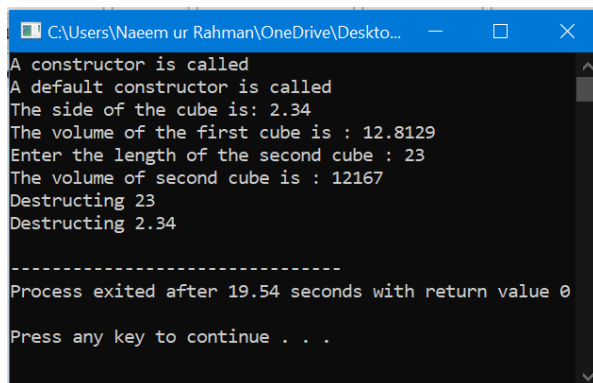
            cout << "Destructing " << side << endl;

        }

};
```



```
int main() {  
  
    cube c1(2.34);  
  
    cube c2;  
  
    cout << "The side of the cube is: "  
<< c1.side << endl;  
  
    cout << "The volume of the first  
cube is : " << c1.volume() << endl;  
  
    cout << "Enter the length of the  
second cube : ";  
  
    cin >> c2.side;  
  
    cout << "The volume of second  
cube is : " << c2.volume() << endl;  
  
    return(0);  
}
```



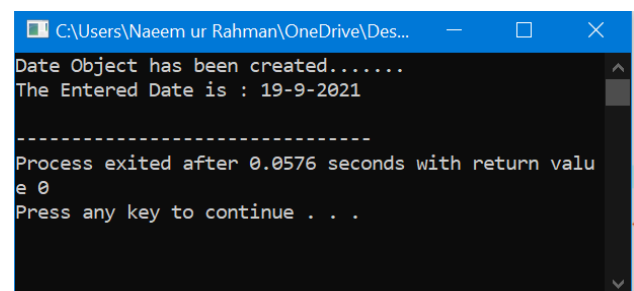
A screenshot of a Windows command prompt window showing the execution of a C++ program. The output text is as follows:  
A constructor is called  
A default constructor is called  
The side of the cube is: 2.34  
The volume of the first cube is : 12.8129  
Enter the length of the second cube : 23  
The volume of second cube is : 12167  
Destructing 23  
Destructing 2.34  
-----  
Process exited after 19.54 seconds with return value 0  
Press any key to continue . . .

### QUESTION NO #19

Write a C++ Program to Display Date  
using Constructors

#### Code:

```
#include<iostream>  
  
using namespace std;  
  
class date{  
  
    int dd, mm, yy;  
  
    public:  
  
    date(){  
  
        dd=19;  
  
        mm=9;  
  
        yy=2021;  
  
        cout<<"Date Object has been  
created....."<<endl; }  
  
    void display() { cout<<"The  
Entered Date is : "<<dd<<"-  
"<<mm<<"-"<<yy<<"\n"; } };  
  
int main (){  
  
    date d; d.display (); return 0; }
```



A screenshot of a Windows command prompt window showing the execution of a C++ program. The output text is as follows:  
Date Object has been created.....  
The Entered Date is : 19-9-2021  
-----  
Process exited after 0.0576 seconds with return value 0  
Press any key to continue . . .

### QUESTION NO #20

Write a C++ Program To Calculate Electricity Bill Of Person using Class

#### Code:

```
#include<iostream>

using namespace std;

class bill{

    int no;

    char name[20];

    int units;

    double bill;

public:

    void get(){

        cout<<"Enter Details of Customer Below " <<endl;

        cout<<"Enter Customer No. : ";cin>>no;

        cout<<"Enter Customer Name : ";cin>>name;

        cout<<"Enter No. of Units used : ";cin>>units; }

    void put() {

        cout<<"Entered Details of Customer are : " <<endl;

        cout<<"Customer No. is : "<<no<<endl;
```

```
        cout<<"Customer Name is : "<<name<<endl;

        cout<<"Number of Units Consumed : "<<units<<endl;

        cout<<"Bill of Customer : "<<bill<<endl; }

    void calc_bill(){

        if(units<=100) bill=units*1.20;

        else if(units<=300) bill=100*1.20+(units-100)*2;

        else bill=100*1.20+200*2+(units-300)*3; } };

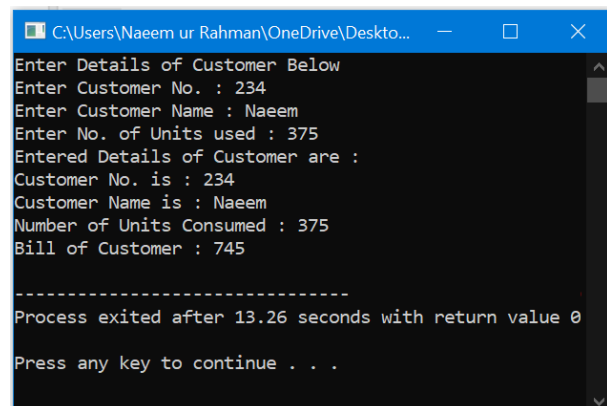
int main() {

    bill b1; b1.get();

    b1.calc_bill(); b1.put();

    return 0;

}
```



The screenshot shows a Windows command prompt window titled "C:\Users\Naeem ur Rahman\OneDrive\Desкто...". The program prompts the user to "Enter Details of Customer Below". The user enters "234" for the customer number, "Naeem" for the customer name, and "375" for the number of units used. The program then displays the entered details: "Entered Details of Customer are : Customer No. is : 234 Customer Name is : Naeem Number of Units Consumed : 375 Bill of Customer : 745". After a separator line, it shows "Process exited after 13.26 seconds with return value 0" and "Press any key to continue . . .".

(Arrays)

**QUESTION NO #01**

C++ Program to Remove Characters in String Except Alphabets.

**Code:**

```
#include <iostream>

using namespace std;

int main() {

    string line; int i;

    cout << "Enter any string : ";
    cin>>line;

    cout << "The Original String is : "
    << line<<endl; int len = line.size();

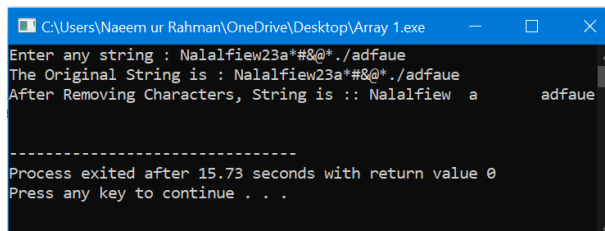
    for(i=0;i<len;++i) {

        if (!(line[i]>='a' &&
        line[i]<='z') || (line[i]>='A' &&
        line[i]<='Z')) {

            line[i]='\0'; } }

    cout << "After Removing
    Characters, String is :: " <<
    line<<endl;

    return 0; }
```



A screenshot of a Windows command prompt window titled "C:\Users\Naeem ur Rahman\OneDrive\Desktop\Array 1.exe". The user enters the string "Nalalfiew23a\*#&@\*./adfaue". The program outputs "The Original String is : Nalalfiew23a\*#&@\*./adfaue" and "After Removing Characters, String is :: Nalalfiew a adfaue". The process exits after 15.73 seconds with a return value of 0.

**QUESTION NO #02**

Write a C++ Program to find Largest Element in an Array

**Code:**

```
#include <iostream>

using namespace std;

int main(){

    int s;cout << "Enter the size of
    Array : ";cin>>s;

    int arr[s],max;

    for(int a=0;a<s;a++){

        cout << "Enter :
        ";cin>>arr[a]; }

        max=arr[0];

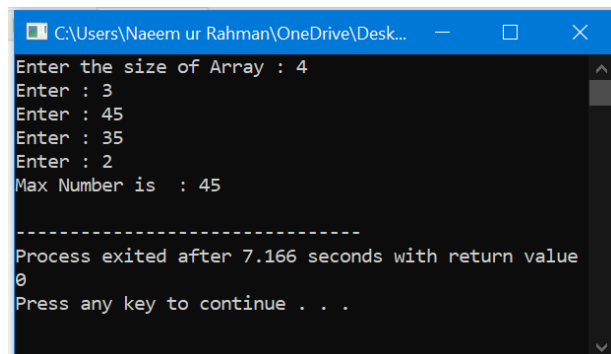
        for(int a=0;a<s;a++){

            if(max<arr[a]){

                max=arr[a]; }

            cout << "Max Number is
            : "<<max<<endl;

            return 0; }
```



A screenshot of a Windows command prompt window titled "C:\Users\Naeem ur Rahman\OneDrive\Desktop\...". The user enters the size of the array as 4, followed by the elements 3, 45, 35, and 2. The program outputs "Max Number is : 45". The process exits after 7.166 seconds with a return value of 0.

### QUESTION NO #03

C++ Program to Reverse an Array using functions

#### Code:

```
#include <iostream>

using namespace std;

void Reverse_Array(int array[],int size);

int main() {

    int i,size;

    cout<<"Enter array size : ";
    cin>>size;

    int a[size];

    for(i=0; i<size; i++) {

        cout<<"Enter arr["<<i<<"] Element
: "; cin>>a[i];

    }

    cout<<"Stored Data in Array :
"<<endl;

    for(i=0;i<size;i++) {

        cout<<" "<<a[i]<<" ";

    }

    Reverse_Array(a,size);

    cout<<endl << "Reversed Array
Values are : " <<endl;
```

```
for(i=0;i<size;i++) {

    cout<<" "<<a[i]<<" ";

}

cout<<endl;

return 0;

}

void Reverse_Array(int array[],int size){

    int temp; size--;

    for (int i=0;size>=i;size--,i++) {

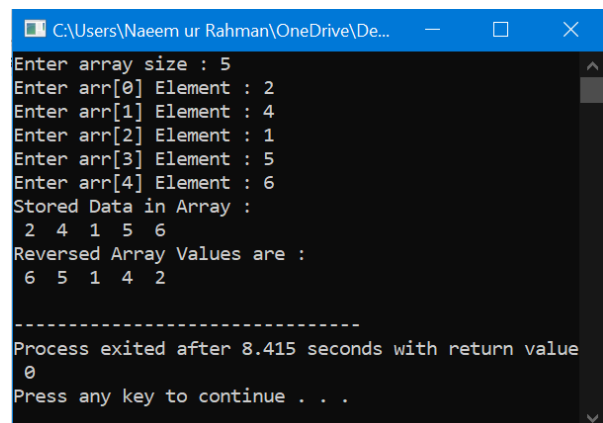
        temp=array[i];

        array[i]=array[size];

        array[size]=temp;

    }

}
```



```
C:\Users\Naeem ur Rahman\OneDrive\De...
Enter array size : 5
Enter arr[0] Element : 2
Enter arr[1] Element : 4
Enter arr[2] Element : 1
Enter arr[3] Element : 5
Enter arr[4] Element : 6
Stored Data in Array :
2 4 1 5 6
Reversed Array Values are :
6 5 1 4 2

-----
Process exited after 8.415 seconds with return value
0
Press any key to continue . . .
```

### QUESTION NO #04

Write a C++ Program to Sort Array Elements in Ascending order.

#### Code:

```
#include<iostream>

using namespace std;

int main() {

    int i,j,temp,size;

    cout<<"Enter array size : ";
    cin>>size;

    int a[size];

    for(i=0; i<size; i++){

        cout<<"Enter arr["<<i<<"] Element
: ";cin>>a[i]; }

    cout<<"Stored Data Before Sorting
In Array "<<endl;

    for(i=0;i<size;i++) {

        cout<<" "<<a[i]<<" "; }

    for(i=0;i<size;i++){

        for(j=0;j<size-i-1;j++) {

            if(a[j]>a[j+1]) {

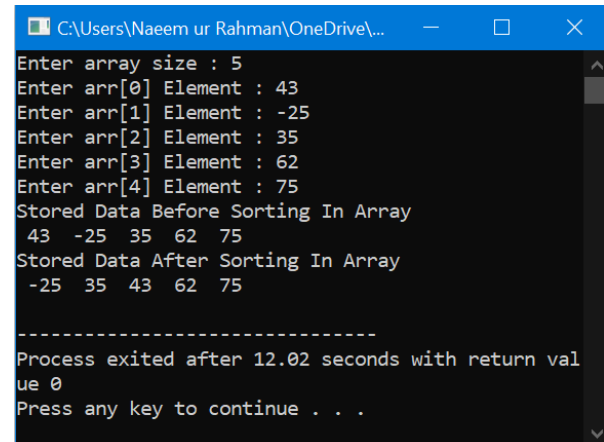
                temp=a[j]; a[j]=a[j+1];
a[j+1]=temp;} } }
```

```
cout<<endl<<"Stored Data After
Sorting In Array \n";

for(i=0;i<size;i++) {

    cout<<" "<<a[i]<<" "; }

cout<<endl; return 0;}
```



The screenshot shows a Windows command prompt window titled "C:\Users\Naeem ur Rahman\OneDrive\...". The program prompts the user to enter the array size (5) and then five elements: 43, -25, 35, 62, and 75. It then displays the "Stored Data Before Sorting In Array" as 43 -25 35 62 75. After sorting, it displays the "Stored Data After Sorting In Array" as -25 35 43 62 75. The program exits after 12.02 seconds with a return value of 0, and prompts the user to press any key to continue.

**QUESTION NO #05**

C++ Program to Find Sum of Elements of an Array

**Code:**

```
#include <iostream>

using namespace std;

int main(){

    int s,sum=0;

    cout << "Enter Size : ";cin>>s;

    int arr[s];

    for (int i=0;i<s;i++){

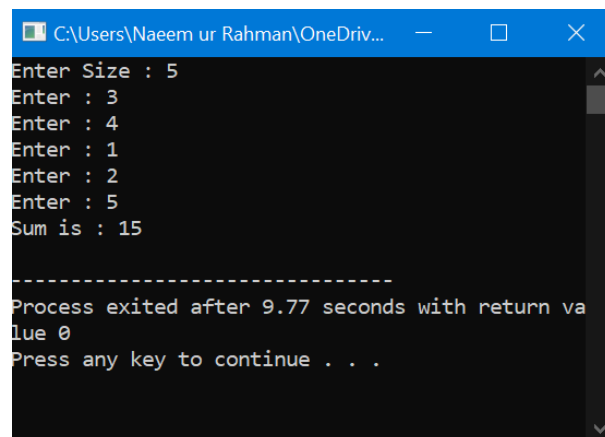
        cout << "Enter : ";cin>>arr[i];

        sum+=arr[i];

        cout<< "Sum is : "

        <<sum<<endl;

        return 0;}
```



The screenshot shows a Windows command prompt window with the title "C:\Users\Naeem ur Rahman\OneDrive...". The program prompts the user to enter the size of the array (5), then enters five elements (3, 4, 1, 2, 5). It then displays the sum of these elements as 15. At the bottom, it shows the message "Process exited after 9.77 seconds with return value 0" and "Press any key to continue . . .".

**QUESTION NO #06**

C++ Program to Find Even and Odd Numbers using array

**Code:**

```
#include<iostream>

using namespace std;

int main(){

    int size; cout<<"Enter array size : ";cin>>size;

    int arr[20],even[20],odd[20],j=0,k=0;

    for(int i=0; i<size; i++)

    {

        cout<<"Enter arr["<<i<<"] Element : "; cin>>arr[i];

    }

    cout<<"Stored Data in Array "

    <<endl;

    for(int i=0;i<size;i++) { cout<<" "

    <<arr[i]<<" ";

    }

    for(int i=0; i<size;i++) {

        if(arr[i]%2==0) { even[j]=arr[i];

        j++;

    }

}
```

**QUESTION NO #07**

C++ Program to Delete an element in an array at desired position

**Code:**

```
#include<iostream>

using namespace std;

int main()

{

    int size;cout<<"Enter array size
: ";

    cin>>size;

    int i,a[size],no,pos;

    for(i=0; i<size; i++){

        cout<<"Enter arr["<<i<<" Element
: ";cin>>a[i];

    }

    cout<<endl<<"Stored Data in Array
: "<<endl;

    for(i=0;i<size;i++){cout<<"
"<<a[i]<<" ";

    }

    cout<<endl<<"Enter position to
Delete number : ";cin>>pos;

    if(pos>size){
```

```
else { odd[k]=arr[i]; k++; } }

cout<<endl<<"Even Elements in
Array are "<<endl;

for(int i=0; i<j ;i++){ cout<<"
"<<even[i]<<" ";

}

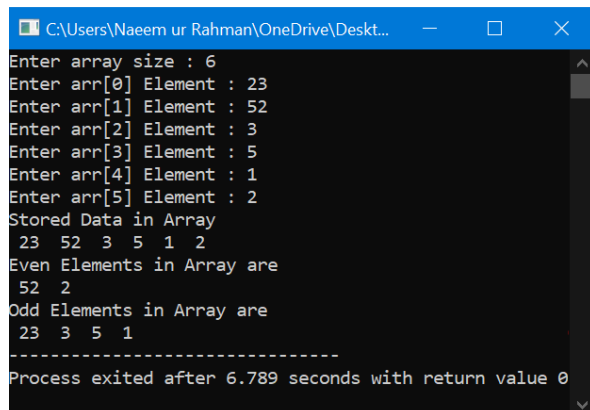
cout<<endl<<"Odd Elements in
Array are "<<endl;

for(int i=0; i<k; i++) { cout<<"
"<<odd[i]<<" ";

}

return 0;

}
```

A screenshot of a Windows command prompt window showing the execution of a C++ program. The user enters an array size of 6 and then enters six elements: 23, 52, 3, 5, 1, and 2. The program outputs the stored data in the array, followed by the even and odd elements. The even elements are 52 and 2, and the odd elements are 23, 3, 5, and 1. The process exits after 6.789 seconds with a return value of 0.

```
C:\Users\Naeem ur Rahman\OneDrive\Deskt...
Enter array size : 6
Enter arr[0] Element : 23
Enter arr[1] Element : 52
Enter arr[2] Element : 3
Enter arr[3] Element : 5
Enter arr[4] Element : 1
Enter arr[5] Element : 2
Stored Data in Array
23 52 3 5 1 2
Even Elements in Array are
52 2
Odd Elements in Array are
23 3 5 1
-----
Process exited after 6.789 seconds with return value 0
```

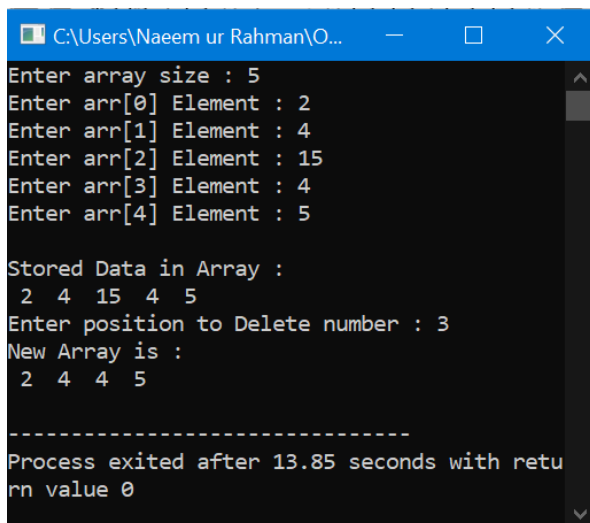
**QUESTION NO #08**

C++ Program to Insert an element in an array at specific position

**Code:**

```
cout<<"This is out of range.";
}
else{ --pos;
for(i=pos;i<=size-1;i++){
a[i]=a[i+1];
}
cout<<"New Array is : "<<endl;
for(i=0;i<size-1;i++){
cout<<" "<<a[i]<<" ";
}
}
cout<<endl;
return 0;
}
```

```
#include<iostream>
using namespace std;
int main() {
    int size;
    cout<<"Enter array size : "; cin>>size;
    int i,a[size],no,pos;
    for(i=0; i<size; i++) {
        cout<<"Enter arr["<<i<<"] Element
        :: "; cin>>a[i];
    }
    cout<<"\nStored Data in Array \n";
    for(i=0;i<size;i++) {
        cout<<" "<<a[i]<<" ";
    }
    cout<<"\nEnter position to insert
    number : "; cin>>pos;
    if(pos>size) {
        cout<<"This is out of range.";
    }
}
```

A screenshot of a Windows command prompt window showing the execution of a C++ program. The window title is "C:\Users\Naeem ur Rahman\O...". The program prompts the user to enter an array size (5), then five elements (2, 4, 15, 4, 5). It then displays the stored data in the array. Next, it prompts for a position to delete a number (3). The program then displays the new array (2, 4, 4, 5). The output ends with a message: "Process exited after 13.85 seconds with return value 0".

```
C:\Users\Naeem ur Rahman\O...
Enter array size : 5
Enter arr[0] Element : 2
Enter arr[1] Element : 4
Enter arr[2] Element : 15
Enter arr[3] Element : 4
Enter arr[4] Element : 5

Stored Data in Array :
2 4 15 4 5
Enter position to Delete number : 3
New Array is :
2 4 4 5

-----
Process exited after 13.85 seconds with return value 0
```



**QUESTION NO #09**

Write a C++ Program to Pass an array in a function

**Code:**

```
#include <iostream>

using namespace std;

void pass(int[],int);

int main() {

    int a[]={1,2,3,4,5}; pass(a,5);

    return 0; }

void pass(int b[],int n){

    int i;

    for(i=0;i<n;i++){

        cout<<"\n"<<b[i];

    }

}
```

```
else {

    cout<<"Enter number to be inserted
: ";

cin>>no;

--pos;

for(i=size;i>=pos;i--) { a[i+1]=a[i];
}

a[pos]=no;

cout<<"New Array is :\n";

for(i=0;i<size+1;i++) { cout<<"
"<<a[i]<<" ";

}

}

cout<<"\n";

return 0;

}
```

```
C:\Users\Naeem ur Rahman\OneDri...
Enter array size : 5
Enter arr[0] Element :: 23
Enter arr[1] Element :: 24
Enter arr[2] Element :: 52
Enter arr[3] Element :: 53
Enter arr[4] Element :: 2

Stored Data in Array
23 24 52 53 2
Enter position to insert number : 4
Enter number to be inserted : 23
New Array is :
23 24 52 23 53 2

-----
Process exited after 21.28 seconds with return
```

```
C:\Users\Naeem ...
1
2
3
4
5

-----
Process exited after 0.0937 second
s with return value 0
Press any key to continue . . .
```

**QUESTION NO #10**

Write a C++ Program for Three Dimensional Array Example

**Code:**

```
#include<iostream>

using namespace std;

int main()
{
    int arr[3][4][2] =
    { { {2, 4}, {7, 8}, {3, 4}, {5, 6} },
      { {7, 6}, {3, 4}, {5, 3}, {2, 3} },
      { {8, 9}, {7, 2}, {3, 4}, {5, 1} } };

    cout<<"arr[0][0][0] =
    "<<arr[0][0][0]<<"\n";

    cout<<"arr[0][2][1] =
    "<<arr[0][2][1]<<"\n";

    cout<<"arr[2][3][1] =
    "<<arr[2][3][1]<<"\n";

    return 0;}
```

```
C:\Users\...
arr[0][0][0] = 2
arr[0][2][1] = 4
arr[2][3][1] = 1
-----
Process exited after 0.09652
seconds with return value 0
Press any key to continue .
```

**QUESTION NO #11**

C++ Program to find Average of n Numbers using array

**Code:**

```
#include <iostream>

using namespace std;

int main(){

    int n, i; float a[100], sum=0.0 ,
    average;

    cout<<"Enter size of Array: ";cin>>n;

    for(i=0;i<n;++i) {

        cout<<"Enter "<<i+1<<" element :
        "; cin>>a[i];

        sum += a[i]; }

    average = sum / n;

    cout << "Average of "<<n<<"
    Numbers is = " << average<<"\n";

    return 0;}
```

```
C:\Users\Naeem ur Rahman\On...
Enter size of Array : 5
Enter 1 element : 23
Enter 2 element : 2
Enter 3 element : 4
Enter 4 element : 256
Enter 5 element : 21
Average of 5 Numbers is = 61.2
-----
Process exited after 10.57 seconds with return value 0
Press any key to continue . . .
```

**QUESTION NO #12**

C++ Program to Accessing Elements of an Array Using Pointer

**Code:**

```
#include <iostream>

using namespace std;

int main(){

    int a[100],n,i;

    cout<<"Enter size of Array : ";cin>>n;

    for(i=0;i<n;++i) {

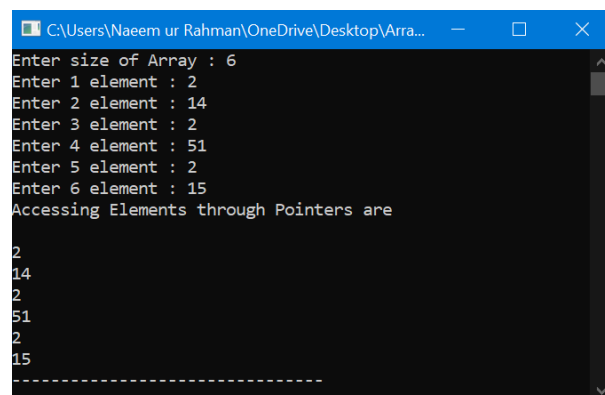
        cout<<"Enter "<<i+1<<" element : ";cin>>a[i]; }

    cout << "Accessing Elements through Pointers are \n";

    for(int i = 0; i < n; ++i) {

        cout << endl << *(a + i); }

    return 0;}
```

A screenshot of a Windows command prompt window. The title bar shows the file path "C:\Users\Naeem ur Rahman\OneDrive\Desktop\Arra...". The program prompts the user to "Enter size of Array : 6". Then it prompts for 6 elements: "Enter 1 element : 2", "Enter 2 element : 14", "Enter 3 element : 2", "Enter 4 element : 51", "Enter 5 element : 2", and "Enter 6 element : 15". After the input, it displays "Accessing Elements through Pointers are" followed by the elements of the array on new lines: 2, 14, 2, 51, 2, 15. A dashed line is shown at the bottom of the output.

```
C:\Users\Naeem ur Rahman\OneDrive\Desktop\Arra...
Enter size of Array : 6
Enter 1 element : 2
Enter 2 element : 14
Enter 3 element : 2
Enter 4 element : 51
Enter 5 element : 2
Enter 6 element : 15
Accessing Elements through Pointers are
2
14
2
51
2
15
-----
```

**QUESTION NO #13**

Sort the array and find the median of array list

**Code:**

```
#include <iostream>

using namespace std;

void median (float[],int);

int main ()

{

    int a;

    cout << "Enter the Number of Values : ";cin>>a;

    const int size = a;

    float array[a];

    median (array,a);

    return 0;

}

void median (float a[],int b)

{

    float m = 0 ;

    for (int x=0;x<b;x++)

    {
```

```

        cout << x+1 << " Enter :
" ; cin>>a[ x ];

    }

    cout <<endl;

    for (int x=0;x<b-1;x++)
    {

        for (int y=0;y<b-1;y++)
        {

            if (a[y]>a[y+1])
            {

                int t;

                t= a[y];

                a[y]=a[y+1];

                a[y+1]=t;

            }

        }

    }

    cout << "    IN ORDER
"<<endl;

    for (int y=0;y<b;y++)

    {

        cout << a[y]<<" ";

    }

```

```

        cout <<endl;

        if (b%2!=2)

        {

            m = a[b/2];

        }

        else

        {

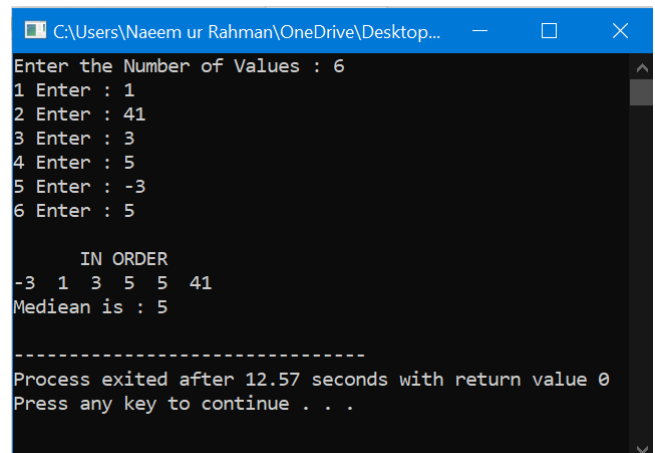
            m = ( ( a [ ( b-1 ) / 2 ] +
a[ b / 2 ] ) / 2 );

        }

        cout <<"Mediean is : "<< m <<
endl;

    }

```



The screenshot shows a Windows command prompt window with the following text:

```

C:\Users\Naeem ur Rahman\OneDrive\Desktop...
Enter the Number of Values : 6
1 Enter : 1
2 Enter : 41
3 Enter : 3
4 Enter : 5
5 Enter : -3
6 Enter : 5

    IN ORDER
-3 1 3 5 5 41
Mediean is : 5

-----
Process exited after 12.57 seconds with return value 0
Press any key to continue . . .

```

**QUESTION NO #14**

Find minimum and maximum number both and sort the array also.

**Code:**

```
#include <iostream>

using namespace std;

int main(){
    int b,A[b],min =
    INT_MAX,max=INT_MIN;

    cout << "Enter the number of inputs :
    ";cin>>b;

    cout << "Enter values " << endl;
    for (int a=0;a<b;a++){ cin>>A[a];
    if (max < A[a]){ max = A[a];}
    if (min > A[a]){ min = A[a];} }

    cout << "The samllest value is :
    " << min << endl;

    cout << "The largest value is :
    " << max << endl; return 0;}
```

```
C:\Users\Naeem ur Rahman\OneDrive\Deskt...
Enter the number of inputs : 6
Enter values
2 3 62 6 -2 5
The samllest value is : -2
The largest value is : 62

-----
Process exited after 10.17 seconds with return value
0
Press any key to continue . . .
```

**QUESTION NO #15**

Array swaping.

**Code:**

```
#include <iostream>

using namespace std;

int main (){
    int A[3]={ 1,2,3};int B[3]={ 4,5,6};
    int s;for(int c=0;c<3;c++){
    s=A[c];A[c]=B[c];B[c]=s;}

    cout << "Values in A After Swaping
    are " << endl;

        for (int a=0;a<3;a++){

    cout << A[a]<<" ";}cout << endl;

    cout << "Values in B After Swaping
    are " << endl;

        for (int b=0;b<3;b++){

    cout << B[b]<<" ";}

    return 0;}
```

```
C:\Users\Naeem ur Rahman\OneDrive\D...
Values in A After Swaping are
4 5 6
Values in B After Swaping are
1 2 3
-----
Process exited after 0.06173 seconds with return v
alue 0
Press any key to continue . . .
```

**QUESTION NO #16**

Frequency of values in array.

**Code:**

```
#include <iostream>
using namespace std;
int main ()
{
    int check[6]={0},i;
    cout << "Enter no of Inputs : ";cin >>i;
    int A[i];
    for(int a=0;a<i;a++)
    {
        cout << "Enter the value : ";cin>>A[a];cout <<endl;
    }
    for (int a=0;a<i;a++)
    {
        if (check[a]==1)
        {
            continue ;
        }
    }
```

```
        int count =1;
        for (int b=a+1;b<i-1;b++)
        {
            if (A[a]==A[b])
            {
                check[b]=1;
                count++;
            }
        }
        cout << "Frequency of "<<A[a]<<" is : " << count <<endl;
    }
    return 0;}
```

```
C:\Users\Naeem ur R...
Enter no of Inputs : 5
Enter the value : 3
Enter the value : 5
Enter the value : 35
Enter the value : 3
Enter the value : 6

Frequency of 3 is : 2
Frequency of 5 is : 1
Frequency of 35 is : 1
Frequency of 6 is : 1

-----
Process exited after 10.14 seconds with return value 0
Press any key to continue . . .
```

**QUESTION NO #17**

Total days to the day you enter from the year starting.

**Code:**

```
#include <iostream>

using namespace std;

int main (){

int a,b,c[12]=
{31,28,31,30,31,30,31,31,30,31,30,31
},t=0;

cout << "Enter the Day (1-31):
";cin>>b;

cout << "Enter the Month (1-12):
";cin>>a;

for(int i=1;i<a;i++){ t += c[i];

}

t+=b;

cout << "Total no of Days from the
start of year to the Day Enter are '"<<
t << "' DAYS"<<endl;

return 0;

}
```

```
C:\Users\Naeem ur Rahman\OneDrive\Desktop\Array 17.exe
Enter the Day (1-31): 23
Enter the Month (1-12): 4
Total no of Days from the start of year to the Day Enter are '112' DAYS
-----
Process exited after 10.92 seconds with return value 0
Press any key to continue . . .
```

**QUESTION NO #18**

Dice Rolled frequency using srand () fun

**Code:**

```
#include <iostream>

#include <stdlib.h>

#include <time.h>

using namespace std;

int main (){ const int size = 7; int
D[size]={0};srand(time(0));

for (int a=1;a<6000;a++){
++D[1+rand()%6] }

cout << "Face"<<setw(15)
<<"Frequency"<<endl;

for (int a=1;a<size;a++){

cout << a<< setw(15)<<D[a]<<endl;}

system ("pause");

return 0;}
```

```
C:\Users\Naeem ur Rahman\OneDrive\Desktop\Array 18.exe
Face      Frequency
1         1010
2          999
3          943
4         1014
5         1041
6          992
Press any key to continue . . .
-----
Process exited after 15.35 seconds with return value 0
Press any key to continue . . .
```

### QUESTION NO #19

Print Astrix using Arrays.

#### Code:

```
#include <iostream>
#include <iomanip>
using namespace std;

int main()
{
    unsigned long i,a[i];

    cout << "Enter the Number of
lines you want to Print : ";cin>>i;

    for (int b=0;b<i;b++)
    {
        cout << b+1 << " Enter :
";cin>>a[b];

    }

    cout << endl;

    for (int c=0;c<i;c++)
    {
```

```
        cout << c+1 << setw(5)
<< a[c] << " ";

        for (int d=0;d<a[c];d++)
        {

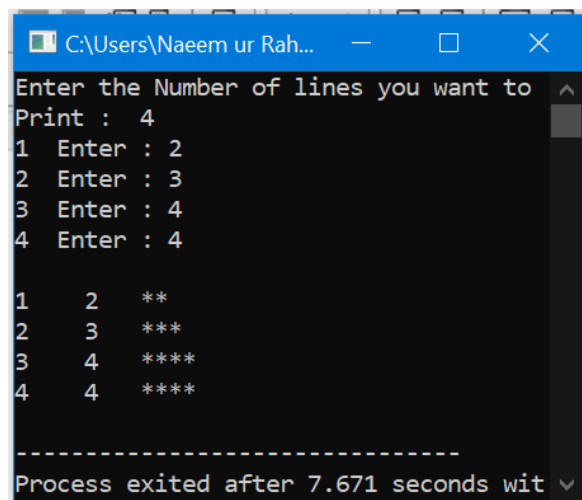
            cout << "**";

        }

        cout << endl;

    }

    return 0;
}
```



```
C:\Users\Naeem ur Rah...
Enter the Number of lines you want to
Print : 4
1 Enter : 2
2 Enter : 3
3 Enter : 4
4 Enter : 4

1 2 **
2 3 ***
3 4 ****
4 4 ****

-----
Process exited after 7.671 seconds wit
```



**QUESTION NO #20**

C++ Program to Find Transpose of a Matrix using array

**Code:**

```
#include <iostream>
using namespace std;

int main(){
    int a[5][5], trans[5][5], r, c, i, j;

    cout << "Enter rows of matrix: ";
    cin >> r;

    cout << "Enter columns of matrix: ";
    cin >> c;

    cout << "Enter Elements to Matrix Below " << endl;

    for(i=0; i<r; i++) {
        for(j=0; j<c; ++j){
            cout << "Enter a[" << i << "][" << j << "] Element : ";
            cin >> a[i][j];
        }
    }

    cout << endl << " The Entered Matrix is " << endl;

    for (i = 0; i < r; ++i){
        for (j = 0; j < c; ++j){
            cout << "\t" << a[i][j]; }
```

```
        cout << "\n";
    }

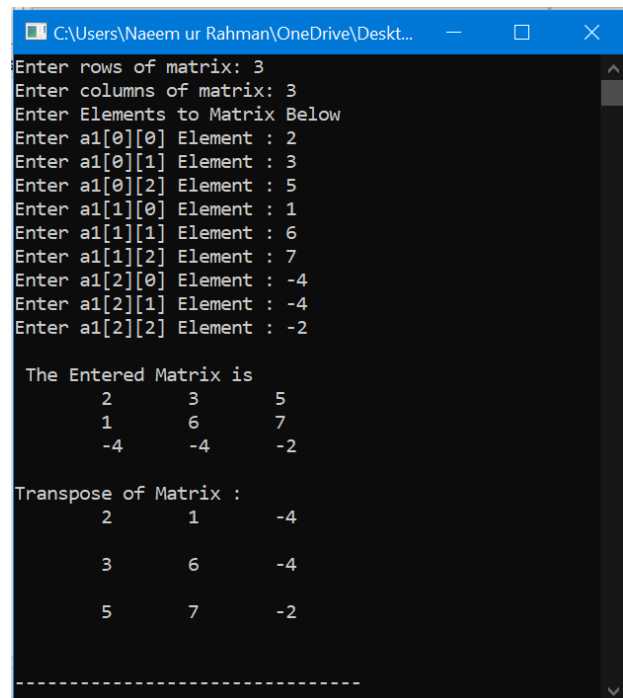
    for(i = 0; i < r; ++i)
        for(j = 0; j < c; ++j){
            trans[j][i] = a[i][j];
        }

    cout << endl << "Transpose of Matrix : " << endl;

    for (i = 0; i < r; ++i){
        for (j = 0; j < c; ++j){
            cout << "\t" << trans[i][j]; }

        cout << "\n\n";
    }

    return 0; }
```



The screenshot shows a Windows command prompt window with the following text:

```
C:\Users\Naeem ur Rahman\OneDrive\Desktop>
Enter rows of matrix: 3
Enter columns of matrix: 3
Enter Elements to Matrix Below
Enter a1[0][0] Element : 2
Enter a1[0][1] Element : 3
Enter a1[0][2] Element : 5
Enter a1[1][0] Element : 1
Enter a1[1][1] Element : 6
Enter a1[1][2] Element : 7
Enter a1[2][0] Element : -4
Enter a1[2][1] Element : -4
Enter a1[2][2] Element : -2

The Entered Matrix is
    2    3    5
    1    6    7
   -4   -4   -2

Transpose of Matrix :
    2    1   -4
    3    6   -4
    5    7   -2
```