

**1. Write a C++ Program that demonstrates the use of Class and Object. 1. Write a C++ Program that demonstrates the use of Class and Object**

```
#include <iostream.h>

#include<conio.h>

// create a class
class Room {
public:
    double length; double
    breadth; double height;
    double calculateArea() {
    return length * breadth;
    }
    double calculateVolume() {
    return length * breadth * height;
    }
};

int main() {
    // create object of Room class
    Room room1;
    // assign values to data members
    room1.length = 42.5; room1.breadth
    = 30.8; room1.height = 19.2;

    // calculate and display the area and volume of the room
    cout << "Area of Room = " << room1.calculateArea() << endl; cout
    << "Volume of Room = " << room1.calculateVolume() << endl;
    getch(); return 0;
```

```
}
```

```
Area of Room = 1309
Volume of Room = 25132.8
```

**2. Write a C++ Program that find Largest from 3 Numbers(Take User input)**

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

```
int main() {
```

```
double n1, n2, n3; cout <<
```

```
"Enter three numbers: "; cin >>
```

```
n1 >> n2 >> n3;
```

```
// check if n1 is the largest number
```

```
if(n1 >= n2 && n1 >= n3) cout <<
```

```
"Largest number: " << n1; // check
```

```
if n2 is the largest number else
```

```
if(n2 >= n1 && n2 >= n3) cout <<
```

```
"Largest number: " << n2;
```

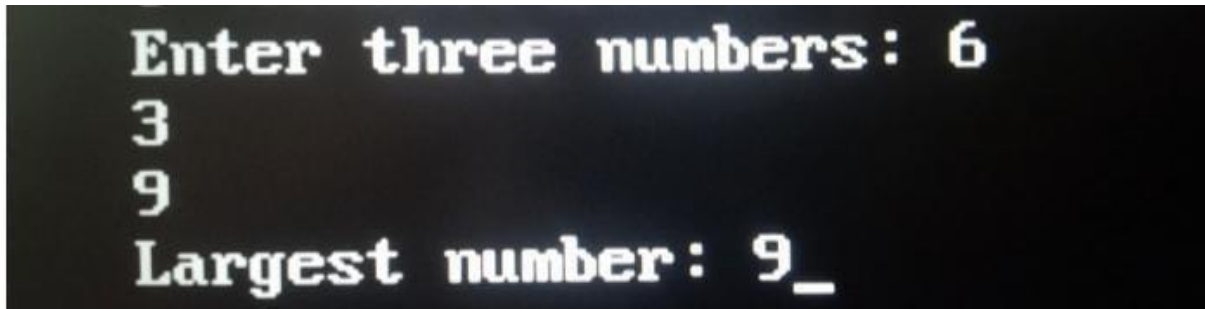
```
// if neither n1 nor n2 are the largest, n3 is the largest
```

```
else
```

```
cout << "Largest number: " << n3;
```

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

```
}
```



### 3. Write a C++ Program that Count Percentage of Student.

Input Roll\_No, Name and 5 Subject marks) .

```
#include <iostream.h>
```

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

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

```
int main() { int
```

```
rollNo;
```

```
char name[50]; float marks[5]; cout << "Enter Roll No: "; cin >> rollNo; cout <<
```

```
"Enter Name: "; cin.ignore(); // Ignore the newline character left in the buffer after  
entering rollNo cin.getline(name, sizeof(name)); float totalMarks = 0; for (i = 0; i <
```

```
5; ++i) {
```

```
cout << "Enter marks for Subject " << i + 1 << ": ";
```

```
cin >> marks[i];
```

```
totalMarks += marks[i];
```

```
}
```

```
float percentage = (totalMarks / (5 * 100)) * 100;
```

```
cout << "\nStudent Details:\n"; cout << "Roll No:
```

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

```
<< endl; cout << "Subject Marks:\n";
```

```
for (int i = 0; i < 5; ++i) {
```

## PROBLEM SHEET-1

```
cout << "Subject " << i + 1 << ": " << marks[i] << endl;
}
cout << "Percentage: " << percentage << "%" << endl;
getch();
return 0;
}
```

```
Enter Roll No: 1
Enter Name: harish
Enter marks for Subject 1: 70
Enter marks for Subject 2: 89
Enter marks for Subject 3: 80
Enter marks for Subject 4: 88
Enter marks for Subject 5: 75
```

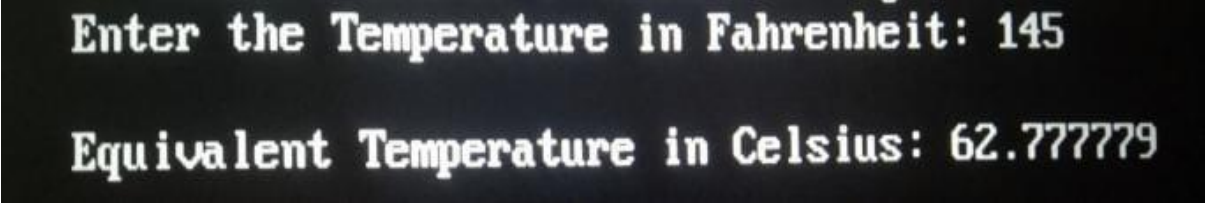
```
Student Details:
Roll No: 1
Name: harish
Subject Marks:
Subject 1: 70
Subject 2: 89
Subject 3: 80
Subject 4: 88
Subject 5: 75
Percentage: 80.400002%
```

**4. Write a C++ program that will ask for a temperature in Fahrenheit and display it in Celsius.**

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

int main()
{
    float fahrenheit, celsius; cout<<"Enter the Temperature
in Fahrenheit: "; cin>>fahrenheit; celsius = (fahrenheit-
```

```
32)/1.8; cout<<"\nEquivalent Temperature in Celsius:
"<<celsius; cout<<endl; getch(); return 0;
}
```



The screenshot shows a black terminal window with white text. The first line reads "Enter the Temperature in Fahrenheit: 145". The second line reads "Equivalent Temperature in Celsius: 62.777779".

## 5. Write a C++ Program that demonstrates the use of Array.

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

int main() { int numbers[5]; cout <<
"Enter 5 numbers: " << endl; //
store input from user to array

for (int i = 0; i < 5; ++i) {
cin >> numbers[i];
}

cout << "The numbers are: ";
// print array elements for
(int n = 0; n < 5; ++n) {
cout << numbers[n] << " ";
}

getch();
return 0;
}
```

```

Enter 5 numbers:
10
30
50
40
80
The numbers are: 10 30 50 40 80 _

```

## 6. Write a C++ Program that demonstrates the use of Type Conversion(Implicit & Explicit Both)

// A C++ program that demonstrates the use of type conversion

```
#include <iostream.h>
```

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

```
main()
```

```
{
```

```
// Implicit type conversion
```

```
// The compiler automatically converts the lower data type to the higher data type
```

```
int x = 10; // x is an int double y = x; // y is a double, x is implicitly converted to
```

```
double
```

```
cout << "x = " << x << endl; // prints 10 cout
```

```
<< "y = " << y << endl; // prints 10.0
```

```
// Explicit type conversion
```

```
// The programmer explicitly converts the data type using casting operators
```

```
double z = 3.14; // z is a double int w = (int) z; // w is an int, z is explicitly
```

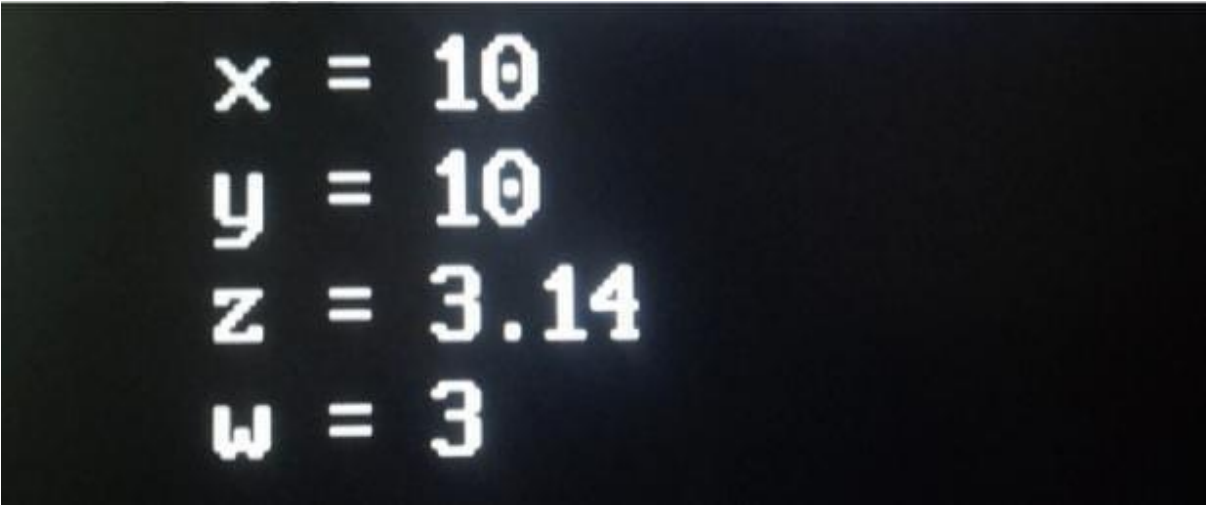
```
converted to int using (int) cout << "z = " << z << endl; // prints 3.14 cout
```

```
<< "w = " << w << endl; // prints 3
```

```
getch();
```

```
return 0;
```

```
}
```



```
x = 10
y = 10
z = 3.14
w = 3
```

## 7. Write a C++ Program that demonstrates the use of Scope Resolution

Operator

```
#include <iostream.h>

// Global variable int
globalVar = 10;

// Function declaration
void printGlobalVar(); int

main() {

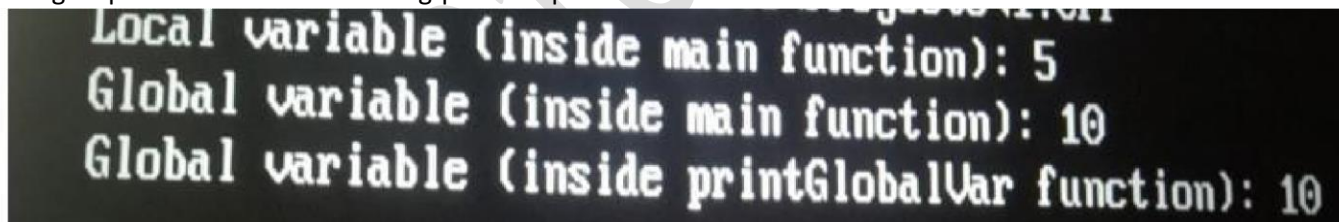
    // Local variable with the same name as the global variable int
    globalVar = 5; cout << "Local variable (inside main function): " <<
    globalVar << endl; cout << "Global variable (inside main function): " <<
    ::globalVar << endl;

    // Call the function to print the global variable
    printGlobalVar(); return 0;
}
```

```
// Function definition to print the global variable void
printGlobalVar() {
    // Access the global variable using the scope resolution operator cout << "Global
variable (inside printGlobalVar function): " << ::globalVar << endl;
}
```

## 8. Write a C++ Program that demonstrates the use of all set and endl Manipulator.

```
#include <iostream.h>
#include <iomanip.h>
#include <conio.h>
int
main() {
    // Using setprecision to format floating-point output
```

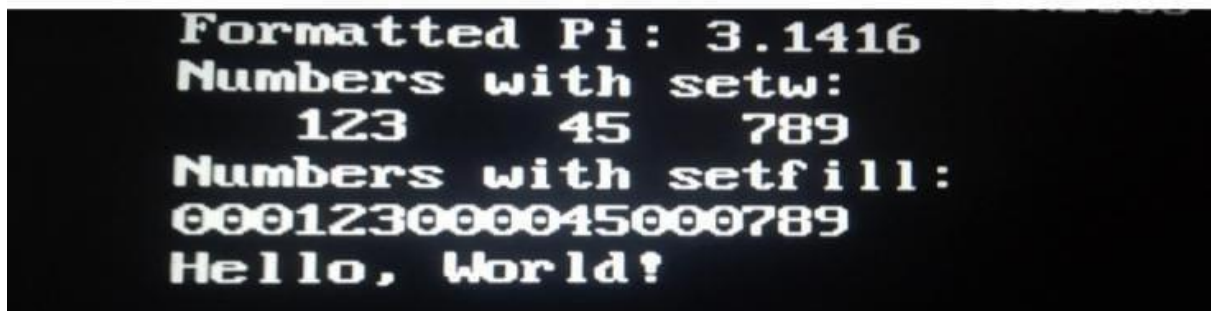


```
Local variable (inside main function): 5
Global variable (inside main function): 10
Global variable (inside printGlobalVar function): 10
```

```
double pi = 3.14159265359; cout << "Formatted Pi: " <<
setprecision(4) << pi << endl; // Using setw to set the
width of the field int num1 = 123; int num2 = 45; int
num3 = 789; cout << "Numbers with setw:\n"; cout <<
setw(6) << num1 << setw(6) << num2 << setw(6) <<
num3 << endl;
// Using setfill to set the fill character
cout << "Numbers with setfill:\n";
cout.fill('0'); // setfill for Turbo C++
cout << setw(6) << num1 << setw(6) << num2 << setw(6) << num3 << endl;
```



```
// Using endl to insert a new line and flush the buffer
cout << "Hello,"; cout << " World!" << endl; getch();
return 0;
}
```



```
Formatted Pi: 3.1416
Numbers with setw:
    123    45    789
Numbers with setfill:
000123000045000789
Hello, World!
```

## 9. Write a C++ Program that demonstrates the use of Call by Value and Call By Reference.

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

// Call by Value: Function takes arguments by value void
callByValue(int num) {

    cout << "Inside callByValue function:\n"; cout <<
    "Original value of num: " << num << endl; num =
    20; // Modifying the local copy of num cout <<
    "Modified value of num: " << num << endl;
}

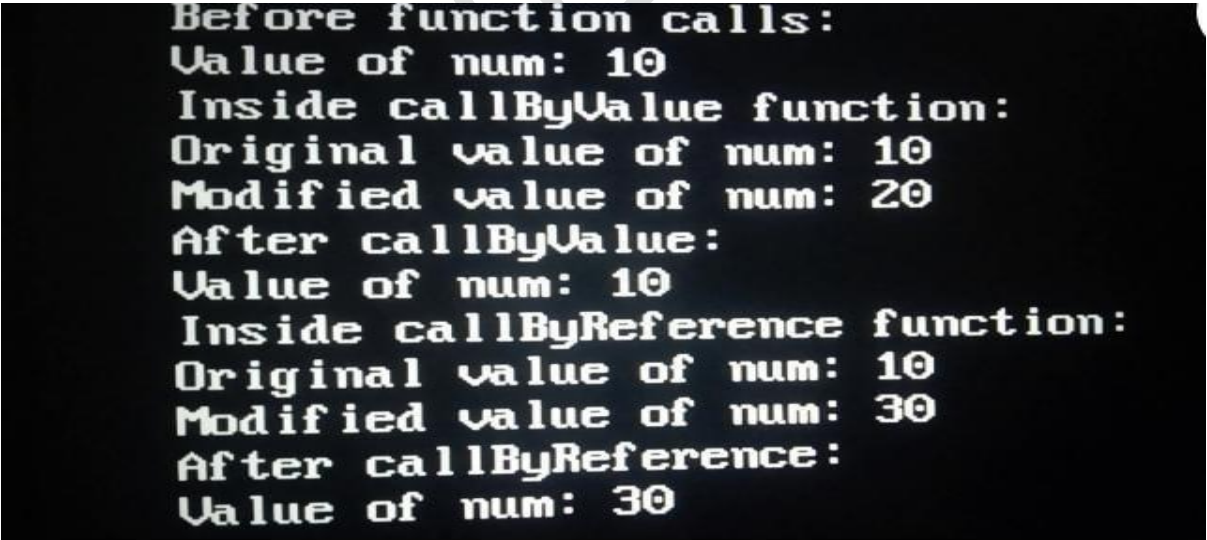
// Call by Reference: Function takes arguments by reference void
callByReference(int& num) { cout << "Inside callByReference function:\n";
cout << "Original value of num: " << num << endl; num = 30; // Modifying the
```

## PROBLEM SHEET-1

```
original value of num (since we have the reference) cout << "Modified value of
num: " << num << endl;
}

int main() { int num = 10; cout <<
"Before function calls:\n"; cout << "Value
of num: " << num << endl;
callByValue(num); cout << "After
callByValue:\n"; cout << "Value of num: "
<< num << endl;
// Call by Reference
callByReference(num); cout << "After
callByReference:\n"; cout << "Value of
num: " << num << endl; getch();

return 0;
```



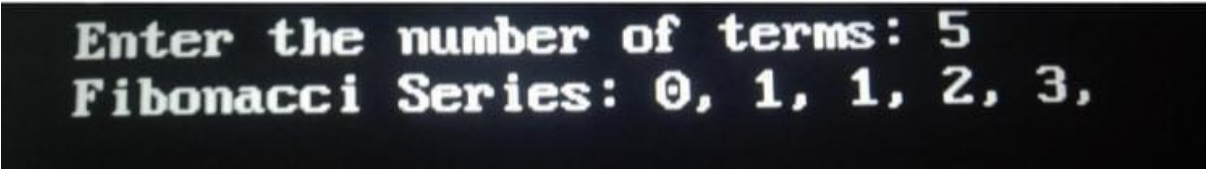
```
Before function calls:
Value of num: 10
Inside callByValue function:
Original value of num: 10
Modified value of num: 20
After callByValue:
Value of num: 10
Inside callByReference function:
Original value of num: 10
Modified value of num: 30
After callByReference:
Value of num: 30
```

### 10. Write a C++ program that will find Factorial of Given no.

```
#include <iostream.h>
```

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

```
int main() {
    int n; long factorial = 1.0; cout <<
    "Enter a positive integer: "; cin >>
    n; if (n < 0)
        cout << "Error! Factorial of a negative number doesn't exist.";
    else { for(int i = 1; i <=
        n; ++i) { factorial *= i;
        }
        cout << "Factorial of " << n << " = " << factorial;
    }
    getch();
    return 0;
}
```



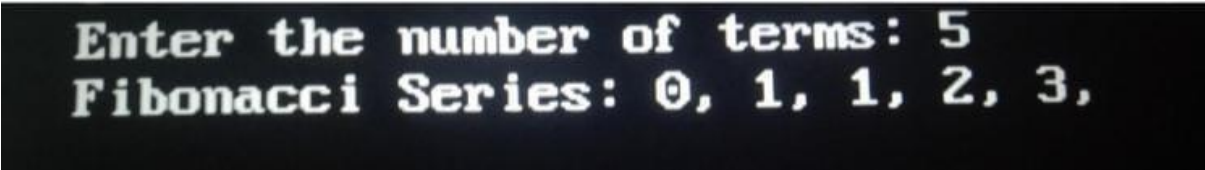
```
Enter the number of terms: 5
Fibonacci Series: 0, 1, 1, 2, 3,
```

## 11. Write C++ programs that will Print Fibonacci Series.

```
#include <iostream.h>
#include<conio.h>
int main() { int n, t1 = 0, t2 = 1,
    nextTerm = 0; cout << "Enter the
    number of terms: ";
    cin >> n; cout << "Fibonacci
    Series: ";
    for (int i = 1; i <= n; ++i) { //
    Prints the first two terms.
```

## PROBLEM SHEET-1

```
if(i == 1) {  
    cout << t1 << " ";  
    continue;  
}  
if(i == 2) {  
    cout << t2 << " ";  
    continue;  
}  
nextTerm = t1 + t2;  
t1 = t2;  
t2 = nextTerm;  
  
cout << nextTerm << " ";  
}  
getch();  
return 0;  
}
```



Enter the number of terms: 5  
Fibonacci Series: 0, 1, 1, 2, 3,

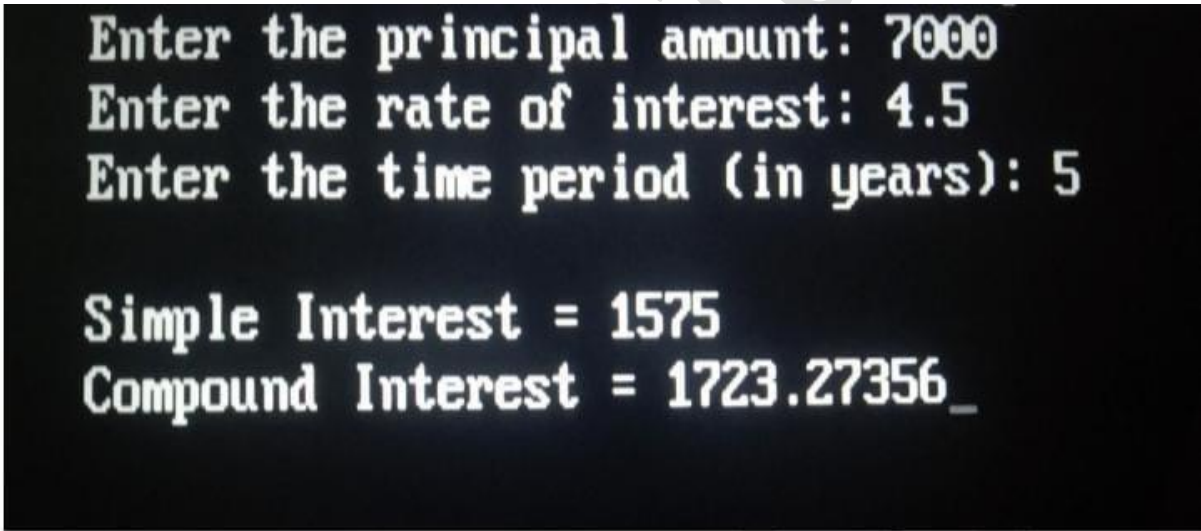
**12. Write a C++ Program that will find Simple Interest and Compound Interest.**

```
#include <iostream.h>  
  
#include <math.h> #include <conio.h>  
  
int main()  
{ float p, r, t, si,  
ci;
```

```

cout << "Enter the principal amount: "; cin
>> p; cout << "Enter the rate of interest: ";
cin >> r; cout << "Enter the time period (in
years): ";
cin >> t; si = (p * r * t) / 100; ci = p *
pow((1 + r / 100), t) - p; cout <<
"\nSimple Interest = " << si; cout <<
"\nCompound Interest = " << ci;
getch();
return 0;
}

```



```

Enter the principal amount: 7000
Enter the rate of interest: 4.5
Enter the time period (in years): 5

Simple Interest = 1575
Compound Interest = 1723.27356_

```

### 13. Write a C++ Program that demonstrates the use of Friend Function.

```

#include<iostream.h>

#include<conio.h> class B; //
forward declaration class A {
private: int numA;

```

```

public:
A(): numA(12) { }
// friend function declaration
friend int add(A, B);
};

class B {
private: int
numB;
public:
B(): numB(1) { }
// friend function declaration
friend int add(A, B);
};
// Function add() is the friend function of classes A and B
int add(A objectA, B objectB) { return (objectA.numA +
objectB.numB);
}
int main() { A objectA; B objectB;
cout<<"Sum: "<< add(objectA, objectB);
getch();
return 0;
}

```



Sum: 13\_

**14. Write a C++ program that will print pyramid pattern of stars(\* ).**

## PROBLEM SHEET-1

```
// C++ code to demonstrate star pattern
#include <iostream.h>
#include<conio.h>
// Function to demonstrate printing pattern void
pypart2(int n)
{
// Number of spaces
int i, j, k = n;
// Outer loop to handle number of rows
// n in this case
for (i = 1; i <= n; i++) { //
Inner loop for columns
for (j = 1; j <= n; j++) {
// Condition to print star pattern
if (j >= k)
cout << "* ";
else cout <<
" ";
}
k--;
cout << "\n";
}
}

// Driver Code int
main()
{
```

## PROBLEM SHEET-1

```
int n = 7; //  
Function Call  
pypart2(n);  
getch(); return  
0;  
}
```



**15. Write a C++ program that will check no is palindrome or not.**

```
#include <iostream.h>  
#include <conio.h>  
int main()  
{  
    int n, num, digit, rev = 0; cout <<  
    "Enter a positive number: "; cin >>  
    num; n = num; do  
{
```




## PROBLEM SHEET-1

```
digit = num % 10; rev
= (rev * 10) + digit;
num = num / 10;
} while (num != 0); cout << " The reverse of the number
is: " << rev << endl;
if (n == rev)

cout << " The number is a palindrome.";
else
cout << " The number is not a palindrome.";

getch();
return 0
```



```
Enter a positive number: 121
The reverse of the number is: 121
The number is a palindrome._
```

220202010101193