# Amity University, Rajasthan

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**1.Write a C ++ program to print "Hello World"**

**Code:**

#include <iostream>

using namespace std;

int main()

{

    // prints hello world

    cout << "Hello World";

    return 0;

**}**

**Output:**

Hello World

**2.Write a C ++ program to enter and print the Number**

**Code:**

#include<iostream>

using namespace std;

int main()

{

    int num=10;

    cout<<"The Value of 'num' is "<<num;

    cout<<endl;

    return 0;

}

**Output:**

The Value of 'num' is 10

**3.Write a C ++ program to add two numbers.**

**Code:**

#include<iostream>

using namespace std;

main()

{

      float v1,v2;

      char si;

      cout<<"Enter two number"<<endl;

      cin>>v1>>v2;

    cout<<"Sum of  "<<v1<<" and "<<v2<<" is "<<v1+v2<<endl;/\* code \*/

return 0;

}

**Output:**

Enter two number

2

3

Sum of 2 and 3 is 5

**4.Write a C++ program to Swap two Numbers.**

**Code:**

#include<iostream>

using namespace std;//Arpit Agarwal//

int main()

{

    int a=5,b=6,var;

    cout<<"before swap a="<<a<<" b="<<b<<endl;

    var=a;

    a=b;

    b=var;

    cout<<"after swap  a="<<a<<" b="<<b<<endl;

    return 0;

}

**Output:**

before swap a=5 b=6

after swap a=6 b=5

**5.Write a C ++ program to check whether the given number is even or odd.**

**Code:**

#include <iostream>

using namespace std;

int main()

{

    int n;

    cout<<"Enter number"<<endl;

    cin>>n;

    if(n%2==0)

    {

          cout<<"even";

    }

    else

    {

        cout<<"odd";

    }

return 0;

}

**Output:**

Enter number

5

Odd

Enter number

120

Even

**6.Write C ++ program to find largest number among three numbers.**

**Code:**

#include <iostream>

using namespace std;

int main()

{

    int n,m,x;

    cout<<"Enter three number"<<endl;

    cin>>n>>m>>x;

    if(n>m && (n>x))

    {

        cout<<"first is greter"<<endl;

    }

    if(m>x)

    {

       cout<<"second is greter"<<endl;

    }

    else{

        cout<<"third is greter"<<endl;

    }

return 0;

}

**Output:**

Enter three number

1

5

3

second is greater

You was in Arpit Agarwal World

**7.Write a C++ program to check the leap year.**

**Code:**

#include <iostream>

using namespace std;

int main()

{

    int year;

    cout << "Enter a year: ";

    cin >> year;

    if (year % 4 == 0)

    {

        if (year % 100 == 0)

        {

            if (year % 400 == 0)

                cout << year << " is a leap year."<<endl;

            else

                cout << year << " is not a leap year."<<endl;

        }

        else

            cout << year << " is a leap year."<<endl;

    }

    else

        cout << year << " is not a leap year."<<endl;

    return 0;

    cout << "You was in Arpit Agarwal World";

    return 0;

}

**Output:**

Enter a year: 2004

2004 is a leap year.

Enter a year: 1900

1900 is not a leap year.

**8.Write a C++ program to find the factorial of the number.**

**Code:**

#include <iostream>

using namespace std;

int main()

{

    int n;

    long double f=1.0;

    cout<<"Enter number"<<endl;

    cin>>n;

    for(int i = 1; i <= n; ++i)

    {

            f \*= i;

    }

    cout<<"Factorial of "<< n<<"="<<f;

return 0;

}

**Output:**

Enter number

5

Factorial of 5=120

Enter number

7

Factorial of 7=5040

**9. write a C++ program to find GCD.**

**Code:**

#include <iostream>

using namespace std;

int gcd(int a, int b)

{

    if (a == 0)

    return b;

    if (b == 0)

    return a;

    if (a == b)

        return a;

    if (a > b)

    return gcd(a-b, b);

    if(a<b)

    return gcd(a, b-a);

}

int main()

{

    int a,b;

    cout<<"Enter two number"<<endl;

    cin>>a>>b;

    cout<<"GCD of "<<a <<" and "<<b<<" is " << gcd(a, b);

    return 0;

}

**Output:**

Enter two number

5

25

GCD of 5 and 25 is 5

Enter two number

17

34

GCD of 17 and 34 is 17

**10. write a C++ program to find LCM**

**Code:**

#include <iostream>

using namespace std;

int gcd(int a, int b)

{

    if (a == 0)

    return b;

    if (b == 0)

    return a;

    if (a == b)

        return a;

    if (a > b)

    return gcd(a-b, b);

    if(a<b)

    return gcd(a, b-a);

}

int main()

{

    int a,b;

    cout<<"Enter two number"<<endl;

    cin>>a>>b;

    int r =a\*b;

    int p=r/gcd(a,b);

    cout<<"LCM="<<p;

    return 0;

}

**Output:**

Enter two number

7

35

LCM=35

**11.write a C++ program to generate multiplication table.**

**Code:**

#include <iostream>

using namespace std;

int main()

{

    int n;

    cout << "Enter a positive integer: ";

    cin >> n;

    for (int i = 1; i <= 10; ++i) {

        cout << n << " \* " << i << " = " << n \* i << endl;

    }

    return 0;

}

**Output:**

Enter a positive integer: 5

5 \* 1 = 5

5 \* 2 = 10

5 \* 3 = 15

5 \* 4 = 20

5 \* 5 = 25

5 \* 6 = 30

5 \* 7 = 35

5 \* 8 = 40

5 \* 9 = 45

5 \* 10 = 50

**12. Write a C++ program to calculate the power of a number.**

**Code:**

#include <iostream>

using namespace std;

int main(){

    int base, exp, i, result = 1;

 cout << "Enter base and exponent\n";

    cin >> base >> exp;

    for(i = 0; i < exp; i++){

        result = result \* base;

    }

    cout << base << "^" << exp << " = " << result;

    return 0;

}

**Output:**

Enter base and exponent

2

4

2^4 = 16

**13. Write a C++ program to check whether the number is palindrome or not.**

**Code:**

#include <iostream>

using namespace std;

int main()

{

    int num, n, digit, reverse = 0;

    cout << "Enter a number" << endl;

    cin >> num;

    n = num;

    while (n != 0)

    {

        digit = n % 10;

        reverse = (reverse \* 10) + digit;

        n = n / 10;

    }

    if (num == reverse)

        cout << "The number is a palindrome.";

    else

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

    cout << endl;

    return 0;

}

**Output:**

Enter a number

141

The number is a palindrome.

Enter a number

326

The number is not a palindrome.

**14.Write a C++ program to create an object of a class and access class attributes.**

**Code:**

#include<iostream>

using namespace std;

class student

{

    char name[40],grade;

    int rollno;

    public:

         void readDetails();

         void printDetails();

};

void student :: readDetails(void)

{

    cout<<"Enter name: "<<endl;

    cin>>name;

    cout<<"Enter roll number: "<<endl;

    cin>>rollno;

    cout<<"Enter grade:"<<endl;

    cin>>grade;

}

void student::printDetails(void)

{

cout<<"Student Details: \n";

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

cout<<"Roll number "<<rollno<<endl;

cout<<"Grade: "<<grade<<endl;

}

int main()

{

        student stu;

        stu.readDetails();

        cout<<"\nDetails of student "<<endl;

        stu.printDetails();

    return 0;

}

**Output:**

Enter name:

Arpit

Enter roll number:

2

Enter grade:

A

Details of student

Student Details:

Name: Arpit

Roll number 2

Grade: A

**15. write a C++ program to read and add two distances.**

**Code:**

#include <iostream>

using namespace std;

class distance

{

    int d,D1;

    public:

    void read(void);

    void print(void);

}stu;

void distance :: read(void)

{

    cout<<"Enter first distance"<<endl;

    cin>>d;

    cout<<"Enter first distance"<<endl;

    cin>>D1;

}

void distance :: print(void)

{

  cout<<"Addition of two distance: "<<d+D1<<endl;

}

int main()

{

      stu.read();

      stu.print();

}

**Output:**

Enter first distance

5

Enter first distance

25

Addition of two distance: 30

**16.write a C++ program to calculate the area of circle, triangle, square and rectangle using class and object.**

**Code:**

#include <iostream>

using namespace std;

class area{

    const double pi=3.14;

    float r,a,b,h;

    public:

    void areacircle(void);

    void areatriangle(void);

    void squre(void);

    void arearectangle(void);

};

void area :: areacircle(void)

{

    cout<<"Enter radius of circle "<<endl;

    cin>>r;

    float c = pi\*r\*r;

    cout<<"Area of circle="<<c<<endl;

}

void area :: areatriangle(void)

{

    cout<<"Enter value of base"<<endl;

    cin>>b;

    cout<<"Enter the value of height"<<endl;

    cin>>h;

    float t=0.5\*b\*h;

    cout<<"Area of triangle="<<t<<endl;

}

void area :: squre(void)

{

cout<<"Enter value of side"<<endl;

cin>>a;

cout<<"Area of square="<<a\*a<<endl;

}

void area :: arearectangle(void)

{

    cout<<"Enter value of length"<<endl;

    cin>>h;

    cout<<"Enter value of  breath"<<endl;

    cin>>b;

   float s=b\*h;

    cout<<"Area of rectangle="<<s<<endl;

}

int main()

{

    area a;

    int choice = 0;

    while (choice != 5)

    {

        cout << "MENU" << endl;

        cout << "1.Area of circle" << endl;

        cout << "2.Area of  rectangle" << endl;

        cout << "3.Area of triangle" << endl;

        cout << "4.Area of square" << endl;

        cout << "5.Quit" << endl;

        cout << "Enter your choice: ";

        cin >> choice;

        switch (choice)

        {

        case 1:

            a.areacircle();

            break;

        case 2:

            a.arearectangle();

            break;

        case 3:

            a.areatriangle();

            break;

        case 4:

            a.squre();

            break;

        default:

            cout << "You were in Arpit Agarwal world" << endl;

        }

    }

    return 0;

}

**Output:**

MENU

1.Area of circle

2.Area of rectangle

3.Area of triangle

4.Area of square

5.Quit

Enter your choice: 1

Enter radius of circle

5

Area of circle=78.5

MENU

1.Area of circle

2.Area of rectangle

3.Area of triangle

4.Area of square

5.Quit

Enter your choice: 5

You were in Arpit Agarwal world

**17.Write a Friend function to add number.**

**Code:**

#include <iostream>

using namespace std;

class SecondNum;

class FirstNum

{

    double a;

public:

    void getA()

    {

        cout << "Enter first number: ";

        cin >> a;

    }

    friend void add(FirstNum, SecondNum);

};

class SecondNum

{

    double b;

public:

    void getB()

    {

        cout << "Enter second number: ";

        cin >> b;

    }

    friend void add(FirstNum, SecondNum);

};

void add(FirstNum x, SecondNum y)

{

    cout << x.a + y.b << endl;

}

int main()

{

    FirstNum first;

    SecondNum second;

    first.getA();

    second.getB();

    add(first, second);

    return 0;

}

**Output:**

Enter first number: 5

Enter second number: 4

9

**18.Write a Program in which make Friend Function to find greatest in two number.**

**Code:**

#include <iostream>

using namespace std;

class First

{

    double a, b;

public:

    void getInput()

    {

        cout << "Enter first number: ";

        cin >> a;

        cout << "Enter second number: ";

        cin >> b;

    }

    friend void max(First);

};

void max(First one)

{

    if (one.a > one.b)

        cout << one.a << " is greater" << endl;

    else

        cout << one.b << " is greater" << endl;

}

int main()

{

    First theOne;

    theOne.getInput();

    max(theOne);

    return 0;

}

**Output:**

Enter first number: 5

Enter second number: 6

6 is greater

Enter first number: 254

Enter second number: 253

254 is greater

**19.Write a program make Friend function to add two complex number.**

**Code:**

#include <iostream>

using namespace std;

class Complex

{

    int real, img;

public:

    void getInput()

    {

        cout << "Enter a complex number: ";

        cin >> real >> img;

    }

    int putReal()

    {

        return real;

    }

    int putImg()

    {

        return img;

    }

    friend Complex sum(Complex, Complex);

};

Complex sum(Complex a, Complex b)

{

    Complex sum;

    sum.real = a.real + b.real;

    sum.img = a.img + b.img;

    return sum;

}

int main()

{

    Complex x, y, z;

    x.getInput();

    y.getInput();

    z = sum(x, y);

    cout << "The sum of complex number is " << z.putReal() << "+i" << z.putImg() << endl;

    return 0;

}

**Output:**Enter a complex number: 5

4

Enter a complex number: 2

3

The sum of complex number is 7+i7

**20.Write a program to find gretest in two number by using friend function in two class .**

**Code:**

#include <iostream>

using namespace std;

class A;

class B{

int X;

public:

void setvalue(int i){X=i;}

friend void mac(A,B);

};

class A

{

int a;

public:

void setvalue(int i){a=i;}

friend void mac(A,B);

};

void mac(A p,B q){

    if(p.a >= q.X)

    {

        cout<< "Max ="<<p.a;

    }

    else

    {

        cout<< "Max ="<<q.X;

    }

}

int main()

{

    A a;

    a.setvalue(5);

    B b;

    b.setvalue(7);

    mac(a,b);

}

**Output:**

Max =7

**21. Write a program to swap number of two classes by friend function.**

#include <iostream>

using namespace std;

class B;

class A{

    int v1;

    public:

    void indata(int a){ v1=a;}

    void display(void){

cout<<v1<<endl;

    }

    friend void exchange(A &,B &);

};

class B{

    int v2;

    public:

    void indata(int a){ v2=a;}

    void display(void){

cout<<v2<<endl;

    }

    friend void exchange(A &,B &);

};

void exchange(A & x, B & y){

    int temp=x.v1;

    x.v1=y.v2;

    y.v2=temp;

}

int main()

{

    A a;

    B b;

    a.indata(5);

    b.indata(8);

    cout<<"value befor exhange \n";

    a.display();

    b.display();

    exchange(a,b);

    cout<<"value after exhange \n";

    a.display();

    b.display();

return 0;

}

**Output:**

value befor exhange

5

8

value after exhange

8

5

**22. Write a program to find area circle, triangle,sqaure by Constructor overloading.**

**Code:**

#include <iostream>

using namespace std;

class area

{

    const double pi = 3.14;

    float r, a, b, h, ar;

public:

    area();

    area(int x);

    area(int y, int z);

    void displaly(void)

    {

        cout << "area " << ar << endl;

    }

};

area ::area()

{ cout << "Enter radius of circle " << endl;

    cin >> r;

    ar = pi \* r \* r;

}

area ::area(int x)

{

    a = x;

    cout << "value of side " << a << endl;

    ar = a \* a;

}

area ::area(int y, int z)

{

    h = z;

    b = y;

    cout << "value of base " << b << endl;

    cout << "value of heght" << h << endl;

    ar = 0.5 \* b \* h;

}

int main()

{ int choice;

    while (choice != 4)

    {

        cout << "1. For area of circle" << endl;

        cout << "2. For area square" << endl;

        cout << "3. area of Triangle" << endl;

        cout << "4.Quit" << endl;

        cout << "Enter your choice: ";

        cin >> choice;

        switch (choice)

        {

        case 1:

        {

            area a;

            a.displaly();

            break;

        }

        case 2:

        { int s;

            cout << "Enter value of side" << endl;

            cin >> s;

            area b(s);

            b.displaly();

            break;

        }

        case 3:

        {

            int p, q;

            cout << "Enter value of base" << endl;

            cin >> p;

            cout << "Enter the value of heght" << endl;

            cin >> q;

            area c(p, q);

            c.displaly();

            break;

        }

        case 4:

        {

            cout << "Thank you 'you was in Arpit Agarwal World' " << endl;

            exit;

        }

        }}}

**Output:**

1. For area of circle

2. For area square

3. area of Triangle

4.Quit

Enter your choice: 1

Enter radius of circle

5

area 78.5

1. For area of circle

2. For area square

3. area of Triangle

4.Quit

Enter your choice: 3

Enter value of base

5

Enter the value of heght

4

value of base 5

value of heght4

area 10

1. For area of circle

2. For area square

3. area of Triangle

4.Quit

Enter your choice: 4

Thank you 'you was in Arpit Agarwal'

**23.Write a program to implement copy constructor.**

#include <iostream>

using namespace std;

class A

{

  public: int x;

    A (int a)

    {

      x=a;

    }

    A (A &i)

    {

      x = i.x;

    }

};

int main ()

{

  A a(40);

  A a2(a);

  cout<<a2.x;

  return 0;

}

**Output:**

**40**

**24.Write a program to implement destructor.**

**Code:**

#include <iostream>

using namespace std;

int count=0;

class A{

    public:

    A(){

        count++;

        cout<<"No of object created \n"<<count<<endl;

    }

    ~A()

    {

          cout<<"No of object distroyed \n"<<count<<"\n";

          count--;

    }

};

int main(){

    A a1,a2,a3;

    {

        cout<<"\n Enter block one";

        A a4;

    }

     {

        cout<<"\n Enter block two";

        A a5;

    }

    return 0;

}

**Output:**

No of object created

1

No of object created

2

No of object created

3

Enter block oneNo of object created

4

No of object distroyed

4

Enter block twoNo of object created

4

No of object distroyed

4

No of object distroyed

3

No of object distroyed

2

No of object distroyed

1

**25.Write a program to implement Dynamic constructor.**

**Code:**

#include <iostream>

#include<cstring>

using namespace std;

class strin{

    int length;

    char \* name;

    public:

    strin(){

        length=0;

        name= new char[length+1];

    }

    strin(const char \* s){

        length=strlen(s);

        name = new char[length+1];

        strcpy(name,s);

    }

    void display(){

        cout<<name<<endl;

    }

    void join(strin &,strin &);

};

void strin :: join(strin &a,strin &b){

    length=a.length+b.length;

    delete name;

    name = new char[length+1];

    strcpy(name,a.name);

    strcat(name,b.name);

}

int main(){

    strin name1("Arpit "),name2("Agarwal"),s;

    name1.display();

    name2.display();

    s.join(name1,name2);

    s.display();

}

**Output:**

Arpit

Agarwal

Arpit Agarwal

**26.Write a program to implement single inheritance in protected mode.**

**Code:**

#include <bits/stdc++.h>

using namespace std;

class employee

{

public:

    int id;

};

class programmer : protected employee

{

public:

    int id\_p;

    void get\_id(void)

    {

        cout << "Enter id " << endl;

        cin >> id;

        cout << id;

    }

};

int main()

{

    programmer obj1;

    obj1.id\_p = 007;

    obj1.get\_id();

    cout << "\n\n Programmer id is " << obj1.id\_p << endl;

    return 0;

}

**Output:**

*Enter id*

*5*

*5*

*Programmer id is 7*

**27. Write a program to implement single inheritance in private mode.**

**Code:**

#include <bits/stdc++.h>

using namespace std;

class employee

{

public:

    int id;

};

class programmer : private employee

{

public:

    int id\_p;

    void get\_id(void)

    {

        cout << "Enter id " << endl;

        cin >> id;

        cout << "\nemployee id is " << id << endl;

    }

};

int main()

{

    programmer obj1;

    obj1.id\_p = 007;

    obj1.get\_id();

    cout << "\n\n Programmer id is " << obj1.id\_p << endl;

    return 0;

}

**Output:**

Enter id

5

employee id is 5

Programmer id is 7

**28. Write a program to implement Multiple inheritance .**

**Code:**

#include <bits/stdc++.h>

using namespace std;

class employee

{

public:

    int id;

};

class human

{

public:

    string name;

};

class programmer : protected employee, private human

{

public:

    int id\_p;

    void get\_id(void)

    {

        cout << "Enter id " << endl;

        cin >> id;

    }

    void get\_name(void)

    {

        cout << "Enter name " << endl;

        cin >> name;

    }

    void printDAta()

    {

        cout << "name: " << name;

        cout << "\nemployee id is " << id << endl;

    }

};

int main()

{

    programmer obj1;

    obj1.id\_p = 007;

    obj1.get\_name();

    obj1.get\_id();

    obj1.printDAta();

    cout << "Programmer id is " << obj1.id\_p << endl;

    return 0;

}

**Output:**

Enter name

Arpit

Enter id

5

name: Arpit

employee id is 5

Programmer id is 7

**29. Write a program to implement Multilevel inheritance in protected mode.**

**Code:**

#include <bits/stdc++.h>

using namespace std;

class employee

{

public:

    int id;

    string name;

};

class programmer : protected employee

{

public:

    int id\_p;

};

class human : protected programmer

{

public:

    int human\_id;

    void get\_idp(void)

    {

        cout << "Enter programmer id " << endl;

        cin >> id\_p;

    }

    void get\_name(void)

    {

        cout << "Enter name " << endl;

        cin >> name;

    }

    void printDAta()

    {

        cout << "name: " << name;

        cout << "\nprogrammer id is " << id\_p << endl;

    }

};

int main()

{

    human obj1;

    obj1.human\_id = 101;

    obj1.get\_idp();

    obj1.get\_name();

    obj1.printDAta();

    cout << "human id is " << obj1.human\_id << endl;

    return 0;

}

**Output:**

Enter programmer id

5

Enter name

Arpit

name: Arpit

programmer id is 5

human id is 101

**30. Write a program to implement Multilevel inheritance in private mode.**

**Code:**

#include <bits/stdc++.h>

using namespace std;

class employee

{

public:

    int id;

    string name;

};

class programmer : private employee

{

public:

    int id\_p;

};

class human : private programmer

{

public:

    int human\_id;

    void get\_idp(void)

    {

        cout << "Enter programmer id " << endl;

        cin >> id\_p;

    }

    void printDAta()

    {

        cout << "\nprogrammer id is " << id\_p << endl;

    }

};

int main()

{

    human obj1;

    obj1.human\_id = 101;

    obj1.get\_idp();

    obj1.printDAta();

    cout << "human id is " << obj1.human\_id << endl;

    return 0;

}

**Output:**

Enter programmer id

5

programmer id is 5

human id is 101

**31. Write a program to Hierarchical inheritance in protected mode.**

**Code:**

#include <bits/stdc++.h>

using namespace std;

class human

{

public:

    string name;

};

class employee : protected human

{

public:

    int id;

    void get\_name(void)

    {

        cout << "Enter name for employee" << endl;

        cin >> name;

    }

    void printDAta()

    {

        cout << "name: " << name;

    }

};

class programmer : protected human

{

public:

    int id\_p;

    void get\_name(void)

    {

        cout << "Enter name for programmer" << endl;

        cin >> name;

    }

    void printDAta()

    {

        cout << "name: " << name;

    }

};

class p1 : protected programmer

{

public:

    int id\_p1;

    void get\_name(void)

    {

        cout << "Enter name for programmer p1" << endl;

        cin >> name;

    }

    void printDAta()

    {

        cout << "name: " << name;

    }

};

int main()

{

    programmer obj1;

    obj1.id\_p = 007;

    obj1.get\_name();

    obj1.printDAta();

    cout << "\nProgrammer id is " << obj1.id\_p << endl;

    p1 p1;

    p1.get\_name();

    p1.printDAta();

    return 0;

}

**Output:**

Enter name for programmer

Arpit

name: Arpit

Programmer id is 7

Enter name for programmer p1

Monika

name: Monika

**32.Write a program to implement Hierarchical inheritance in private mode.**

**Code:**

#include <bits/stdc++.h>

using namespace std;

class human

{

public:

    string name;

};

class employee : private human

{

public:

    int id;

    void get\_name(void)

    {

        cout << "Enter name for employee" << endl;

        cin >> name;

    }

    void printDAta()

    {

        cout << "name: " << name;

    }

};

class programmer : private human

{

public:

    int id\_p;

    void get\_name(void)

    {

        cout << "Enter name for programmer" << endl;

        cin >> name;

    }

    void printDAta()

    {

        cout << "name: " << name;

    }

};

/\*

class p1 : private programmer

{

    public:

        int id\_p;

    void get\_name(void)

    {

        cout << "Enter name " << endl;

        cin >> name;

    }

    void printDAta()

    {

        cout << "name: " << name;

    }

};

\*/

int main()

{

    programmer obj1;

    obj1.id\_p = 007;

    obj1.get\_name();

    obj1.printDAta();

    cout << "\nProgrammer id is " << obj1.id\_p << endl;

    employee e1;

    e1.get\_name();

    e1.printDAta();

    return 0;

}

**Output:**

Enter name for programmer

Arpit

name: Arpit

Programmer id is 7

Enter name for employee

Monika

name: Monika

**33.Write a program to implement Hybrid inheritance.**

**Code:**

#include <iostream>

using namespace std;

class A

{

    protected:

    int a;

    public:

    void get\_a()

    {

       std::cout << "Enter the value of 'a' : " << std::endl;

       cin>>a;

    }

};

class B : public A

{

    protected:

    int b;

    public:

    void get\_b()

    {

        std::cout << "Enter the value of 'b' : " << std::endl;

       cin>>b;

    }

};

class C

{

    protected:

    int c;

    public:

    void get\_c()

    {

        std::cout << "Enter the value of c is : " << std::endl;

        cin>>c;

    }

};

class D : public B, public C

{

    protected:

    int d;

    public:

    void mul()

    {

         get\_a();

         get\_b();

         get\_c();

         std::cout << "Multiplication of a,b,c is : " <<a\*b\*c<< std::endl;

    }

};

int main()

{

    D d;

    d.mul();

    return 0;

}

**Output:**

Enter the value of 'a' :

2

Enter the value of 'b' :

5

Enter the value of c is :

7

Multiplication of a,b,c is : 70

**34. Write a program to implement operator overloading.**

**Code:**

#include <iostream>

using namespace std;

class complex

{

    int x, y;

public:

    complex() {}

    complex(int p, int q)

    {

        x = p;

        y = q;

    }

    complex operator+(complex c)

    {

        complex t;

        t.x = x + c.x;

        t.y = y + c.y;

        return (t);

    }

    void display(void);

};

void complex ::display(void)

{

    cout << x << "+i" << y << endl;

}

int main()

{

    complex c1, c2, c3;

    c1 = complex(1, 2);

    c2 = complex(2, 3);

    c3 = c1 + c2;

    cout << "c1=";

    c1.display();

    cout << "c2=";

    c2.display();

    cout << "c3=";

    c3.display();

    cout<<"You was in Arpit Agarwal World";

    return 0;

}

**Output:**

*c1=1+i2*

*c2=2+i3*

*c3=3+i5*

*You was in Arpit Agarwal World*

**35.Write a program to calculate addition, multiplication divide and modulus of two numbers using classes.**

**Code:**

#include <iostream>

#include <math.h>

using namespace std;

class Calculator

{

    double A, B;

public:

    void get()

    {

        cout << "Enter First Number: ";

        cin >> A;

        cout << "Enter Second Number: ";

        cin >> B;

    }

    double add()

    {

        return A + B;

    }

    double sub()

    {

        return A - B;

    }

    double mul()

    {

        return A \* B;

    }

    double div()

    {

        return A / B;

    }

};

int main()

{

    int choice;

    Calculator cal;

    cout << "Enter 1 Add 2 Numbers"

         << "\nEnter 2 Subtract 2 Numbers"

         << "\nEnter 3 Multiply 2 Numbers"

         << "\nEnter 4 Divide 2 Numbers"

         << "\nEnter 0 To Exit"

         << "\n";

    do

    {

        cout << "\nEnter Choice: ";

        cin >> choice;

        switch (choice)

        {

        case 1:

            cal.get();

            cout << "Result: " << cal.add() << endl;

            break;

        case 2:

            cal.get();

            cout << "Result: " << cal.sub() << endl;

            break;

        case 3:

            cal.get();

            cout << "Result: " << cal.mul() << endl;

            break;

        case 4:

            cal.get();

            cout << "Result: " << cal.div() << endl;

            break;

        }

    } while (choice >= 1 && choice <= 4);

    return 0;

}

**Output:**

Enter 1 Add 2 Numbers

Enter 2 Subtract 2 Numbers

Enter 3 Multiply 2 Numbers

Enter 4 Divide 2 Numbers

Enter 0 To Exit

Enter Choice: 1

Enter First Number: 5

Enter Second Number: 2

Result: 7

Enter Choice: 3

Enter First Number: 5

Enter Second Number: 2

Result: 10

Enter Choice: 0

**36.Write a C++ program to manage shopping list and bill for a store:**

**Code:**

#include <iostream>

using namespace std;

class ITEMS

{

    int itemCode[100];

    double itemPrice[100];

    int count = 0;

public:

    void getitem()

    {

        cout << "Enter item code: ";

        cin >> itemCode[count];

        cout << "Enter Item cost: ";

        cin >> itemPrice[count];

        count++;

    }

    void displayCost()

    {

        double sum = 0;

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

            sum += itemPrice[i];

        cout << "Total Cost: " << sum << endl;

    }

    void removeItem()

    {

        int itmCode;

        cout << "Enter Item Code: " << endl;

        cin >> itmCode;

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

            if (itemCode[i] == itmCode)

                itemPrice[i] = 0;

        cout << "Item Removed" << endl;

    }

    void displayItems()

    {

        cout << "ItemCode : ItemPrice" << endl;

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

        {

            cout << itemCode[i] << " : " << itemPrice[i] << endl;

        }

    }

};

int main()

{

    ITEMS shpList;

    int choice = 0;

    while (choice != 5)

    {

        cout << "MENU" << endl;

        cout << "1.Add an Item" << endl;

        cout << "2.Display Total Cost" << endl;

        cout << "3.Delete an Item" << endl;

        cout << "4.Display items" << endl;

        cout << "5.Quit" << endl;

        cout << "Enter your choice: ";

        cin >> choice;

        switch (choice)

        {

        case 1:

            shpList.getitem();

            break;

        case 2:

            shpList.displayCost();

            break;

        case 3:

            shpList.removeItem();

            break;

        case 4:

            shpList.displayItems();

            break;

        default:

            cout << "You were in Arpit Agarwal World" << endl;

        }

    }

    return 0;

}

**Output:**

MENU

1.Add an Item

2.Display Total Cost

3.Delete an Item

4.Display items

5.Quit

Enter your choice: 1

Enter item code: 5

Enter Item cost: 50

MENU

1.Add an Item

2.Display Total Cost

3.Delete an Item

4.Display items

5.Quit

Enter your choice: 2

Total Cost: 50

MENU

1.Add an Item

2.Display Total Cost

3.Delete an Item

4.Display items

5.Quit

Enter your choice: 1

Enter item code: 4

Enter Item cost: 220

MENU

1.Add an Item

2.Display Total Cost

3.Delete an Item

4.Display items

5.Quit

Enter your choice: 2

Total Cost: 270

MENU

1.Add an Item

2.Display Total Cost

3.Delete an Item

4.Display items

5.Quit

Enter your choice: 4

ItemCode : ItemPrice

5 : 50

4 : 220

MENU

1.Add an Item

2.Display Total Cost

3.Delete an Item

4.Display items

5.Quit

Enter your choice: 5

You were in Arpit Agarwal World

**37.Write a C++ program to implement array of object.**

**Code:**

#include <iostream>

using namespace std;

class student{

    char name[40];

    int m1,m2,m3,m4,m5,m6,rollno;

    float total,per;

    public:

    void readdeatails(void);

    void percentage(void);

    void printdetails(void);

};

void student :: readdeatails(void)

{

    cout<<"Enter name: "<<endl;

    cin>>name;

    cout<<"Enter roll number: "<<endl;

    cin>>rollno;

    cout<<"Enter maths marks no out of 100:"<<endl;

    cin>>m1;

    cout<<"Enter Physics marks no out of 100:"<<endl;

    cin>>m2;

    cout<<"Enter Chemistery marks no out of 100:"<<endl;

    cin>>m3;

    cout<<"Enter Hindi marks no out of 100:"<<endl;

    cin>>m4;

    cout<<"Enter English marks no out of 100:"<<endl;

    cin>>m5;

    cout<<"Enter Biology marks no out of 100:"<<endl;

    cin>>m6;

    total=(m1+m2+m3+m4+m5+m6)/600.00;

}

void student :: percentage(void)

{

    per=total\*100.00;

}

void student::printdetails(void)

{

cout<<"Student Details: \n";

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

cout<<"Rollnumber "<<rollno<<endl;

cout<<"percentage "<<per<<endl;

}

int main()

{

    int n,i;

    student stu[i];

    cout<<"Enter total no of student \n";

    cin>>n;

    for(i=1;i<=n;i++)

    {

        cout<<"Enter the Details of student "<<i<<endl;

        stu[i].readdeatails();

    }

     for(i=1;i<=n;i++)

    {

        cout<<"\nDetails of student "<<i<<endl;

        stu[i].percentage();

        stu[i].printdetails();

    }

    return 0;

}

**Output:**

Enter total no of student

4

Enter the Details of student 1

Enter name:

Arpit

Enter roll number:

1

Enter maths marks no out of 100:

100

Enter Physics marks no out of 100:

95

Enter Chemistery marks no out of 100:

85

Enter Hindi marks no out of 100:

75

Enter English marks no out of 100:

95

Enter Biology marks no out of 100:

87

Enter the Details of student 2

Enter name:

Monika

Enter roll number:

2

Enter maths marks no out of 100:

85

Enter Physics marks no out of 100:

90

Enter Chemistery marks no out of 100:

79

Enter Hindi marks no out of 100:

89

Enter English marks no out of 100:

95

Enter Biology marks no out of 100:

99

Enter the Details of student 3

Enter name:

Satyam

Enter roll number:

3

Enter maths marks no out of 100:

75

Enter Physics marks no out of 100:

80

Enter Chemistery marks no out of 100:

98

Enter Hindi marks no out of 100:

78

Enter English marks no out of 100:

99

Enter Biology marks no out of 100:

95

Enter the Details of student 4

Enter name:

Sushant

Enter roll number:

4

Enter maths marks no out of 100:

75

Enter Physics marks no out of 100:

80

Enter Chemistery marks no out of 100:

90

Enter Hindi marks no out of 100:

78

Enter English marks no out of 100:

100

Enter Biology marks no out of 100:

98

Details of student 1

Student Details:

Name: Arpit

Rollnumber 1

percentage 89.5

Details of student 2

Student Details:

Name: Monika

Rollnumber 2

percentage 89.5

Details of student 3

Student Details:

Name: Satyam

Rollnumber 3

percentage 87.5

Details of student 4

Student Details:

Name: sushant

Rollnumber 4

percentage 86.8333

**38.Write a C++ program to implement a Default constructor.**

**Code:**

#include <iostream>

using namespace std;

class construct

{

public:

    int a, b;

    construct()

    {

        a = 10;

        b = 20;

    }

};

int main()

{

    construct c;

    cout << "a: " << c.a << endl

         << "b: " << c.b;

    return 1;

}

**Output:**

a: 10

b: 20

**39. Write a C++ program to implement a parameterized constructor.**

**Code:**

#include <iostream>

using namespace std;

class Point

{

private:

    int x, y;

public:

    Point(int x1, int y1)

    {

        x = x1;

        y = y1;

    }

   int getX()

    {

        return x;

    }

    int getY()

    {

        return y;

    }

};

int main()

{

     Point p1(10, 15);

     cout << "p1.x = " << p1.getX() << ", p1.y = " << p1.getY();

     return 0;

}

**Output:**

p1.x = 10, p1.y = 15

**40.Write a C++ program to implement static variable.**

**Code:**

#include <iostream>

using namespace std;

class item

{

    static int count; //count is static

    int number;

public:

    void getdata(int a)

    {

        number = a;

        count++;

    }

    void getcount(void)

    {

        cout << "count:";

        cout << count << endl;

    }

};

int item ::count; //count defined

int main()

{

    item a, b, c;

    a.getcount();

    b.getcount();

    c.getcount();

    a.getdata(1);

    b.getdata(2);

    c.getdata(3);

    cout << "after reading data : " << endl;

    a.getcount();

    b.getcount();

    c.getcount();

    return 0;

}

**Output:**

count:0

count:0

count:0

after reading data:

count:3

count:3

count:3

**41. Write a C++ program to implement static variable and member.**

**Code:**

#include <iostream>

using namespace std;

class test

{

    int code;

    static int count; // static member variable

public:

    void set(void)

    {

        code = ++count;

    }

    void showcode(void)

    {

        cout << "object member : " << code << endl;

    }

    static void showcount(void)

    {

        cout << "count=" << count << endl;

    }

};

int test::count;

int main()

{

    test t1, t2;

    t1.set();

    t2.set();

    test ::showcount();

    test t3;

    t3.set();

    test::showcount();

    t1.showcode();

    t2.showcode();

    t3.showcode();

    return (0);

}

**Output:**

count=2

count=3

object member : 1

object member : 2

object member : 3

**42.Write a program to implement constant function.**

**Code:**

#include<iostream>

using namespace std;

class Demo

{

    int value;

    public:

    Demo(int v = 0) {value = v;}

    void showMessage()

    {

        cout<<"Hello World I am Arpit, "

        " Inside"

        " showMessage() Function"<<endl;

    }

    void display()const

    {

        cout<<"Hello world I'm Newton "

        "Baba Inside display() Function"<<endl;

    }

};

int main()

{

    const Demo d1;

    //d1.showMessage();Error occurred if uncomment.

    d1.display();

    return(0);

}

**Output:**

Hello world I'm Newton Baba Inside display() Function

**43. Write a C++ program to implement virtual classes.**

**Code:**

#include <iostream>

using namespace std;

class A {

public:

    int a;

    A()

    {

        a = 10;

    }

};

class B : public virtual A {

};

class C : public virtual A {

};

class D : public B, public C {

};

int main()

{

    D object; // object creation of class d

    cout << "a = " << object.a << endl;

    return 0;

}

**Output:**

a = 10

**44.** **Write a C++ program to write into a file using file handling.**

**Code:**

#include <iostream>

#include <fstream>

using namespace std;

int main()

{

    fstream Arpit;

    Arpit.open("Arpit.txt", ios::out);

    if (!Arpit)

    {

        cout << "error while creating file" << endl;

    }

    else

    {

        cout << "file created successfully" << endl;

        Arpit << "This is simply a test file";

        Arpit.close();

    }

    return 0;

}

**Output:**

file created successfully

**45.** **Write a C++ program to read from a file using file handling.**

**Code:**

#include<iostream>

#include<fstream>

using namespace std;

int main ()

{

  fstream Keshav;

  Arpit.open ("Arpit.txt", ios::in);

  if (!Arpit)

    {

      cout << "error while creating";

    }

  else

    {

      char x;

      while (1)

    {

      Arpit >> x;

      if (Arpit.eof ())

        break;

      cout << x;

    }

      cout << "file created successfully" << endl;

      Arpit.close ();

    }

  return 0;

}

**Output:**

This is simply a test file by Arpit Agarwal file created successfully