EX.NO : 3(A)	INHERITANCE(BASE CLASS & DERIVED CLASSES)
DATE :	

PROGRAM STATEMENT :

To write a c++ program to check loan eligibility based on age and income using multiple inheritancee(age greater then 20 and less than 46) and income greater then 20000 is eligible for loan).

ALGORITHM:

1. Start the program and define two classes: one for storing age and the other for income.
2. Read input: Accept age from the user using the Age class and income using the Income class.
3. Use multiple inheritance to create a class that inherits from both Age and Income.
4. Check eligibility conditions:
5. Age must be greater than 20 and less than 46.
6. Income must be greater than 20000.
7. Display the result: Print whether the user is eligible or not based on the conditions.

PROGRAM:

```
#include <iostream>
using namespace std;
class A{
   public:
   int age,income;
   void read(){
   cin>>age>>income;
   }
};
class B:public A
{
   public:
   void loan(){
      if(age>20 && age<46){
         if(income>20000){
            cout<<"Eligible for Loan";
         }
         else{
            cout<<"Not Eligible for Loan";
         }
      }
      else{
         cout<<"Not Eligible for Loan";
      }
   }
};
```

```
int main()
{
   B o;
   o.read();
   o.loan();
}
```

OUTPUT :

	Input	Expected	Got	
✔	19 14000	Not Eligible for Loan	Not Eligible for Loan	✔
✔	21 30000	Eligible for Loan	Eligible for Loan	✔
✔	24 14000	Not Eligible for Loan	Not Eligible for Loan	✔

RESULT :

Thus, the c++ program to check loan eligibility based on age and income using multiple inheritance is created successfully.

EX.NO : 3(B)	PROTECTED MEMBERS & OVERRIDING
DATE :	

PROGRAM STATEMENT :

To Write a C++ program to divide numbers using inheritance

ALGORITHM:

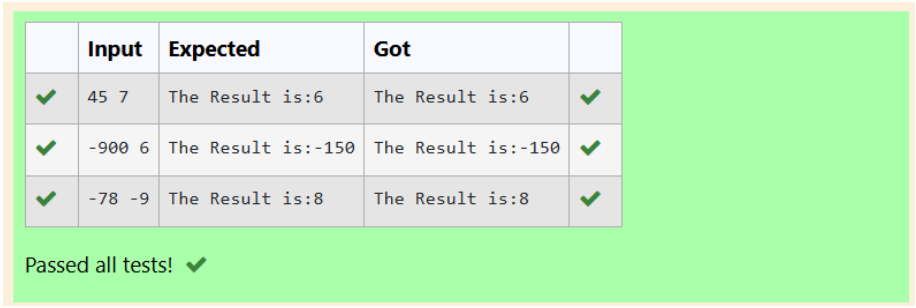
1. Define a base class (Base) with two protected variables a and b for inputs.
2. Create derived class A, which reads the first input value (a) from the user.
3. Create class B, which inherits from A and reads the second input value (b).
4. Create final derived class C, which inherits from B and performs the division operation a / b.
5. In the main function, create an object of class C, call input methods in sequence, and finally call the display method to show the result, ensuring division by zero is checked.

PROGRAM:

```
#include <iostream>
using namespace std;
class Base {
     protected:
     int a,b;
};

class A:public Base
{
   public:
       void read1(){
          cin>>a;
       }
};

class B:public A
{
   public:

       void read2(){
          cin>>b;
       }
};

class C:public B
{
   public:
```

```
        void display(){
           cout<<"The Result is:"<<a/b<<endl;
        }
};

int main()
{
   C obj;
   obj.read1();
   obj.read2();
   obj.display();
}
```

OUTPUT :



	Input	Expected	Got	
✔	45 7	The Result is:6	The Result is:6	✔
✔	-900 6	The Result is:-150	The Result is:-150	✔
✔	-78 -9	The Result is:8	The Result is:8	✔

Passed all tests! ✔

RESULT :

Thus, the Write a C++ program to divide numbers using inheritance is created successfully.

EX.NO : 3(C)	PUBLIC,PRIVATE & PROTECTED INHERITANCE
DATE :	

PROGRAM STATEMENT :

To Write a C++ program to get two numbers from two base classes and display the bitwise & operation in the derived class.

ALGORITHM:

1. Class A reads number a.
2. Class B reads number b.
3. Class C inherits from both A and B.
4. C::result() computes a & b.
5. main() creates object, reads inputs, and shows result.

PROGRAM:

```
#include <iostream>
#include<math.h>
using namespace std;

class A {
   public:
      int a;
      void read1(){
         cin>>a;
      }
   // write your code here
};
class B {
   public:
   int b;
   void read2(){
      cin>>b;
   }
    // write your code here
};
class C : public A,public B
{
   public:
   void result(){
      cout<<"Bitwise & of two numbers = "<<(a & b)<<endl;
   }
};


int main()
```

```
{
   C obj;
   obj.read1();
   obj.read2();
   obj.result();
}
```

OUTPUT :

	Input	Expected	Got	
✔	15 10	Bitwise & of two numbers = 10	Bitwise & of two numbers = 10	✔
✔	10 3	Bitwise & of two numbers = 2	Bitwise & of two numbers = 2	✔
✔	7 2	Bitwise & of two numbers = 2	Bitwise & of two numbers = 2	✔

Passed all tests! ✔

RESULT :

Thus, the C++ program to get two numbers from two base classes and display the bitwise & operation in the derived class is created successfully.

EX.NO : 3(D)	CONSTRUCTOR & DESTRUCTOR IN DERIVED CLASS
DATE :	

PROGRAM STATEMENT :

To Write a C++ program to perform bitwise | operation using derived constructor .

ALGORITHM:

1. Base class constructor reads the first input (x).
2. Derived class Base1 constructor reads the second input (y).
3. Final derived class Operation constructor performs x | y.
4. Result is calculated and displayed in the Operation constructor.
5. main() simply creates an Operation object to trigger all steps.

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PROGRAM:

```
#include <iostream>

using namespace std;
class Base{
   public:
   int x,y;
   void op(){
      cin>>x>>y;
   }
};
class Base1 : public Base{
   public:
   int A;
   void op1(){
      A=(x|y);
   }
};
class operation : public Base1
{
   public:
   void ope(){
      cout<<"The Result is:"<<A;
   }
};
int main()
{
   operation o;
```

```
    o.op();
    o.op1();
    o.ope();
}
```

OUTPUT :

	Input	Expected	Got	
✔	25 3	The Result is:27	The Result is:27	✔
✔	30 1	The Result is:31	The Result is:31	✔
✔	-25 6	The Result is:-25	The Result is:-25	✔

RESULT :

Thus, the C++ program to perform bitwise | operation using derived constructor is created successfully.