DATA STRUCTURES LABORATORY MANUAL – ICE 2144

III SEMESTER B. TECH

EXPT. 3: CLASS INHERITANCE

1. Write a C++ Program that illustrate single inheritance.

Syntax:

```
class derived-class-name: visibility-mode base-class-name
{
        ……
        ……
}
```

Program:

```
#include<iostream>
using namespace std;
class A
{
        protected:
                int a, b;
        public:
                void get()
                {
                        cout<<"Enter any two integer values:";
                        cin>>a>>b;
                }
};
class B: public A
{
        int c;
        public:
                void add()
                {
                        c = a+b;
                        cout<<a<<"+"<<b<<"="<<c;
                }
};
int main()
{
        B b;
        b.get();
        b.add();
        return 0;
}
```

2. Write a C++ program to create multilevel inheritance.

```
#include <iostream>
```

```
using namespace std;

class base //single base class
{
	public:
		int x;
		void getdata()
		{
			cout << "Enter value of x= ";
			cin >> x;
		}
};

class derive1: public base // derived class from base class
{
	public:
		int y;
		void readdata()
		{
			cout << "\nEnter value of y= ";
			cin >> y;
		}
};

class derive2: public derive1 // derived from class derive1
{
	private:
		int z;
	public:
		void indata()
		{
			cout << "\nEnter value of z= ";
			cin >> z;
		}
		void product()
		{
			cout << "\nProduct= " << x * y * z;
		}
};
int main()
{
	derive2 a;
	a.getdata();
	a.readdata();
	a.indata();
	a.product();
```

```
        return 0;
}
```

3. Write a C++ program to use pointer for both base and derived classes and call the member function. Use Virtual keyword.

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

class base
{
        public:
                virtual void print ()
                {
                        cout<< "print base class" <<endl;
                }
                void show ()
                {
                        cout<< "show base class" <<endl;
                }
};
class derived: public base
{
        public:
                void print ()
                {
                        cout<< "print derived class" <<endl;
                }
                void show ()
                {
                        cout<< "show derived class" <<endl;
                }
};

int main()
{
        base *bptr;
        derived d;
        bptr = &d;
        bptr→print();
        bptr→show();
        return 0;
}
```

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EXERCISE:

1. Write a C++ program that illustrate multiple inheritance.
2. Write a C++ program that illustrate Hierarchical inheritance.
3. Write a program to invoking derived class member through base class pointer.
4. Write a C++ program to implement hybrid inheritance using virtual base classes.