Lab 10

1. Suppose that you want to maintain information about different vehicles. You are supposed to create a base class called Vehicle that comprises two data members make and model. Further, extend the base class to create another two subclasses. One namely 'Car' with data members price, seating capacity and fuel type. And another 'bike' class with data members cylinders, number of gears, and fuel tank size. Further, create another subclass for Audi having a data member to store the horse power. Next, make a subclass BajajBike having a data member engine power in cc.

You have to select the best base class in order to extend the derived class. Also demonstrate the object creation from all the derived classes defined in the program.

2. In continuation with the Q. No. 1 above, demonstrate the concept function overriding by redefining the member function (method) printDetails() in each of the derived class, that prints the information of each object created.

A. code:-

```
#include <iostream>
using namespace std;
class Vehicle
{
   protected:
    string make;
    string model;
   public:
    void getDetails()
    {
      cout<<"Enter Make: ";
      cin>> make;
      cout<<"Enter Model: ";
      cin>> model;
    }
    void printDetails()
    {
      cout<<"Make: "<<make<<endl;
      cout<<"Model: "<<model<<endl;
    }
};
class Car: public Vehicle
{
   protected:
    string price;
    string seating_cap;
    string fuel_type;
   public:
    void getDetails()
    {
      cout<<"Enter details for Car:\n";
      Vehicle::getDetails();
      cout<<"Price: ";
      cin>> price;
      cout<<"Seating Capacity: ";
      cin>> seating_cap;
      cout<<"Fuel Type: ";
      cin>> fuel_type;
     }
```

```
    void printDetails()
    {
      cout<<"Car Specifications:\n";
      Vehicle::printDetails();
      cout<<"Price: Rs "<<price<<endl;
      cout<<"Seating Capacity: "<<seating_cap<<endl;
      cout<<"Type of Fuel: "<<fuel_type<<" L"<<endl;
    }
};
class Bike: public Vehicle
{
   protected:
    string cylinders;
    string num_gears;
    string fueltank_size;
   public:
    void getDetails()
    {
      cout<<"Enter details for Bike:\n";
      Vehicle::getDetails();
      cout<<"Number of Cylinders: ";
      cin>> cylinders;
      cout<<"Number of Gears: ";
      cin>> num_gears;
      cout<<"Size of the Fuel Tank: ";
      cin>> fueltank_size;
    }
    void printDetails()
    {
      cout<<"Bike Specifications:\n";
      Vehicle::printDetails();
      cout<<"Number of Cylinders: "<<cylinders<<endl;
      cout<<"Number of Gears: "<<num_gears<<endl;
      cout<<"Size of the Fuel Tank: "<<fueltank_size<<" L"<<endl;
    }
};
class Audi: public Car
{
   protected:
    string horse_power;
```

```
    public:
     void getDetails()
     {
       cout<<"Enter details for Audi:\n";
       Vehicle::getDetails();
       cout<<"Horse Power: ";
       cin>> horse_power;
     }
     void printDetails()
     {
       cout<<"Audi Specifications:\n";
       Vehicle::printDetails();
       cout<<"Horse Power: "<<horse_power<<endl;
     }
};
class BajajBike: public Bike
{
    protected:
     string engine_power;
    public:
     void getDetails()
     {
       cout<<"Enter details for Bajaj Bike:\n";
       Vehicle::getDetails();
       cout<<"Engine Power: ";
       cin>> engine_power;
     }
     void printDetails()
     {
       cout<<"BajajBike Specifications:\n";
       Vehicle::printDetails();
       cout<<"Engine Power: "<<engine_power<<" cc"<<endl;
     }
};
int main()
{
 Car *c1 = new Car;
 Bike *b1 = new Bike;
 Audi *a1 = new Audi;
 BajajBike *bb1 = new BajajBike;
```

```
 c1->getDetails();
 b1->getDetails();
 a1->getDetails();
 bb1->getDetails();
 cout<<"\n";
 c1->printDetails();
 b1->printDetails();
 a1->printDetails();
 bb1->printDetails();
}
```

SAMPLE INPUT AND SAMPLE OUTPUT:

```
Enter details for Car:
Enter Make: abc
Enter Model: efg
Price: 600000
Seating Capacity: 4
Fuel Type: petrol
Enter details for Bike:
Enter Make: hij
Enter Model: klm
Number of Cylinders: 2
Number of Gears: 4
Size of the Fuel Tank: 8
Enter details for Audi:
Enter Make: nop
Enter Model: qrs
Horse Power: 1234
Enter details for Bajaj Bike:
Enter Make: akl
Enter Model: mdn
Engine Power: 900
```

```
Car Specifications:
Make: abc
Model: efg
Price: Rs 600000
Seating Capacity: 4
Type of Fuel: petrol L
Bike Specifications:
Make: hij
Model: klm
Number of Cylinders: 2
Number of Gears: 4
Size of the Fuel Tank: 8 L
Audi Specifications:
Make: nop
Model: qrs
Horse Power: 1234
BajajBike Specifications:
Make: akl
Model: mdn
Engine Power: 900 cc
```