

```

1  #include "Vehicle.h"
2  #include "LandVehicle.h"
3  #include "WaterVehicle.h"
4  #include "AirVehicle.h"
5  #include "Car.h"
6  #include "Boat.h"
7  #include "Plane.h"
8
9  #include <iostream>
10 using namespace std;
11
12 int main()
13 {
14     LandVehicle landVehicle(80, 50, 4);
15     WaterVehicle waterVehicle(60, 40, 2);
16     AirVehicle airVehicle(300, 200, 2);
17     Car car(120, 60, 4, 4);
18     Boat boat(40, 30, 1, 2);
19     Plane plane(600, 300, 2, 4);
20
21     Vehicle *Vehicle_ptr;
22
23     Vehicle_ptr = &landVehicle;
24     Vehicle_ptr -> displayInfo();
25
26     Vehicle_ptr = &waterVehicle;
27     Vehicle_ptr -> displayInfo();
28
29     Vehicle_ptr = &airVehicle;
30     Vehicle_ptr -> displayInfo();
31
32     Vehicle_ptr = &car;
33     Vehicle_ptr -> displayInfo();
34
35     Vehicle_ptr = &boat;
36     Vehicle_ptr -> displayInfo();
37
38     Vehicle_ptr = &plane;
39     Vehicle_ptr -> displayInfo();
40
41     return 0;
42 }

```

```

1  #ifndef VEHICLE_H
2  #define VEHICLE_H
3
4  class Vehicle{
5  public:
6      Vehicle();
7      virtual void displayInfo() = 0;
8
9      void setSpeed(int);
10     void setFule(int);
11
12     int getSpeed() const;
13     int getFule() const;
14
15 protected:
16     int speed;
17     int fule;
18 };
19
20
21 #endif

```

```

1  #include "Vehicle.h"
2  #include <iostream>
3  using namespace std;
4
5  Vehicle::Vehicle(){
6      setSpeed(0);
7      setFule(0);
8  }
9
10 void Vehicle::setSpeed(int s){
11     speed = s;
12 }
13
14 void Vehicle::setFule(int f){
15     fule = f;
16 }
17
18 int Vehicle::getSpeed() const{
19     return speed;
20 }
21
22 int Vehicle::getFule() const{
23     return fule;
24 }

```

```

1  #ifndef LANDVEHICLE_H
2  #define LANDVEHICLE_H
3
4  #include "Vehicle.h"
5
6  class LandVehicle : public Vehicle{
7      public:
8          LandVehicle();
9          LandVehicle(int, int, int);
10         virtual void displayInfo();
11
12         void setWheels(int);
13         int getWheels() const;
14
15     private:
16         int numWheels;
17 };
18
19 #endif

```

```

1  #include "LandVehicle.h"
2  #include <iostream>
3  using namespace std;
4
5  LandVehicle::LandVehicle(){}
6
7  LandVehicle::LandVehicle(int s, int f, int wheel){
8      Vehicle::setSpeed(s);
9      Vehicle::setFule(f);
10     setWheels(wheel);
11 }
12
13 void LandVehicle::displayInfo(){
14     cout << "Land Vehicle - Speed: " << getSpeed()
15          << ", Fule: " << getFule()
16          << ", Wheels: " << getWheels() << endl;
17 }
18
19 void LandVehicle::setWheels(int wheel){
20     numWheels = wheel;
21 }
22
23 int LandVehicle::getWheels() const{
24     return numWheels;
25 }

```

```

1  #ifndef WATERVEHICLE_H
2  #define WATERVEHICLE_H
3
4  #include "Vehicle.h"
5
6  class WaterVehicle : public Vehicle{
7  public:
8      WaterVehicle();
9      WaterVehicle(int, int, int);
10     virtual void displayInfo();
11
12     void setEngines(int);
13     int getEngines() const;
14
15 private:
16     int numEngines;
17 };
18
19 #endif

```

```

1  #include "WaterVehicle.h"
2  #include <iostream>
3  using namespace std;
4
5  WaterVehicle::WaterVehicle(){}
6
7  WaterVehicle::WaterVehicle(int s, int f, int engine){
8      Vehicle::setSpeed(s);
9      Vehicle::setFule(f);
10     setEngines(engine);
11 }
12
13 void WaterVehicle::displayInfo(){
14     cout << "Water Vehicle - Speed: " << getSpeed()
15         << ", Fule: " << getFule()
16         << ", Engines: " << getEngines() << endl;
17 }
18
19 void WaterVehicle::setEngines(int engine){
20     numEngines = engine;
21 }
22
23 int WaterVehicle::getEngines() const{
24     return numEngines;
25 }

```

```

1  #ifndef AIRVEHICLE_H
2  #define AIRVEHICLE_H
3
4  #include "Vehicle.h"
5
6  class AirVehicle : public Vehicle{
7  public:
8      AirVehicle();
9      AirVehicle(int, int, int);
10     virtual void displayInfo();
11
12     void setWings(int);
13     int getWings() const;
14
15 private:
16     int numWings;
17 };
18
19 #endif

```

```

1  #include "AirVehicle.h"
2  #include <iostream>
3  using namespace std;
4
5  AirVehicle::AirVehicle(){}
6
7  AirVehicle::AirVehicle(int s, int f, int wing){
8      Vehicle::setSpeed(s);
9      Vehicle::setFule(f);
10     setWings(wing);
11 }
12
13 void AirVehicle::displayInfo(){
14     cout << "Air Vehicle - Speed: " << getSpeed()
15         << ", Fule: " << getFule()
16         << ", Wings: " << getWings() << endl;
17 }
18
19 void AirVehicle::setWings(int wing){
20     numWings = wing;
21 }
22
23 int AirVehicle::getWings() const{
24     return numWings;
25 }

```

```

1  #ifndef CAR_H
2  #define CAR_H
3
4  #include "LandVehicle.h"
5
6  class Car : public LandVehicle{
7  public:
8      Car(int, int, int, int);
9      virtual void displayInfo();
10
11     void setDoors(int);
12     int getDoors() const;
13
14 private:
15     int numDoors;
16 };
17
18 #endif

```

```

1  #include "Car.h"
2  #include <iostream>
3  using namespace std;
4
5  Car::Car(int s, int f, int wheel, int door){
6      LandVehicle::setSpeed(s);
7      LandVehicle::setFule(f);
8      LandVehicle::setWheels(wheel);
9      setDoors(door);
10 }
11
12 void Car::displayInfo(){
13     cout << "Car - Speed: " << getSpeed()
14         << ", Fule: " << getFule()
15         << ", Wheels: " << getWheels()
16         << ", Doors: " << getDoors() << endl;
17 }
18
19 void Car::setDoors(int door){
20     numDoors = door;
21 }
22
23 int Car::getDoors() const{
24     return numDoors;
25 }

```

```

1  #ifndef BOAT_H
2  #define BOAT_H
3
4  #include "WaterVehicle.h"
5
6  class Boat : public WaterVehicle{
7      public:
8          Boat();
9          Boat(int, int, int, int);
10         virtual void displayInfo();
11
12         void setSails(int);
13         int getSails() const;
14
15     private:
16         int numSails;
17 };
18
19 #endif

```

```

1  #include "Boat.h"
2  #include <iostream>
3  using namespace std;
4
5  Boat::Boat(){}
6
7  Boat::Boat(int s, int f, int engine, int sail){
8      WaterVehicle::setSpeed(s);
9      WaterVehicle::setFule(f);
10     WaterVehicle::setEngines(engine);
11     setSails(sail);
12 }
13
14 void Boat::displayInfo(){
15     cout << "Boat - Speed: " << getSpeed()
16         << ", Fule: " << getFule()
17         << ", Engines: " << getEngines()
18         << ", Sails: " << getSails() << endl;
19 }
20
21 void Boat::setSails(int sail){
22     numSails = sail;
23 }
24
25 int Boat::getSails() const{
26     return numSails;
27 }

```

```

1  #ifndef PLANE_H
2  #define PLANE_H
3
4  #include "AirVehicle.h"
5
6  class Plane : public AirVehicle{
7  public:
8      Plane();
9      Plane(int, int, int, int);
10     virtual void displayInfo();
11
12     void setEngines(int);
13     int getEngines() const;
14
15 private:
16     int numEngines;
17 };
18
19 #endif

```

```

1 #include "Plane.h"
2 #include <iostream>
3 using namespace std;
4
5 Plane::Plane(){}
6
7 Plane::Plane(int s, int f, int wing, int engine){
8     AirVehicle::setSpeed(s);
9     AirVehicle::setFule(f);
10    AirVehicle::setWings(wing);
11    setEngines(engine);
12 }
13
14 void Plane::displayInfo(){
15     cout << "Plane - Speed: " << getSpeed()
16         << ", Fule: " << getFule()
17         << ", Wings: " << getWings()
18         << ", Engines: " << getEngines() << endl;
19 }
20
21 void Plane::setEngines(int engine){
22     numEngines = engine;
23 }
24
25 int Plane::getEngines() const{
26     return numEngines;
27 }

```

```

Land Vehicle - Speed: 80, Fule: 50, Wheels: 4
Water Vehicle - Speed: 60, Fule: 40, Engines: 2
Air Vehicle - Speed: 300, Fule: 200, Wings: 2
Car - Speed: 120, Fule: 60, Wheels: 4, Doors: 4
Boat - Speed: 40, Fule: 30, Engines: 1, Sails: 2
Plane - Speed: 600, Fule: 300, Wings: 2, Engines: 4

```

