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IBM19ISO48

3<sup>rd</sup> Sem

Batch - 3

5) Design a Ship class.

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

class Ship
{
private:
    string name;
    int builtYear;
public:
    Ship(string n = "", int by = 0) : name(n), builtYear(by) {}
    string getName() { return name; }
    int getBuiltYear() { return builtYear; }
    virtual void print();
};

void Ship::print()
{
    cout << "Ship's Name : " << name << endl;
    cout << "Built Year : " << builtYear << endl;
}

class Cruisedhip : public Ship
{
private:
    int maxNoPass;
public:
    Cruisedhip(string n = "", int by = 0, int m = 0) : Ship(n, by),
        maxNoPass(m) {}
    int getMaxNoPass() { return maxNoPass; }
    virtual void print();
}
```

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```
void CruiseShip::print()
{
    cout << "Cruise Ship's Name : " << getName() << endl;
    cout << "Cruise Ship's Maximum Number of Passengers : " << maxPass << endl;
}

class CargoShip : public Ship
{
private:
    int cargoCapacity;
public:
    CargoShip(string n = "", int ly = 0, int c = 0) : Ship(n, ly),
        cargoCapacity(c) {}
    int getCargoCapacity() { return cargoCapacity; }
    virtual void print();
};

void CargoShip::print()
{
    cout << "Cargo Ship's Name : " << getName() << endl;
    cout << "Cargo Ship's Cargo Capacity : " << cargoCapacity << endl;
}

int main()
{
    int n;
    cout << "Enter the number of ship : ";
    cin >> n;
    Ship *s[n];
    string name;
    int builtYear;
    for (int i = 0; i < n; i++)
    {
        cout << endl << "Ship " << i + 1 << ":" << endl;
        cout << "Enter ship's Name : ";
        cin >> name;
        cout << "Enter ship's built year : ";
        cin >> builtYear;
    }
}
```

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```

int type;
cout << "Enter ship's type (1. Cruise Ship, 2. Largoship) : ";
cin >> type;
if (type == 1)
{
    int maxPass;
    cout << "Enter Cruise Ship's Maximum number of passengers : ";
    cin >> maxPass;
    s[i] = new CruiseShip(name, builtYear, maxPass);
}
else
{
    int cargoCapacity;
    cout << "Enter Largo Ship's cargo capacity : ";
    cin >> cargoCapacity;
    s[i] = new Largoship(name, builtYear, cargoCapacity);
}

cout << endl << "Ship details : " << endl;
for (int i=0 ; i<n ; ++i)
{
    cout << endl << "Ship " << i+1 << ":" << endl;
    s[i] -> print();
    delete s[i];
}
return 0;
}

```

The screenshot shows a code editor window with the following details:

- Title Bar:** The title bar displays "ship.cpp" and the path "~ / C++Lab/labTest2".
- Toolbar:** The toolbar includes standard icons for Open, Save, and Close.
- Code Area:** The main area contains the C++ source code for three classes: Ship, CruiseShip, and CargoShip. The code uses color-coded syntax highlighting for keywords, comments, and variables.
- Status Bar:** The status bar at the bottom shows "C++" with a dropdown arrow, "Tab Width: 4", "Ln 1, Col 1", and "INS".

```
1 #include <iostream>
2 #include <cstring>
3 using namespace std;
4
5 class Ship
6 {
7     private:
8         string name;
9         int builtYear;
10    public:
11        Ship(string n = "", int by = 0) : name(n), builtYear(by) {}
12        string getName() { return name; }
13        int getBuiltYear() { return builtYear; }
14        virtual void print();
15    };
16
17 void Ship::print()
18 {
19     cout << "Ship's Name : " << name << endl;
20     cout << "Built Year : " << builtYear << endl;
21 }
22
23 class CruiseShip : public Ship
24 {
25     private:
26         int maxNoPass;
27     public:
28        CruiseShip(string n = "", int by = 0, int m = 0) : Ship(n, by), maxNoPass(m) {}
29        int getMaxNoPass() { return maxNoPass; }
30        virtual void print();
31    };
32
33 void CruiseShip::print()
34 {
35     cout << "Cruise Ship's Name : " << getName() << endl;
36     cout << "Cruise Ship's Maximum Number of Passengers : " << maxNoPass << endl;
37 }
38
39 class CargoShip : public Ship
40 {
41     private:
42         int cargoCapacity;
43     public:
44        CargoShip(string n = "", int by = 0, int c = 0) : Ship(n, by), cargoCapacity(c) {}
45        int getCargoCapacity() { return cargoCapacity; }
46        virtual void print();
47 };
```

ship.cpp  
~/C++Lab/labTest2

```
47 };
48
49 void CargoShip::print()
50 {
51     cout << "Cargo Ship's Name : " << getName() << endl;
52     cout << "Cargo Ship's Cargo Capacity : " << cargoCapacity << endl;
53 }
54
55 int main()
56 {
57     int n;
58     cout << "Enter the number of ships : ";
59     cin >> n;
60     Ship *s[n];
61     string name;
62     int builtYear;
63     for(int i = 0; i < n; ++i)
64     {
65         cout << endl << "Ship " << i+1 << " : " << endl;
66         cout << "Enter Ship's Name : ";
67         cin >> name;
68         cout << "Enter Ship's built year : ";
69         cin >> builtYear;
70         int type;
71         cout << "Enter Ship's type (1.Cruise Ship, 2.CargoShip) : ";
72         cin >> type;
73         if(type == 1)
74         {
75             int maxNoPass;
76             cout << "Enter Cruise Ship's Maximum number of passengers : ";
77             cin >> maxNoPass;
78             s[i] = new CruiseShip(name, builtYear, maxNoPass);
79         }
80         else
81         {
82             int cargoCapacity;
83             cout << "Enter Cargo Ship's cargo Capacity : ";
84             cin >> cargoCapacity;
85             s[i] = new CargoShip(name, builtYear, cargoCapacity);
86         }
87     }
88     cout << endl << "Ship details : " << endl;
89     for(int i = 0; i < n; ++i)
90     {
91         cout << endl << "Ship " << i+1 << " : " << endl;
92         s[i]->print();
93         delete s[i];
```

C++ ▾ Tab Width: 4 ▾ Ln 93, Col 1 ▾ INS

ship.cpp  
~/C++Lab/labTest2

```
50 {
51     cout << "Cargo Ship's Name : " << getName() << endl;
52     cout << "Cargo Ship's Cargo Capacity : " << cargoCapacity << endl;
53 }
54
55 int main()
56 {
57     int n;
58     cout << "Enter the number of ships : ";
59     cin >> n;
60     Ship *s[n];
61     string name;
62     int builtYear;
63     for(int i = 0; i < n; ++i)
64     {
65         cout << endl << "Ship " << i+1 << " : " << endl;
66         cout << "Enter Ship's Name : ";
67         cin >> name;
68         cout << "Enter Ship's built year : ";
69         cin >> builtYear;
70         int type;
71         cout << "Enter Ship's type (1.Cruise Ship, 2.CargoShip) : ";
72         cin >> type;
73         if(type == 1)
74         {
75             int maxNoPass;
76             cout << "Enter Cruise Ship's Maximum number of passengers : ";
77             cin >> maxNoPass;
78             s[i] = new CruiseShip(name, builtYear, maxNoPass);
79         }
80         else
81         {
82             int cargoCapacity;
83             cout << "Enter Cargo Ship's cargo Capacity : ";
84             cin >> cargoCapacity;
85             s[i] = new CargoShip(name, builtYear, cargoCapacity);
86         }
87     }
88     cout << endl << "Ship details : " << endl;
89     for(int i = 0; i < n; ++i)
90     {
91         cout << endl << "Ship " << i+1 << " : " << endl;
92         s[i]->print();
93         delete s[i];
94     }
95     return 0;
96 }
```

Bracket match found on line: 56      C++ ▾      Tab Width: 4 ▾      Ln 96, Col 2 ▾      INS

```
deven@deven-VirtualBox: ~/C++Lab/labTest2
deven@deven-VirtualBox: ~/C++Lab/labTest2
deven@deven-VirtualBox:~/C++Lab/labTest2$ g++ ship.cpp
deven@deven-VirtualBox:~/C++Lab/labTest2$ ./a.out
Enter the number of ships : 3

Ship 1 :
Enter Ship's Name : Titanic1
Enter Ship's built year : 1990
Enter Ship's type (1.Cruise Ship, 2.CargoShip) : 1
Enter Cruise Ship's Maximum number of passengers : 2000

Ship 2 :
Enter Ship's Name : Titanic2
Enter Ship's built year : 2000
Enter Ship's type (1.Cruise Ship, 2.CargoShip) : 2
Enter Cargo Ship's cargo Capacity : 50000

Ship 3 :
Enter Ship's Name : Titanic3
Enter Ship's built year : 2010
Enter Ship's type (1.Cruise Ship, 2.CargoShip) : 1
Enter Cruise Ship's Maximum number of passengers : 4000

Ship details :

Ship 1 :
Cruise Ship's Name : Titanic1
Cruise Ship's Maximum Number of Passengers : 2000

Ship 2 :
Cargo Ship's Name : Titanic2
Cargo Ship's Cargo Capacity : 50000

Ship 3 :
Cruise Ship's Name : Titanic3
Cruise Ship's Maximum Number of Passengers : 4000
deven@deven-VirtualBox:~/C++Lab/labTest2$
```