~\OneDrive\Desktop\Assignment-2,3,4(oops).cpp

```cpp
1   #include <iostream>
2   using namespace std;
3
4   class Person {
5   public:
6       string name;
7       int age;
8       virtual void display() {
9           cout << "Name: " << name << endl;
10          cout << "Age: " << age << endl;
11      }
12  };
13
14  class Student : public Person {
15  public:
16      string program;
17      float gpa;
18      void display() override {
19          Person::display();
20          cout << "Program: " << program << endl;
21          cout << "GPA: " << gpa << endl;
22      }
23  };
24
25  class Professor : public Person {
26  public:
27      string department;
28      string specialization;
29      void display() override {
30          Person::display();
31          cout << "Department: " << department << endl;
32          cout << "Specialization: " << specialization << endl;
33      }
34  };
35
36  // ----- Course -----
37  class Course {
38  public:
39      int code;
40      string title;
41      int credits;
42      void display() {
43          cout << "Course Code: " << code << endl;
44          cout << "Title: " << title << endl;
45          cout << "Credits: " << credits << endl;
46      }
47  };
48
```

```cpp
49   class Department {
50   public:
51       string name;
52       string location;
53       void display() {
54           cout << "Department Name: " << name << endl;
55           cout << "Location: " << location << endl;
56       }
57   };
58
59   // ----- Input Helper Functions -----
60   void inputStudent(Student &s) {
61       cout << "--- Enter Student Details ---" << endl;
62       cout << "Name: ";
63       getline(cin, s.name);
64       cout << "Age: ";
65       cin >> s.age;
66       cin.ignore();
67       cout << "Program: ";
68       getline(cin, s.program);
69       cout << "GPA: ";
70       cin >> s.gpa;
71       cin.ignore();
72   }
73
74   void inputProfessor(Professor &p) {
75       cout << "\n--- Enter Professor Details ---" << endl;
76       cout << "Name: ";
77       getline(cin, p.name);
78       cout << "Age: ";
79       cin >> p.age;
80       cin.ignore();
81       cout << "Department: ";
82       getline(cin, p.department);
83       cout << "Specialization: ";
84       getline(cin, p.specialization);
85   }
86
87   void inputCourse(Course &c) {
88       cout << "\n--- Enter Course Details ---" << endl;
89       cout << "Course Code: ";
90       cin >> c.code;
91       cin.ignore();
92       cout << "Title: ";
93       getline(cin, c.title);
94       cout << "Credits: ";
95       cin >> c.credits;
96       cin.ignore();
97   }
98
```

```cpp
 99   void inputDepartment(Department &d) {
100       cout << "\n--- Enter Department Details ---" << endl;
101       cout << "Name: ";
102       getline(cin, d.name);
103       cout << "Location: ";
104       getline(cin, d.location);
105   }
106
107   int main() {
108       Student s;
109       Professor p;
110       Course c;
111       Department d;
112
113       inputStudent(s);
114       inputProfessor(p);
115       inputCourse(c);
116       inputDepartment(d);
117
118       cout << "\n--- Student Information ---" << endl;
119       s.display();
120
121       cout << "\n--- Professor Information ---" << endl;
122       p.display();
123
124       cout << "\n--- Course Information ---" << endl;
125       c.display();
126
127       cout << "\n--- Department Information ---" << endl;
128       d.display();
129
130       return 0;
131   }
132
133
```