

IS0020 Program Design and Software Tools
HW 5

Due: April 6, 2005 - Total Points 100

For this assignment read problem 10.12 related to the employee hierarchy. You will extend the problem by adding new classes as follows:

- Instead of **Employee** as the main base class, introduce **UniversityMember** as the main base class. That is **Employee** and its derived classes as in 10.12 will now be derived from **UniversityMember**.
- Introduce following new classes
 1. **TeachingStaff** class
 - A **TeachingStaff** “is a” **SalariedEmployee**
 - Each teaching staff teaches 3 courses (use an assumed Course number)
 2. **ResearchStaff** class
 - A **ResearchStaff** “is a” **SalariedEmployee**
 - A **ResearchStaff** only does research. Indicate the research areas by listing upto 5 research project titles
 3. **Professor** class
 - **Professor** “is a” a **TeachingStaff** as well as a **ResearchStaff**
 - A professor teaches 2 courses (again use an assumed Course number)
 - A professor has some projects (Use an assumed Project number)

In this assignment, you are required to demonstrate at least the following:

- Use of Map container and associated iterators and algorithms (choose some relevant ones) in the Standard Template Library. That is, instead of using Vector as mentioned in 10.12 you are required to use Map container.
- Show polymorphic programming by incorporating the functionality described in 10.12 (i.e., you are required to incorporate what is described in 10.12 using Map instead of Vector).
- Use of multiple inheritance

Make sure you define abstract and concrete classes, and use multiple inheritance and polymorphism appropriately.

Query Menu: You should provide appropriate menus for facilitating user interaction. Here are some examples:

- Adding new Objects
- Deleting Objects
- Searching for particular object based on criteria (e.g., SSN)
- Earnings for each University employee
- Listing objects of each category (e.g., Salaried employee, ResearchStaff, etc.)

For your convenience, relevant example files from the book have been provided as Zipped files.