

The hierarchy starts with the “VirtualCollege” Class which represents the Virtual College as a whole. This class should be designed such that it follows the **Singleton Pattern** since only one instance of this class should be present at any given time.

The system consists of users(class “User”) which can either be of type “Student”, “Administrator”(Management) or “Mentor”. The User class can create any type of user and hence follows the **Factory Method Pattern**.

One student can register for a single “Course” at a time and also register for additional “Subject”s if wanted. Course class can be thought of as a collection of Subjects.

Students can use the “Library” provided by the college to get access to study material of type “Video”, “Audio” or “PDF”. Those are the three elements of the library and hence we can design this hierarchy to follow the **Composite Pattern**.

Every Subject has one or more “Exam”s and every exam has a “Result”

Note: Words in double quotation marks are classes.