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Applied Programming Concepts

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Assignment 2

**Waterfall**

* Requirements Analysis & Definition (week 1)
  + Goal is to recreate LeopardWeb with UIs, databases
  + Test existing system: LeopardWeb
* System & Software Design (week 3)
  + The design of the system is very clearly outlined in the description of the assignments
    - Database of users: the system should work for 100 students, 10 instructors, and 1 admin, however, we will test with fewer.
    - Database of courses: this will contain information such as the CRN, course name, times, and instructor.
    - Three types of users:
      * student – can register, can see available courses and their own schedule.
      * instructor – can see available courses and their own course roster.
      * admin – can see everything, can edit courses/users/schedules.
    - The system should include multiple semesters, print-out of schedule, scheduling preferences.
    - The system as a whole and all components must be tested thoroughly.
    - The base class of the system is user with:
      * Attributes: first name, last name, ID.
      * Methods: set function for each attribute, and a function to print all info for the object.
    - There will be three derived classes:
      * All derived classes must contain any additional attributes and appropriate set/get functions.
      * student – the student class will have functions that allow them to search courses, add/drop courses, print their schedule.
      * instructor – the instructor class will have functions that allow them to print their schedule, print their class list, and search for courses.
      * admin – the admin class will have functions that allow them to add courses to the system, remove courses from the system, add/remove users, add/remove student from a course, search and print rosters and courses.
* Implementation & Unit Testing (week 5)
  + Test components (classes, databases) separately
* Integration & System Testing (week 7)
  + Integrate all components
* Operation & Maintenance (week 9)
  + Have other users (students, instructor) test system
  + Update system based on user requests

**Incremental**

* (May) First iteration: Information, classes, and databases for one semester for each user
* (June) Next iteration: add more semesters for each user, add more to the methods and UI
* (July)
* (August)

**Integration and Configuration**

* Component Analysis
* Requirement modifications
* System design (with reuse)
* Development and integration

<https://www.tutorialspoint.com/python_network_programming/python_databases_and_sql.htm#:~:text=Python%20supports%20various%20databases%20like,is%20the%20Python%20DB%2DAPI>.

Python supports SQL databases. You can create, modify, and grab info from databases. There can be databases for each user and semester filled with all the information associated with the user.

* June – student database
* July – instructor database
* August – admin database

Assuming practice with databases leads to being more comfortable using them, the instructor and admin databases may come easier than the student database, and therefore take less time. The rest of the time can be spent on code specific areas.