Applied Programming Concepts Assignment 1

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Figure 1: Waterfall Method

For the Waterfall method I decided to start by creating the parent class followed by the inherited classes. Then, I moved onto the database and finally the GUI. This way allows for proper testing of each part, before moving on to the next stage.
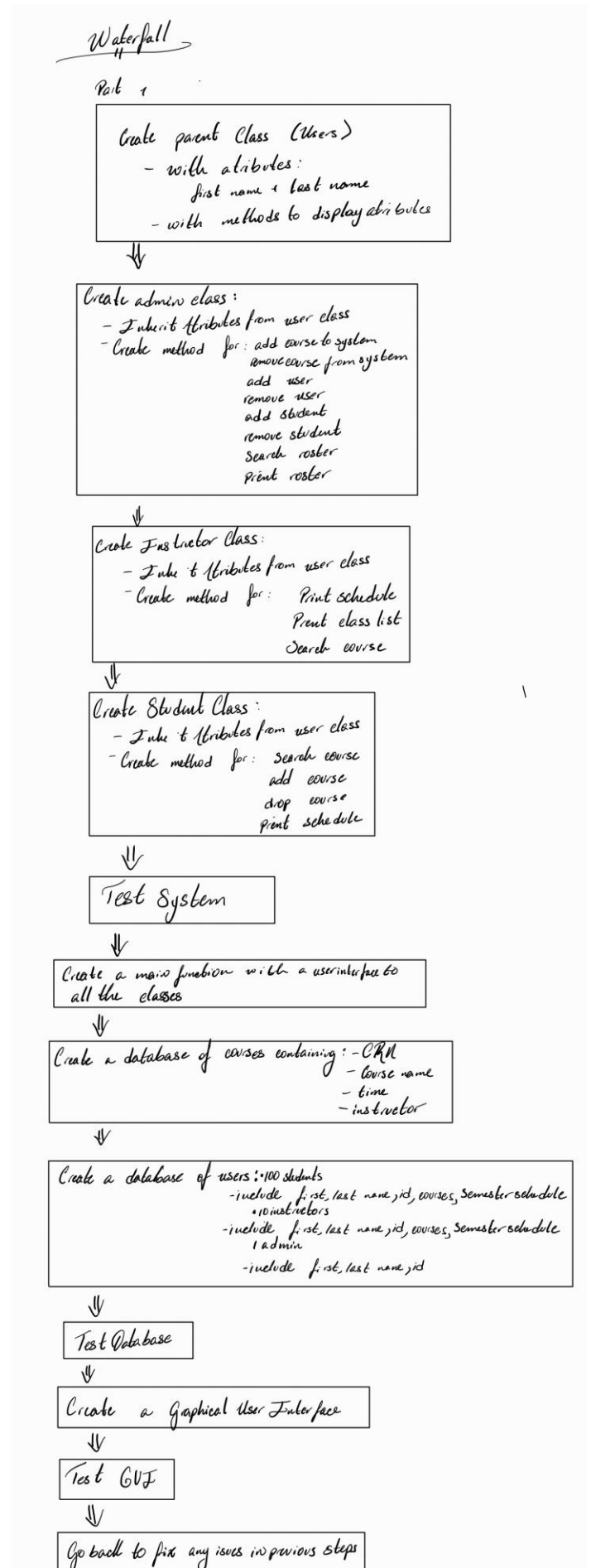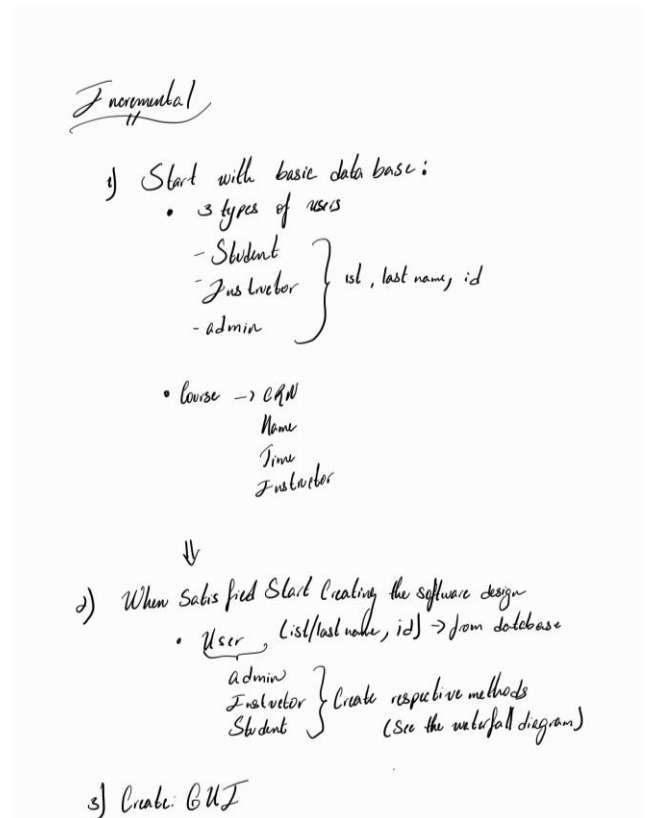
Waterfall

Part 1

Create parent Class (Users)
- with atributes:
  first name + last name
- with methods to display atributes

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Create admin class:
- Inherit Attributes from user class
- Create method for: add course to system
  remove course from system
  add user
  remove user
  add student
  remove student
  Search roster
  Print roster

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Create Instructor Class:
- Inherit Attributes from user class
- Create method for: Print schedule
  Print class list
  Search course

⬇

Create Student Class:
- Inherit Attributes from user class
- Create method for: Search course
  add course
  drop course
  print schedule

⬇

Test System

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Create a main function with a user interface to all the classes

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Create a database of courses containing: - CRN
  - course name
  - time
  - instructor

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Create a database of users: - 100 students
  - include first, last name, id, courses, semester schedule
  - 10 instructors
  - include first, last name, id, courses, semester schedule
  - 1 admin
  - include first, last name, id

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Test Database

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Create a Graphical User Interface

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Test GUI

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Go back to fix any issues in previous steps

Figure 2: Incremental Method:

For the incremental method, I decided to start from the creation of the database. This way I can account for all the Information that is required as well as have a better understanding of the scope of the project before I start Working on the software engineering. This method will also allow me to integrate the information created in the database with the software design simultaneously. Finally, I create a GUI which allows to me to get a visual representation of the project.

Integrate and Configure:

In this project model, the goal is to reduce the amount of work by taking other iterations of the project and modifying it to fit my needs. I this case, I found some project templates on GitHub that will serve to give a starting point for the software development. The plan is to take inspiration from these templates and adapt it to a database we will create using SQL lite. To do so, I will base the framework of this database on content from the article Introduction to Python SQL. I will also follow some of the tutorials found in SQL Lite Databases to better understand this code. Lastly, I will create a user graphical interface using the library: Tkinter and following the steps outlined in the tutorial: Python interface to TCL/TK.

Links for the Mentioned Websites and Articles:

https://docs.python.org/3/library/sqlite3.html

https://realpython.com/python-sql-libraries/

https://github.com/adilmohak/django-lms

https://docs.python.org/3/library/tkinter.html