COP290: Design Practices in Computer Science

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Piazza Discussion Group: Kindly join this Piazza course to participate in the discussions related to COP290: http://piazza.com/iit_delhi/spring2016/cop290. The course code is *cop290*.

Assignments

Basic jargon: In the first three assignments, we will develop Android applications. These applications follow a simple *client-server* model; the client (also known as the front-end) is the Android apk that runs on your mobile phone, and the server (also known as the back-end) is the code that runs on a computer and serves the requests of the clients over the Internet.

We will have four programming assignments in this course.

1. Assignment 0: Develop a simple Android application which takes user input and sends this information to a central server (which would be provided). The problem statement of Assignment 0 can be found here: Problem Statement
2. Assignment 1: Design and develop the front end of a sufficiently complex Android application. The code of the server along with the API's will be provided to you.
3. Assignment 2: Design and develop a complete Android application including the backend as well.
4. Assignment 3: To be decided

Suggestions for Android Apps: Kindly use this Google form to suggest a good Android application: http://goo.gl/forms/mD38iz3Mvc (January 6 deadline). You get 3 bonus marks if your suggested App is chosen for an assignment.

Points to note:

1. Each assignment in the course should be done in a **group of three students**. Since the first three assignments involve the development of Android applications, we recommend you to form groups such that at least one member of the student group has an Android mobile/tablet.
2. This is a self-guided course. We will conduct help sessions for each assignment, and will provide critical reviews for your each assignment submission. However, it is expected that the students learn most of the background material on their own. Kindly do not expect the teaching assistant to write/debug the code for you.

Background

This course is intended for students with at least one year of programming experience. Prerequisites for this course are:

1. COL 100 (Introduction to Computer Science)

2. COL106 (Data Structures and Algorithms)

Useful links:

1. Getting started with Android development (http://developer.android.com/training/index.html): This site contains the link to a video course which builds your Android development skills right from setting up the Android Studio to deploying your Android application on the mobile phone. For Assignment 0, it is sufficient to go through Lesson 1. For Assignments 1 and 2, you can follow Lessons 2 and 3. You can skip the additional lessons if you think that they will not assist you in your assignment.
2. Installing the Android Studio software (http://developer.android.com/sdk/index.html)
3. Proxy configuration for the Android Studio software (http://developer.android.com/tools/studio/studio-config.html)
4. Version control system: You must use a version control system for the development of all the assignments. Use this link to understand what is a version control system with the example of Git (http://git-scm.com/doc).
5. You have to maintain your code base on an online repository like Github (https://guides.github.com/activities/hello-world/) or Bitbucket (https://bitbucket.org/tutorials/tutorials.bitbucket.org).

Grading

The grading for each assignment will contain four components:

1. Design document
2. Basic code. This shall the broken down into three to four parts based on the assignment
3. Software practices
    a. Code indentation
    b. Commenting

    c. Modularity
    d. Version control system like Bitbucket
4. Additional features

The exact break up of different assignments and the grade components shall be announced with each assignment.

All the submissions will be checked for plagiarism. If a student group is found to be copying code from other group or a third party source, all the concerned students (includes the person who wrote the code) will get ‘F’ grade and a disciplinary action will be initiated against them.

The overall grading of the course will be relative. For the fourth grade component (additional features); more marks will be provided for application features which are unique and which enhance the application usage sufficiently. So if you implement an additional exciting feature in your code, it is in your interest to keep this to yourself.