CprE 388 Final Project

Requirements for All Projects

- You should .zip your project and submit it on Blackboard Learn or via e-mail.
- Include in your .zip a project report file that gives a brief overview of your project design, APIs, etc.
- Demo your project to the TA during lab hours, office hours, or via appointment.
- All applications should be "polished"; an app icon is required. Your project should be free of bugs.
- TWO members per team or ONE member teams will be allowed

Due Dates

- Discuss with your respective lab TA for getting custom project approved.
- Have your project description submitted by Friday, November 4th(10.00 pm) for approval using the project form link below.
- Demo your project and turn it in before Friday, December 9th (3.00 pm - 4.00 pm).

Link to Project Form for Approval

Complete the details of your project (Custom or Pre-designed), team members etc. using the link below.

https://goo.gl/forms/Fcv8LAlaT8BNUXhx1

Option 1 – Create Your Own Project

Before starting the project, create a 150 point rubric and a 3 week project schedule (similar to the rubrics and schedules listed in Option 2 & 3). Then discuss the project with the TA to see if the concept has enough complexity.

In your app, include **at least TWO** technical and **one** design feature from the criteria listed below:

Technical Criteria:

- External API's (for ex.):
  - A google API: Maps, Drive, Google+, etc.
  - Other Social Integration: Facebook, Twitter, etc.
  - Google Game Features: CloudSave, Achievements, Leaderboards, etc. (requires google developer account)
  - Some other external library ○ Ads (AdMob or some other provider)

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- Android Features:
  - Database Storage
  - Device File System
  - Preferences
  - Notifications
  - Android Widget
  - Content Providers
  - Services

- Arduino Features
  - 32 x 32 Matrix LED board
  - iRobot camera

- Raw Sensors
  - Gyroscope (Orientation)
  - Accelerometer
  - Ambient light
  - Proximity
  - Linear Acceleration
  - GPS
  - Magnetometer
  - Step Counter
  - Etc.

Design Criteria:

- Navigation:
  - Menus
  - Swipable Pages/Tabs
  - Navigation Drawer
  - Actionbar

- Accessibility
  - Text-to-Speech
  - Talkback
  - Explore by touch etc.
- Arduino
  - Create a new Arduino Library

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- Rotating LED message

Optional Features:

- Polished Submission to Google Play Store
- JNI/Native Code integration
- Web Backend (via App Engine, Parse, some other service)

Pre-Designed Projects

Option 2 – Scrabble Utility App

Create a utility app that will help people cheat when playing Scrabble.
Requirements:

- (30 points) A set of four activities: the scrabble board, a list of word plays, an anagram solver and a preferences screen.
- (30 points) The anagram solver activity allows the user to enter 7 letters (including blank tiles), and will find words that contain those letters from a dictionary.
- (30 points) The scrabble board activity allows the user to input their 7 letters, plus the contents of the board.
- (20 points) The board can be solved using a small dictionary in a reasonable amount of time, with the results listed on the 2nd activity. When selecting a result, the word is shown on the scrabble board.
- (40 points) The preferences activity will allow the user to choose from a few dictionaries (large and small) as well as switch between the original Scrabble board and the Words with Friends board.

Optional Features:

- Use a DAWG (directed acyclic word graph) for storing the dictionaries.
- Solve a complex board using a 100,000+ dictionary (TWL) in less than 1 second.

Project Schedule:
Week 1 – Find dictionaries, finish the user interface. Finish the preferences activity.
Week 2 – Finish the anagram solver. Begin solving the Scrabble board (hint: solve it row by row, column by column)
Week 3 – Finish the scrabble solver. Test.

Option 3 – Create an Android Game

Create a game on the Android Platform (PacMan, Space Invaders, Donkey Kong, Angry Birds)

Requirements:

- (70 points) A working game.
- (40 points) Allow the user to save their progress.
- (20 points) A feature that saves the high score and initials of the user.
- (20 points) Cool graphics.

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Optional Features:

- Use a 3rd Party Graphics/Game library (like libgdx, Cocos2D etc)
  High-production value is a plus.

Project Schedule:

Week 1 – Google and read tutorials. Create test apps to demo what is possible.

Week 2 – Start working on the game mechanics by combining the test apps.

Week 3 – Finish the game mechanics. Store the game state. Create high score system. Test & work on graphics.

Option 3 – Heart Rate Monitor Display

Given a heart rate monitor that integrates with an android device using Bluetooth, display the waveform of the heart rate on the 32 x 32 LED display through the Arduino board.

Requirements:

- (60 points) Display a wave form on LED board
- (30 points) Attach to Bluetooth device
- (30 points) Interprets information from heart rate monitor
- (30 points) persist heart rate data

Optional Features:

- Display BPM on the led board

Project Schedule:

Week 1 – Establish connection between heart rate monitor, make sense of the data

Week 2 – Work on converting the wave form to a format that can be visualized and transmitting the data

Week 3 - Display the wave form. Test and remove bugs!