Project 2

**CSC 4320/6320 - Operating Systems**

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**Spring 2018**

**Goal of this project:**

Get familiar with the low-level functionality in Android System. Examples of low-level features include process management, memory management, file management, I/O device management, network management, etc.

**Requirements:**

Develop an Android Application, which should use at least one type of OS-related functionality. An OS-related functionality is something related to the Android OS or some type of system call. For example, you can develop a process manager to monitor the processes in the system. Some OS-related or system call APIs can be found at the following two links:

The android.os package: http://developer.android.com/reference/android/os/package-summary.html
Android system calls: https://developer.android.com/reference/android/system/Os.html

By default, the project should be finished individually. In rare cases, teamwork may be granted according to the complexity of the proposed project. Any teamwork must have a strong justification and needs to be approved by the professor.

**Some ideas to get you started for your project:**

- Process manager
  - List current process (like the result of command *ps* in Ubuntu)
  - Kill processes
- File manager
  - List files and/or folders
  - Open/close/save files
- Text file process
  - Conversion between lowercase and uppercase.
  - Add line number.
  - Search keywords.
- Storage management
  - Showing storage information of your phone (e.g., breaking based on different Apps)
- Memory management
- Network management and/or operation

**How to Start?**

Follow the tutorial provided in class and develop a simple HelloWorld App. Then install the App in an Android Device or Emulator.

**Important deadlines:**

**3/22/2018: Proposal of your topic**

Write a proposal of your topic and upload it to iCollege. The proposal should include a brief description of the features in your App. The project topic will be posted on the class webpage on 3/27/2018. If your topic is not approved, you will be informed by 3/27/2017.

**4/17/2018 and 4/19/2018: Presentation & Demo**

Prepare a 5-minute presentation for your project during the class time. Your presentation should cover a general description of your project, introduce the features and what system calls are used, and also a demo of your project. The presentation time and demo time should be roughly evenly divided.

**Below is the template that we will follow for preparing the presentation slides:**

- Slide 1: cover page (including title, name, etc)
- Slide 2: General description of the App
- Slide 3: Overall design
- Side 4: OS-related low-level functionalities description
- Slide 5-6: One or two (no less than one and no more than two) screenshot of your App

**4/24/2018 (Tuesday): Project report**

Write a final project report and upload it to iCollege. The project report should include a general description of your App and some screenshots of results. Also submit your source code and presentation slides to iCollege by this date.

**More Details about project report and grading criteria:**

Your project report should include the following three parts: 1) a cover page; 2) main content; 3) source code (only the part of the code that you programed). The main content should be 5-7 pages, Times New Roman font, size 12, single line space, single column, page martins (1" on all four sides).

Below is a sample outline that you may use for organizing your main content:

1. Background/introduction/overview of your App
2. OS-related low-level functionalities
3. Design of your App and how it works
4. User interface and some screenshots

Here are the grading criteria we will use to grade your project (for both demo and report):

- Project quality (completeness, robustness)
- Complexity
- OS-related low-level functionalities
- Presentation or report quality (e.g. well-organized or poorly-organized)

The final project grade = presentation/demo grade x 0.6 + report grade x 0.4

**Other Useful links:**

1. How To Get Started With Android Programming.
http://x-team.com/2016/01/how-get-started-android-programming/

1. Android APIs References.
https://developer.android.com/reference/packages.html

2. How to get running process list and traffic statistics.
http://www.itcuties.com/android/how-to-get-running-process-list-and-traffic-statistics/