

## SWE6130: MOBILE APPLICATIONS DEVELOPMENT

Group Project Specifications

Given on: 1ST July 2016 Due on: 4th August 2016

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As an upcoming young ICT professional, you have come to the conclusion that mobile applications can be commercialized to provide returns as well as challenge the developer to think about innovation and entrepreneurship. You are toying around with four possible mobile applications, namely:

1. **Geo-Location Services Mobile Advisor**
2. **Weather Data Services Advisor**
3. **Agri-Livestock Business Mobile Advisor**
4. **Stock Market Mobile Advisor**

Each application provides user requested information on their mobile device. The application processes user requests and retrieves information from its internal storage but if updates exist on a content server located somewhere in the Service Provider space (owner of the app) or cloud, the device requests and gets these updates and makes them available to the user. In some cases, the content server pushes notifications to the user.

The four mobile apps have the following high-level requirements.

1. **Geo-Location Services Application Requirements**

This application provides a user with information based on geo-location proximity. We are interested with information on:

1. Schools
2. Hospitals
3. Restaurants/Hotels

A user needs to login into the application for authentication. The user then selects an area of interest from the list above, using a reasonable user interface. The application determines its current location then searches the nearest available selected services and shows them on a google map. The mobile device must have WIFI connection or mobile data enabled.

1. **Weather Data Services Application Requirements**

This application provides a user with weather information based on current location. The mobile app retrieves weather data from your backend server which you must prepopulate with actual data. Select weather data from major cities around the world on key parameters like: rainfall, temperature (high, low), humidity, etc.

On starting up the application (authentication is required), it fetches current location weather data, displays it and also displays the name of the location. Besides displaying weather for the current location, a user may scroll through cities to display weather for a specific location. For illustration purposes, capture data for about 10 cities. The display is accompanied by an image corresponding to the weather type. To retrieve the weather, the mobile device must have WIFI connection or mobile data enabled. (NB – for a real-life application, it is possible to retrieve actual weather data from cloud services and process it to your own format and store on your server).

1. **Agri-Livestock Business Mobile Application Advisor Requirements**

This application provides a user with agricultural or livestock information based on request.

1. Security: a user needs to login into the application for authentication;
2. Level 1 Menu Items
   1. Livestock
   2. Agriculture
   3. Horticulture
3. Level 2 Menu items
   * Livestock
     1. Dairy rearing
     2. Pig rearing
     3. Chicken rearing
     4. Fish rearing
   * Agriculture
     1. Maize farming
     2. Beans farming
     3. Wheat farming
   * Horticulture
     1. Potato farming
     2. Tomato farming
     3. Cabbage farming
     4. Kale farming
     5. Onion farming
4. Level 3 Menu items
   * Livestock
     1. Initialization (insemination, chicks, fingerlings, etc)
     2. Feeding
     3. Animal health
     4. Market access
   * Agriculture/Horticulture
     1. Land preparation/planting/seedlings
     2. Plant maintenance (weeding/fertilizer)
     3. Plant health
     4. Harvesting & Storage
     5. Market access
5. Output
   * The application displays an information page relevant to the user request.
   * *Note: You need to research on the relevant information for the different requests and store the same on the Content Server waiting for device requests.*

**General Comment:** This application requires you to update the Content Server from time to time whenever new information is available. An update field must be maintained on the server and *pushes a notification* to the device whenever an update becomes available. This requires you to maintain a user list with mobile numbers for notification services. When a user sees the notification, they run the app and request for the updates. The device connects to the internet, retrieves the updates and then executes the app. The device must have WIFI connection or mobile data enabled.

Whenever new categories of livestock or agriculture are added, or even an updated version of the app becomes available, the Content Server pushes notification to the users using the user list. Once the user gets the notification, they may opt to update the app. This requires a new app to be downloaded and replaces the existing one.

1. **Stock Market Mobile Advisor Application Requirements**

This application provides a user with information on stock movements at the Nairobi Stock Exchange based on request.

1. Security requirement: a user needs to login into the application for authentication before use;
2. Level 1 Menu Items – Choose an NSE Category
   1. Agricultural
   2. Banking
   3. Commercial and Services
   4. Construction and Allied
   5. Energy and Petroleum
   6. Insurance
   7. Investment
3. Level 2 Menu Items – Listed Companies in category

e.g.: Energy and Petroleum

1. KenolKobil Ltd Ord 0.05
2. Total Kenya Ltd Ord 5.00
3. KenGen Ltd Ord. 2.50
4. Kenya Power & Lighting Co Ltd
5. Umeme Ltd Ord 0.50

Get listed companies from NSE website for each the seven categories

1. For the company selected from menu 2, retrieve the following:
   1. Yesterday’s closing price
   2. Weekly average price
   3. The highest annual price
   4. The lowest annual price
2. Output: The application displays the information retrieved in step (d) in a nice format.

**General Comment:** This application requires you to update the Content Server on a daily basis so as to capture the closing stock prices (say midnight). Whenever a user runs the application, the device checks its system date and if the local application data last update’s date is less than the system date, the device connects to the internet, retrieves the updates and then executes the app. The device must have WIFI connection or mobile data enabled.

Whenever new companies get listed, you must update them on the Content Server. The server then *pushes notification* to the users using the user list. Once the user gets the notification, they may opt to update the app. This requires a new app to be downloaded and replaces the existing one.

1. **Own Application Requirements (Optional)**

You may also propose your own application for consideration. In this case write a concept note and discuss with me for approval.

**WHAT IS REQUIRED FROM YOU**

1. Divide yourselves into *four groups of 2 students* each. Each group will handle one of the projects listed above. Each member of the group will be assigned clear individual responsibilities. Some aspects of the mobile app will be handled by all group members.
2. Carry out research on the requirements of the mobile application using the following outline:
3. Learn how the mobile app will operate from process, data and user interface perspectives;
4. Develop key use cases to help you step through what will need to be developed;
5. Submit a 2-3 page report showing your proposed solution.
6. Develop your chosen app to meet the requirements listed above using the following tools:
   * Android SDK/ Android Studio
   * SQLlite
   * External Content Server (using Oracle, MySQL, etc)

1. Communication between the device and Content server must be with JSON objects.
2. For the external Content Server, you may start with a laptop as the server during development and testing. You may use any database as the content server back end (except MS Access). Later, you may explore the possibility of a cloud server.
3. Document your solution in a project report
4. Prepare about 10 slides for presentation in week 12. The presentation will demonstrate a live system and other relevant aspects.

*NB: Assessment will be based on presentation (30%) and project report documentation (70%).*