CS 4ZP6: Capstone Project
Problem Statement
Written by Group: Ananthan Kanagasabai, Andrei Ciontea, Curran Tam, Joseph Nguyen, Victor Siu

Draft Project Title:
ARV Regimen Generator

Background Information:
17 HIV Antiretroviral (ARV) medications have been approved for use in children. This results in various regimens available for use, as usually most children need to be on 3 medications at once. There are many factors to consider when initiating ARVs in children as many medications have different toxicities and side effects (including affecting growth, hormones, kidneys etc). Also, certain viruses may be resistant to some medications and not others. Some medications will interact with other HIV or non HIV medications. Some medications come in liquids, dissolvable tablets, or pills which can affect what age children can take them or not. Also, FDA approval for certain medications depends on: age, weight etc. Drug insurance will only cover some medications. Therefore, it is very challenging to decide on a regimen given the multiple permutations.

Motivation of the Project:
By creating a solution for this regimen issue, we can: improve efficiency, reduce human error, and provide an optimal and detailed regimen when medical teams need to decide on prescriptions for HIV patients. Creating this app will also help lessen the time that a doctor needs to use in order to come up with a medication regimen for a child. The doctor will be able to use the saved time for other important tasks and the patient will also receive their prescription at a sooner time.

Challenges:
Several obstacles that will come our way include:
- Developing the algorithm for regimen selection
- Compiling all the information needed on each ARV medication
- Developing the android application
- Making the interface as user-friendly as possible

Developing the algorithm will likely be the most time consuming and the core of our project. This will be based on all the medical information being compiled properly and coded in the android application accordingly.

Detailed Objectives:
We will begin by discussing with our external supervisor to organize and compile all medical information needed to begin our application development. A static non-functional prototype will be created as a draft and framework to work on. Once the shell is created, we will begin developing our algorithm by compiling the information provided by our external supervisor. If

possible, we are looking to create a user account system in addition to the base application for doctors and patients to keep track of personal regimens.

Assumptions:
The project will be done in Android Studio development and the end product will be an android application. General users of this application will be doctors and patients looking into HIV medication prescriptions. We are making the assumption that the doctor owns a mobile phone and that the phone runs the android OS.

Constraints:
One major constraint is that the application will be functional only on an android device. Another constraint is that the medical information being used in the app will be limited to the knowledge that is available during the time of development. Any new information made available by the medical community will not be added to the app when development ceases unless we continue to update the app after the 8 months we are allotted to work on the project. We are also limited by the knowledge we have about the android development environment. The members of this group will have to learn to code an android application during the duration of this course.