**Combined Rational Statements**

**Rational for Topic**

We have chosen this topic because keeping and storing information in a hospital is very important, but presenting that information in a clear easy to understand and use way is even more important. So we want to create an application that is capable of tracking all a patients’ important information, and making that information usable to both the doctors and nurses treating the patient. This combined with a method of tracking prescribed drugs and their interference with other drugs should help the doctors and nurses to better diagnose, treat, and provide care for the patients. This system is currently unavailable in the medical field and we believe it could be a valuable resource. We want to make hospitals a better place.

**Use Case Rationale**

(UC1 & UC8 & UC12) This use case is required so the program can give the proper functionality to the proper user, creating a much more efficient experience. The doctors can access information critical for them, as well as nurses and pharmacists seeing information relevant to their particular jobs.

(UC2) This use case is required so that doctors can add new patients into their list, and allows doctors to verify all patient information on written records is correct with the patient.

(UC3) This use case is required so that doctors and nurses are able to access general patient information that might be relevant for particular forms, such as insurance and emergency contact information.

(UC4) This use case is required so that the doctor may be able to revise the current status of a patient’s information, such as weight or allergies the patient may have not listed be for upon admittance.

(UC5) This use case is required so that a doctor may be able to diagnose a patient and store that diagnosis for later use, as well as revise a previous diagnosis that may have been incorrect. Then the entered diagnosis can been easily seen by both doctors and nurses so that the patient can be more effectively treated.

(UC6) This use case is required so that the doctor can send a new prescription directly to the pharmacy. Additionally, this use case will help prevent accidental overdoses as well as improper mixing of medications by checking the drug to be prescribed against the current drug database.

(UC7) This use case is required so that both doctor and nursing staff can quickly be alerted to a patient who is in critical need or urgent care. This will allow for quicker treatment of a patient who is in urgent need.

(UC9) This use case is required so that the nursing staff can quickly communicate with the doctor. However, this method is also better than the traditional pager method as doctors will see a full message on screen to give the doctor more information as to why the page was sent.

(UC11)This use case is required so that the pharmacy staff can see a list of the prescriptions ordered, the dosage, and what doctor ordered the prescription. By having this use case we are enabling prescriptions to be filled more quickly as they will populate in a list as soon as the doctor makes the order, and informing the nursing staff as soon as the prescription is filled.

(UC12 & UC13) This use case is required so that the doctor cannot prescribe medication that could be harmful if prescribed in the improper amount or if it were combined with any other medication that might cause adverse side effects. This use case also allows for drugs to be modified, and for new drugs to be prescribed as soon as they are entered into the database by the pharmacy. The drug database is the most important part of our program as there is currently no such database being used in hospitals today.

(UC14) & (UC15) This use case is required so that new users may be added to the user database, and current users can have their information changed. Only the administrator will have access to this use case as it provides a greater level of security to the system. Thus new hires that will have access to this system will have to be manually be entered into or edited by the system administrator.

(UC16) This use case is required so that hospital employee’s will be able to track which doctors, or nurses are working during a particular shift so that they can more efficiently share information pertaining to patient care.

**Rational for Software Databases**

For our program we will make use of SQLite, as this was one of the project specifications.

**Rational For Software Architecture Used**

This architecture will be especially useful for us as our program will be interactive and use 4 different views depending on the user’s permissions.

**Object Rationale**

Patient Object - We are using a Patient object that has the patient’s information stored in the database. By using this object the user can access and change the patients object information in the database.

Prescription Object - We are using a Prescription object which will access current medications for each patient. It will have the ability to access the drug object to determine the quantity on hand and determine if it conflicts with any drug the patient is currently receiving.

Drug Object - The drug object will hold all of the drugs information such as, conflicting drugs, quantity, uses, side effects, max dosage, etc. This object will be accessed by the prescription object and communicate back and forth.

User Object - The user object will hold the information for each user, doctors, nurses, administrators. It will have their login information, the user’s current permissions, and personal information. This object will have 4 subclasses for each user.

Alarm Object - The alarm object will only be used when a patient needs immediate assistance. The color of the patient’s panel will turn red signaling the doctors and nurses.

GUI Object - The GUI object is basically the interface where everything appears to the user. It has buttons and windows that the user sees and interacts with. The buttons will call a method when they are pushed.