**Application: Hospital Management Platform**

The platform manages the patient that comes at the hospital, the staff and the needed equipment. The platform consists in a web development application which is responsive, in order for doctors/ nurses to use it on tablets/ smartphones and for patients to use if on any device. The accounts are made for hospital staff (doctors, nurses etc.) and patients.

For this platform I would use the following patterns:

1. Creational:

**Builder** - for implementing the users, as the user class has a minimum required set of attributes such as name and password, as well as optional attributes such as email, profile picture etc.

**Factory** – for implementing several types of hospital staff (nurse, doctor, stretcher-bearer) without exposing the creation logic to the user and referring the created objects through a common interface.

**Prototype** – for implementing the recipes, because they could repeat so it is easier to cache the structure of the recipe and clone it, instead of creating each time a new recipe. Only the completely new recipes, which are not related to old prescribed medicine, will be added in the database completely new.

1. Structural:

**Proxy** – for implementing different access layers to the application, based on the user’s privileges and on the patients. For example, when the hospital is overpopulated, the hospital will only hospitalize the patients with medical insurance.

**Composite** – for managing the departments of the hospital. By using this pattern, the departments will have their sub-departments or sections represented in an arborescent way. (level 0 – department, level 1 – sub department, level 2 – section (the leaves nodes))

**Decorator** – this design pattern would be used in order to provide a different way of giving the medical results to a patient, beside printing, by using the platform. So, by using this pattern I will be able to provide alternatives which will allow going back to the initial situation (the printing format).

1. Behavioral:

**Observer –** this design pattern will be used to notify all the patients that have ever been in the hospital regarding new diseases that are present in town/ the near region/ whole country.

**State –** by using thisdesign patterns the patients will be managed easier. A patient can have one of the following states: Hospitalized, UnderObservation, Released. When the patient is brought to the hospital he becomes Hospitalized. If his health situation is difficult, then his state is changed to UnderObservation. When he is cured and sent home, the patient enters the released state.

**Template –** the hospitalization has a set of predefined steps that need to be respected: Analysis of health status of the patient, checking the availability of the hospital and emitting the hospitalization paper. The best way of implementing this sequential steps/rules is by using the template design pattern.