Data Modeling and Databases I. Project, Phase 1.

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1. Study the domain.

- How your system will function:

  Patients who are assigned for this hospital have their personal account, where they can access their medical history, the results of analyzes and communicate with doctors. In case of illness, the patient can register for an appointment with the doctor on the site. He can choose the appropriate time and preferable specialist. Doctor in his account can check all the patients with whom he has an appointment for the day, also he can view the list of patients who is currently treated by him and their medical history. Nurses are able to see their schedule for the day, receive notifications about emergency situations. They should keep track of stationary patients, check their canteen menu, take them for analyzes. The system is also can be used for internal communications. The doctor can send results of medical examination to patients and certificate of recovery after the end of the treatment. Other staff of the hospital should be able to manage the rest of the hospital problems. Financial management, keeping track of the condition of the medical equipment, registration of guests, tracking of donations is the responsibility of other staff of the hospital.

- Which entities will it have and how they will be related to each other:

  In our system, we have four main entities: patient, doctor, nurse, hospital staff. Patients are divided into two types: ambulatory patient and stationary patient; as well as in staff we have three main characters: economic department, supply manager and receptionist. Treatment of patients is controlled by the assigned doctor. Every nurse is assigned to a group of stationary patients. Economic department manages salaries, spendings on patients and other financial questions. Supply manager tracks the condition of medical equipment and the whole hospital. The receptionist is responsible for managing reports for the patient, and the organization of charity events and donation receiving.

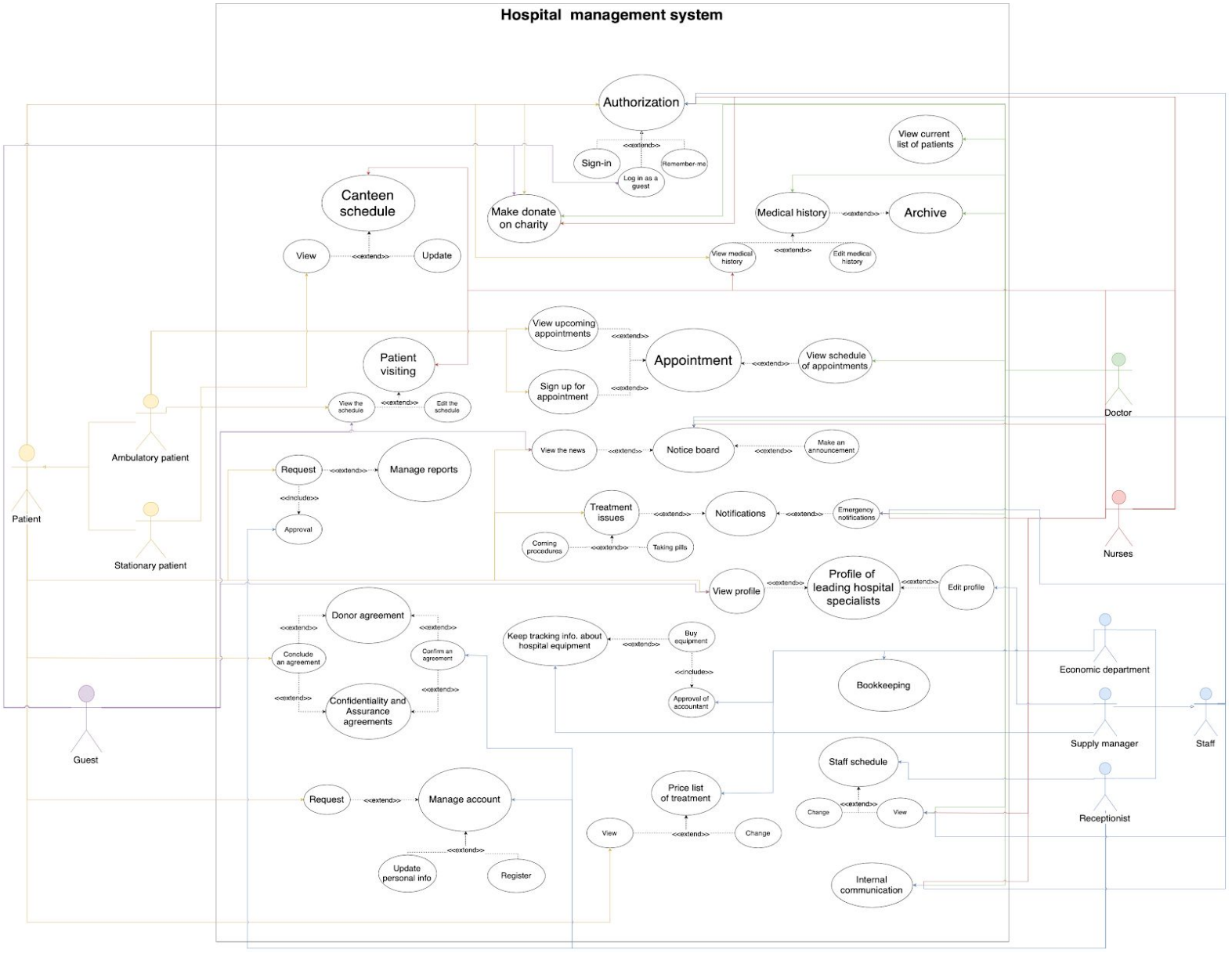
- What will be the level of detailization:

  Our system is on the optimal level of detailization. Most of the functions of the hospital can be done by using our system avoiding unnecessary paperwork. Besides the main functionality that is covered in the system, there are some narrow use-cases such as the Management of canteen menu and the Profile of leading specialist in the hospital.

2. Describe the domain.

1. Use-Case diagram.

   p.s. : for better readability **link** to the our saved diagram in the cloud.



2. Functional and non-functional requirements.

   There is the list with all requirements and templates below.

p.s. : In the list below we will provide the name of the requirement in the **Use-Case** diagram in the brackets.

Functional requirements:

1. Multi user account system. (Authorization)
2. Medical History.

3. Monitoring the whole hospital system. (Keep tracking info. about hospital equipment)

4. Management of all types of users' account.

5. Notice Board.

6. View Appointments.

7. Appointment Management.

8. Notifications.

9. Invoice Management.

10. Medical Report Management. (Manage Report)

11. Internal Communication.

12. Management of the list with current pricing for particular treatment. (Price list of treatment)

13. Profile of leading hospital specialists.

14. Management of an assurance and confidentiality agreements between the patient and the hospital. (Confidentiality and Assurance agreements)

15. Current list of patients.

16. Donor agreement.

17. Patient visiting.

18. Canteen menu.

19. Staff schedule.

20. Charity.

Non-functional requirements:

21. Security.

22. User friendly interface.

23. Scalability and Reliability.

24. Portability.

25. Privacy.

26. Accessibility.

27. Development environment.

28. Response time.

29. Backup.

30. Testability.

31. Integrability.

32. Internalization.

33. Robustness.

34. Payment service.

35. Partnership.

Functional requirements

Requirement ID	1
Title	**Multi user account system**
Type	**Functional**
Description	Any user should be able to create/manage his/her personal account.
Priority	1
Risk	C

Requirement ID	2
Title	**Medical history**
Type	**Functional**
Description	Doctors can see the list of all patients with their medical history.
Priority	2
Risk	H

Requirement ID	3
Title	**Monitoring the whole hospital system**
Type	**Functional**
Description	Staff of hospital should be able to check the condition of the all equipment of the hospital (technical, medical etc.).
Priority	2
Risk	H

Requirement ID	4
Title	**Management of all types of users' account**
Type	**Functional**
Description	The system supports several types of accounts with different level of access and functionality.
Priority	1
Risk	C

Requirement ID	5
Title	**Notice Board**
Type	**Functional**
Description	Users can see general information about the hospital, upcoming events.
Priority	3
Risk	L

Requirement ID	6
Title	**View Appointments**
Type	**Functional**
Description	Doctors should have an opportunity to see their working schedule and list of patients for consultation. Patients should have an opportunity to view their upcoming appointments.
Priority	2
Risk	M

Requirement ID	7
Title	**Appointment Management**
Type	**Functional**
Description	All patients should have an opportunity to choose convenient time-slot for the medical examination with particular doctor and sign up for it.
Priority	2
Risk	M

Requirement ID	8
Title	**Notifications**
Type	**Functional**
Description	Authorized users should be notificated about issues, according to their account type. For instance, for doctors - information about operations and unplanned meetings and for patients - notification about procedures and taking pills/drugs/medicaments.
Priority	3
Risk	L

Requirement ID	9
Title	**Invoice Management**
Type	**Functional**
Description	Financial department of the hospital have to be able to track the balance of the financial resources.
Priority	2
Risk	M

Requirement ID	10
Title	**Medical Report Management**
Type	**Functional**
Description	Patients can receive(from the hospital) the medical report about their illness using the system. It can be either formal document with the period of treatment or it can be detail review of medical history.
Priority	3
Risk	L

Requirement ID	11
Title	**Internal Communication**
Type	**Functional**
Description	Medical staff can communicate and have some conversations about diagnosis of patients and problems of the hospital.
Priority	3
Risk	L

Requirement ID	12
Title	**Management of the list with current pricing for particular treatment.**
Type	**Functional**
Description	Patients can view the list with current pricing of the procedures and treatments. The financial department can make changes to the list basing on the hospital balance.
Priority	2
Risk	L

Requirement ID	13
Title	**Profile of leading hospital specialists**
Type	**Functional**
Description	Users can view the list of the top specialist and their medical experience. Hospital staff can edit this list.
Priority	3
Risk	L

Requirement ID	14
Title	**Management of an assurance and confidentiality agreements between the patient and the hospital**.
Type	**Functional**
Description	Patient can conclude the confidentiality and assurance agreements using the system.
Priority	2
Risk	M

Requirement ID	15
Title	**Current list of patients**
Type	**Functional**
Description	Doctors have their own list of patients that are getting treatment currently.
Priority	2
Risk	L

Requirement ID	16
Title	**Donor agreement**
Type	**Functional**
Description	Patient will have an option to conclude an agreement with the hospital. The agreement confirms that if the patient passes away, his/her body will transfer either to the Organ Procurement and Transplantation Network or to the Research laboratory of the hospital.
Priority	3
Risk	L

Requirement ID	17
Title	**Patient visiting**
Type	**Functional**
Description	Friends and relatives of a patient may visit the hospital only during the particular period of time. They can view a schedule of visiting hours in the system. Nurses can edit the schedule for internal reasons of the hospital.
Priority	3
Risk	L

Requirement ID	18
Title	**Canteen menu**
Type	**Functional**
Description	For every group of patients there are different meal plan stored in the system, nurses should keep track on this schedule to provide appropriate meal for the patient.
Priority	3
Risk	L

Requirement ID	19
Title	**Staff schedule**
Type	**Functional**
Description	Hospital staff can see their tasks for the day and schedule of their duties.
Priority	2
Risk	M

Requirement ID	20
Title	**Charity**
Type	**Functional**
Description	Any person should be able to donate money/organs/medicaments in need of hospital.
Priority	3
Risk	L

Non-functional requirements

Requirement ID	21
Title	**Security**
Type	**Non-functional**
Description	System should have two step authentication, restriction on complexity of password, confirmation via phone number / ID medical number.
Priority	1
Risk	H

Requirement ID	22
Title	**User friendly interface**
Type	**Non-functional**
Description	User should be able to understand all the functional of the system. Interface should be readable and understandable, must be in light colors and pleasant to use.
Priority	2
Risk	H

Requirement ID	23
Title	**Reliability and Scalability**
Type	**Non-functional**
Description	System must handle increase in number of users and prevent any possible exceptions and errors.
Priority	1
Risk	H

Requirement ID	24
Title	**Portability**
Type	**Non-functional**
Description	System should be supported on any device and operating system. Also, it can support several types of files/extensions/formats.
Priority	2
Risk	M

Requirement ID	25
Title	**Privacy**
Type	**Non-functional**
Description	All the information stored in the system should not be accessible for the people outside of the system.
Priority	1
Risk	M

Requirement ID	26
Title	**Accessibility**
Type	**Non-functional**
Description	System design should have several modes for comfortable use by people with disabilities.
Priority	2
Risk	L

Requirement ID	27
Title	**Development environment**
Type	**Non-functional**
Description	System should be implemented in a way such that it can be updated and set up for adding new information or functionality.
Priority	1
Risk	H

Requirement ID	28
Title	**Response time**
Type	**Non-functional**
Description	System response time should be less than 5 seconds.
Priority	2
Risk	L

Requirement ID	29
Title	**Backup**
Type	**Non-functional**
Description	In case of crush of the system, all the data should be easily restored.
Priority	2
Risk	L

Requirement ID	30
Title	**Testability**
Type	**Non-functional**
Description	Developer can test every function of the system, to be sure that system works properly.
Priority	3
Risk	L

Requirement ID	31
Title	**Integrability**
Type	**Non-functional**
Description	System can be used in collaboration with others systems/applications in the field.
Priority	3
Risk	L

Requirement ID	32
Title	**Internationalization**
Type	**Non-functional**
Description	System can be adapted to various languages and regions without engineering changes.
Priority	3
Risk	L

Requirement ID	33
Title	**Robustness**
Type	**Non-functional**
Description	System should be able to handle the invalid input and errors during the execution.
Priority	1
Risk	H

Requirement ID	34
Title	**Payment service**
Type	**Non-functional**
Description	System should support inside payment for additional medical services.
Priority	2
Risk	M

Requirement ID	35
Title	**Partnership**
Type	**Non-functional**
Description	System should provide the list of operations/procedures that can be done in partner hospitals.
Priority	3
Risk	L