(HD) Software Engineering – LAB01 Summary: Requirements Analysis

During this session, a high-level statement of a proposed automated Health Care Centre system (MedSYS) was presented to students.

Objective: To identify a set of appropriate requirements for the proposed software system.

The following topics were addressed:

1. Process models
   A brief overview of the three process models used in software development projects
   - Waterfall
   - Evolutionary (Agile)
   - Component Based Software Engineering (CBSE) – Reuse

2. Process Model Activities (an overview)
   - Specification
   - Development
   - Validation
   - Evolution

3. Requirements Analysis
   - An explanation of the concept of requirements elicitation or requirements gathering
   - Identifying the relevant stakeholders for a proposed system
   - Methods for performing requirements elicitation:
     - Informal meetings
     - Questionnaires/Surveys
     - Interviews
     - Workshops
     - Examination of existing similar systems

4. Classification of Requirements
   - Functional Requirements (Services to be provided by the system)
   - Non-functional Requirements (Security, performance, reliability)
   - Domain Requirements (e.g. Web interface)

5. Group Exercise:
   - The student worked in groups and simulated an informal meeting with stakeholders to produce a list of functional requirements for the MedSYS project (See Appendix A)
   - A class discussion was conducted which addressed the following
     - System Constraints (Budget, Completion date, resources, skills)
     - System Scope (what to include; what to exclude; Scope influenced by constraints)
     - Essential and non-essential requirements
     - Prioritising requirements

6. User Requirements Vs System Requirements
    - User Requirements A high-level (abstract) description of a functional requirement
    - System Requirement: A low-level (detailed) description of a functional requirement
        - A function as a set of one or more tasks (Data capture, data validation, data storage/retrieval)
        - The concept of business rules to be implemented by a function

7. Requirements Specification
    - A brief discussion of the need to use a formal approach to document the requirements identified during requirements elicitation.
    - Text, narrative: and the potential problems which this option might bring
    - Graphical: use of notations such as UML, System modelling, etc.

8. Managing a Complex Project
    - A system as a set of interacting components
    - Grouping of functional requirements into project components/modules
    - Representing the functional components/modules of a system in a structured way (see Appendix B)

Appendix A – Functional Requirements for MedSYS

Stakeholders:

- Receptionist
- Doctor
- Practice Manager/Financial Controller

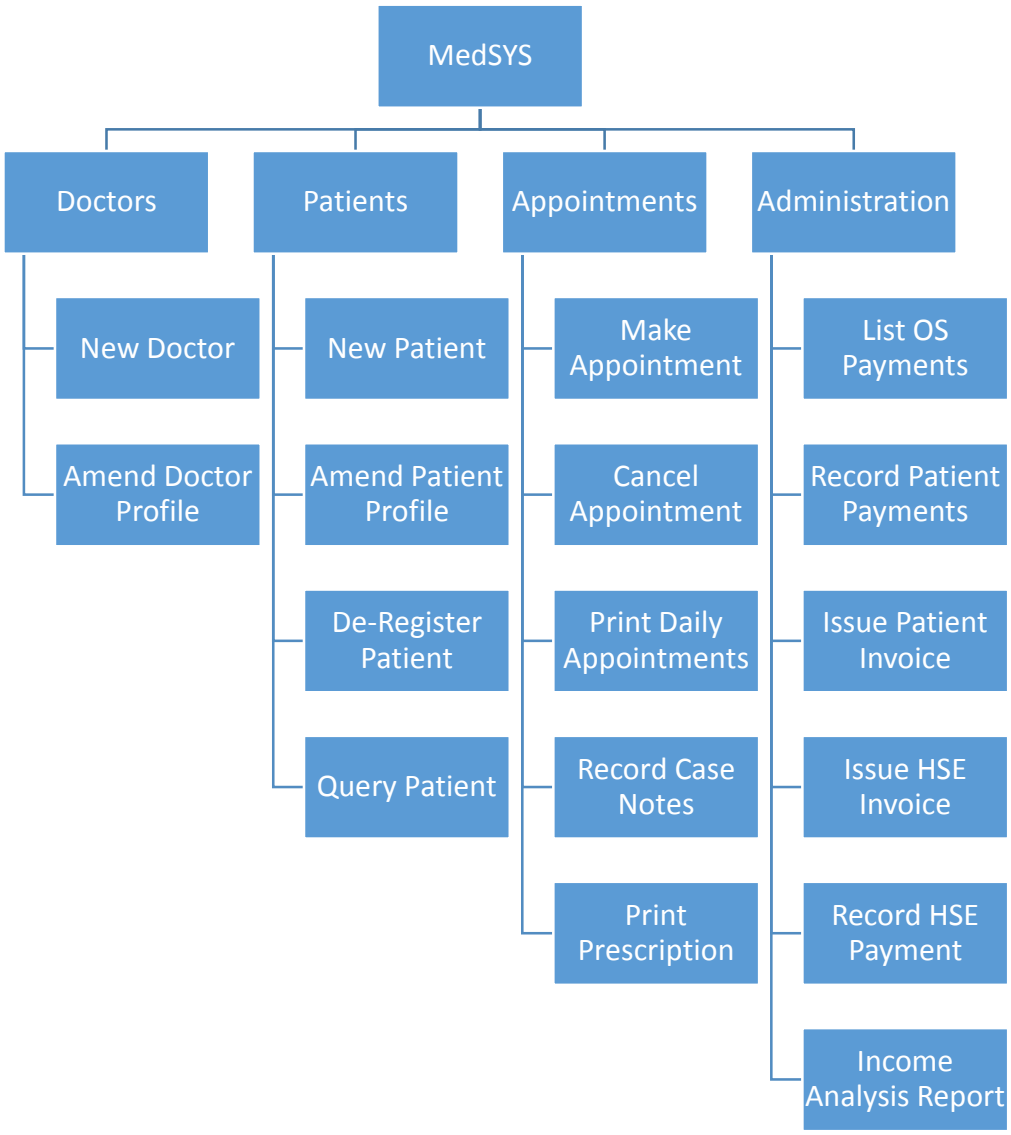
Functional Requirements

- New Patient
- Amend Patient Profile
- De-register Patient
- New Doctor
- Amend Doctor Profile
- Make Appointment
- Cancel Appointment
- Print Daily Appointments
- List outstanding Payments
- Print Prescription
- Record Patient Payments
- Record Case Notes
- Issue Invoice
- Issue HSE Invoice
- Record HSE Payment
- Query Patient
- Income Analysis Report

A substantial number of functional requirements were identified and discussed during the group exercise. Some of these requirements were excluded as discussion identified that they did not fall within the ***scope*** of the proposed system (The automation of patient, doctor and appointment records).

Appendix B – Functional Components/Modules of MedSYS

A ***Hierarchy Chart*** is a simple graphical methodology which might be used to show the sub-components (modules) of a software system. The following hierarchy chart models the functional requirements identified in Appendix A as a set of functional components (modules) for MedSYS:



Note: The structure (modules) shown above would be discussed with the stakeholders and the development team and might be subject to several revisions before being finalised.