



Libyan International Medical University

Faculty of Information Technology

Health Informatics Department



An Outpatient Electronic Health Record augmented with ICD-10

A graduation project presentation submitted to the Dep. of Health Informatics as partial fulfillment for the Requirement for the Degree of **B.Sc.** in Information Technology

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Introduction



Health Information Technology & The change it brought to the health facilities.



Electronic Medical Record (EMR)

Documentation

Sharing Information

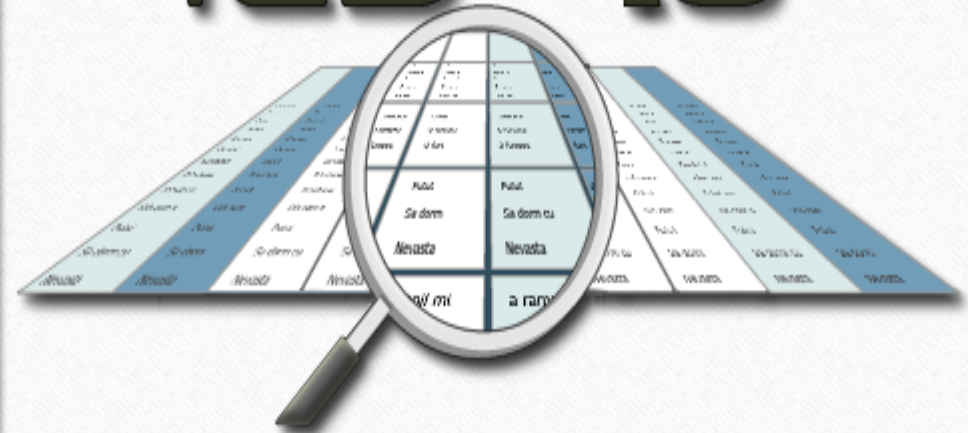
Improving diagnosis

Quality Improving

International Statistical Classification of Diseases and Related Health Problems(ICD).

including nuanced classifications of a wide variety of signs, symptoms, abnormal findings, complaints, social circumstances, and external causes of injury or disease.

ICD - 10



Problem Statement

As stated previously the incredible growth of the technologies in the health sector is driving the improvements plans and efforts done in our sector.

After finishing the first part of the internship as a health informatics in Benghazi Medical Center (BMC) a list of problems and obstacles were facing the electronic systems as a whole in the facility, more specific if we talk about the recording and documentation of the patients data and visits we found the center is very poor and merely covering what is required in a basic EMR.

Problem Statement

We developed a system that solves the key problems that faces the department which are :

Lack of medical records availability;

Patient medical record redundancy ;

Difficulties of including the ICD in the medical record; and

Lack of reports and statistics generated by the department.

The System Proposed

- It is a computer based electronic system that helps the OPD to save and retrieve patients data easily.
- This system can book an appointment, save medical session data and display the patients medical history.

Aims & Objectives

-Enhancing the quality of the health services delivered by the center.

this system in its optimum status will provide an instant access to a patient medical record any time. Moreover the built-in features and properties are **aiming to ease the health delivery processes** by providing a medical database of the procedures used by the doctors and practitioners.

-It can be stated as levels, **for the clinical/Medical part** of the project is focused on **representing an EMR** that is covering all of the patient data needed for each session, **also presenting a new built-in ICD feature to the record** that enable the user or the doctor to insert or search for the diagnosis or treatment listed in the patient record.

- **Another essential goal or level to achieve is to have an electronic database that is available instantly for the use of reports and research requirements.**

Methodology

The Methodology used to develop the system is the
(Waterfall Model)

The waterfall model is considered is one of the oldest methodologies used in developing systems, it is also known as one of the *Sequential Linear Life Cycle* model.

Waterfall Model Advantages

- Simple and easy to use & implement model.
- Each step of this model have it is own methodology and a certain outcome, The steps are sequential, presided and clear.
- It works at its best in small projects that its requirements are fully understood and probably documented.

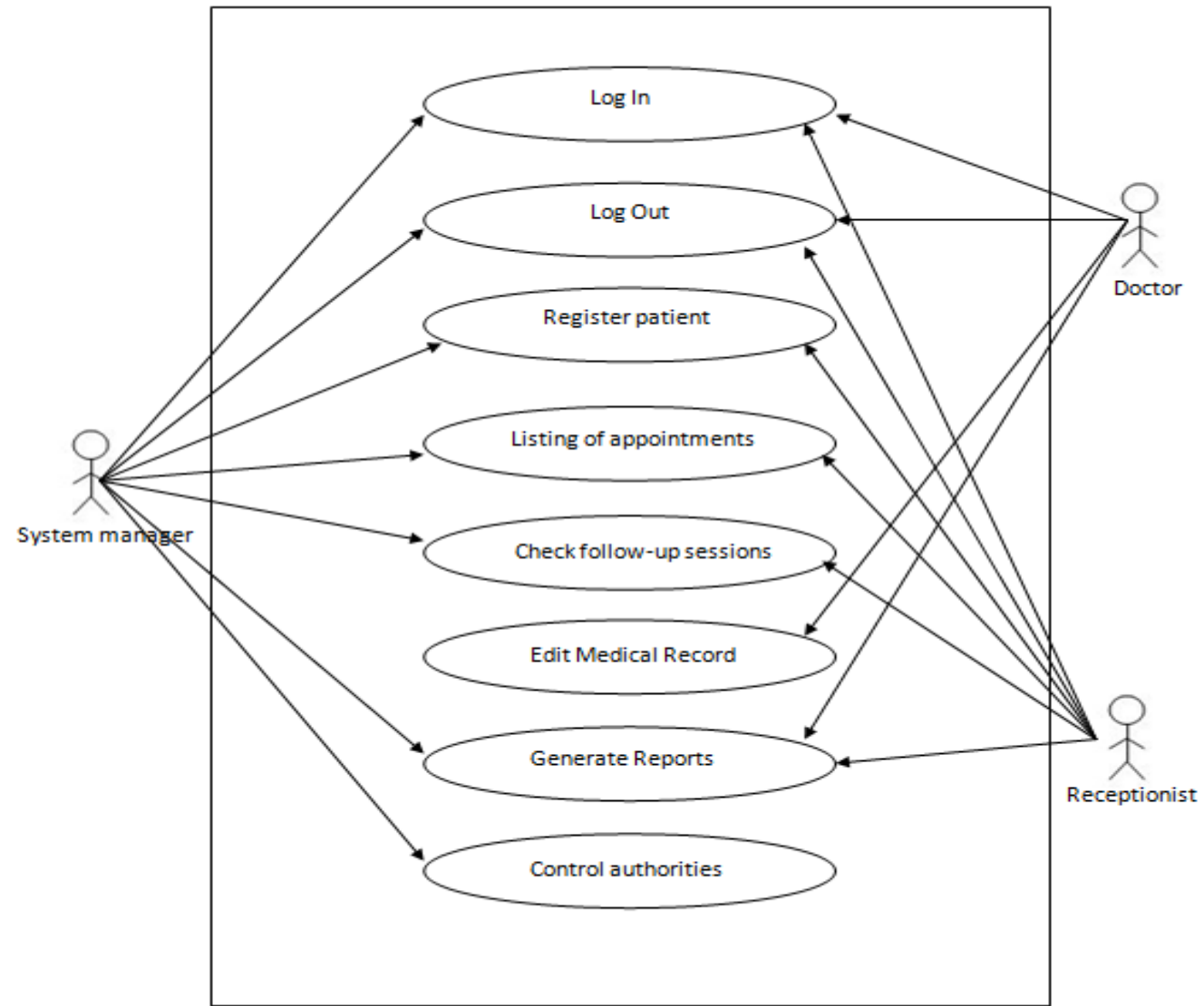
Tools Used In The Project

- **Visual Basic .NET (VB.NET)** is an **Object-oriented Programming Language**, implemented on the **.NET Framework**.
- **A Microsoft Office Access 2007 Database.**

Tools Used In The Project

Unified Modeling Language (UML) :

- Use Case Diagram
- Activity diagram
- Class diagram
- Sequence diagram



Suggestions

Further improvement can be held to the department procedures to adopt the ideal EMR for pediatrician including:

Progress note templates, Automated Growth Charts, ePrescribing, Reports and Immunization modules.

These Integrated Practice Management System enables the front office(reception) and revenue cycle management staff to perform at their best in all administrative and financial aspects.

Thank you