



KENYATTA UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY

**DEPARTMENT OF COMPUTING AND INFORMATION
TECHNOLOGY**

SCO400 PROJECT ANALYSIS

**PROJECT TITLE: COVID-19 CASELOAD AND MORTALITY
ANALYSIS AND PREDICTION WITH MACHINE LEARNING**

submitted by

by

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1. Introduction

The objectives of this analysis document are the following;

- a) Analysis of the functionality of existing similar systems,
- b) Requirements definition,
- c) Analysis of the functionality of the proposed solution.

Since similar systems appear in a fragmented nature, only one (***WHO Coronavirus Disease (COVID-19) Dashboard***) shall be used in analysis. The World Health Organization Coronavirus Disease (COVID-19) Dashboard (<https://covid19.who.int/>) allows users to track the state of the cases, deaths and recoveries using a choropleth map and a bubble map. A user can view the number of cases, deaths and recoveries using the interactive map globally, by region or country.

After analysis of this system, it was found that the dashboard does not provide users with the ability to compare the trends of different countries in a visual way. The system does not give users the ability to generate a report on the state of the trends in Portable Document Format.

Moreover, users who want to predict the state of the pandemic do not have a way of projecting the trend on the system.

The main aim of this system analysis is to find out what will be done, how it will be undertaken, who will do it, when it will be done, why would it be done and how can it be improved. This is in line with the problem-solving technique that improves the system and ensures that all the components of the system work efficiently to accomplish their purpose.

This will be accomplished by establishing the ways collecting data, interpreting the facts, identifying the problems, and decomposition of the proposed system into its components.

2. Analysis of the case study system

2.1 Functionality

The available house hunting system supports the following functionalities:

Maps

Users can track the state of the cases, deaths and recoveries using a choropleth map and a bubble map.

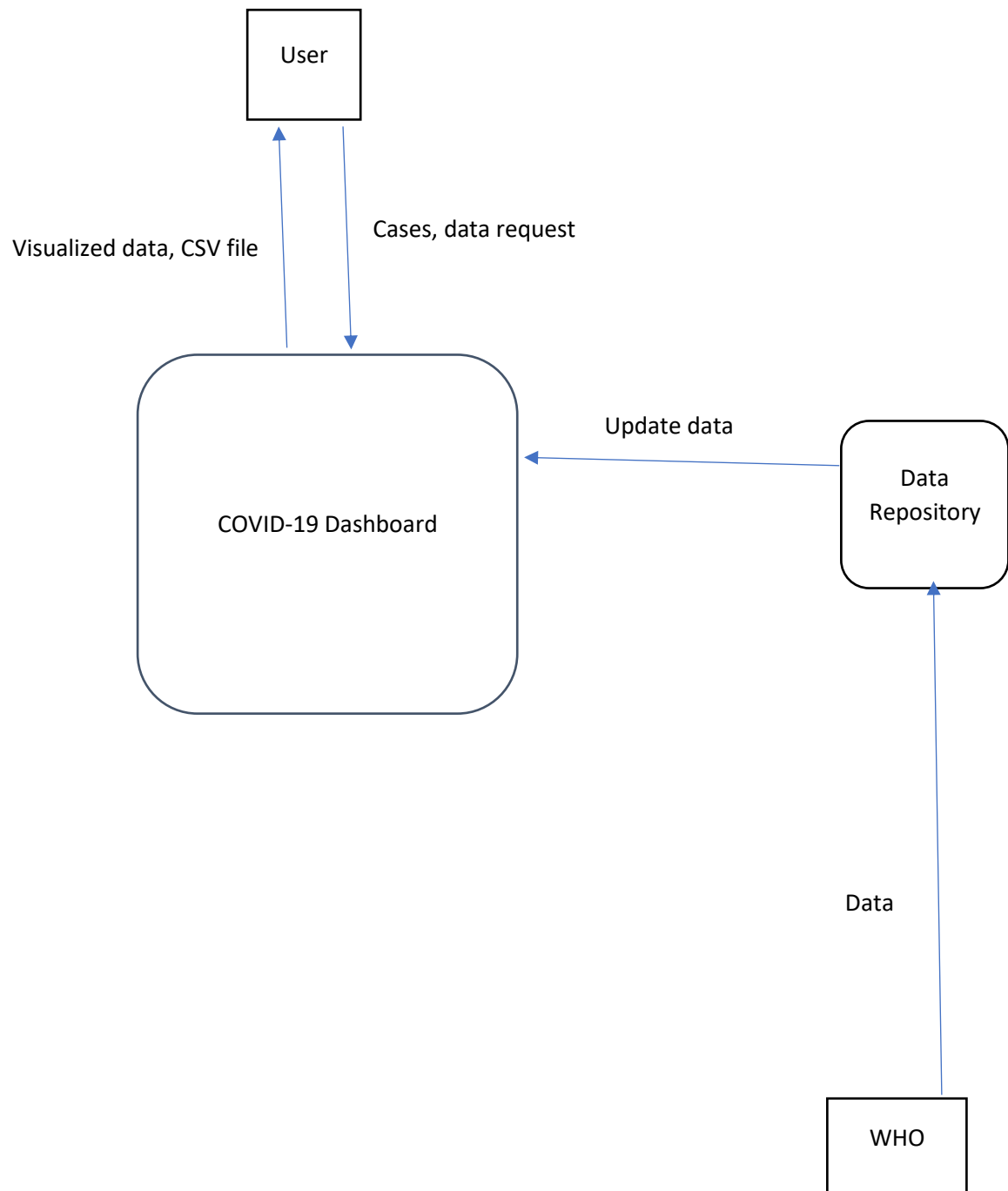
Data table

A user can view in a tabular form, the situation by country, territory and area.

Data download

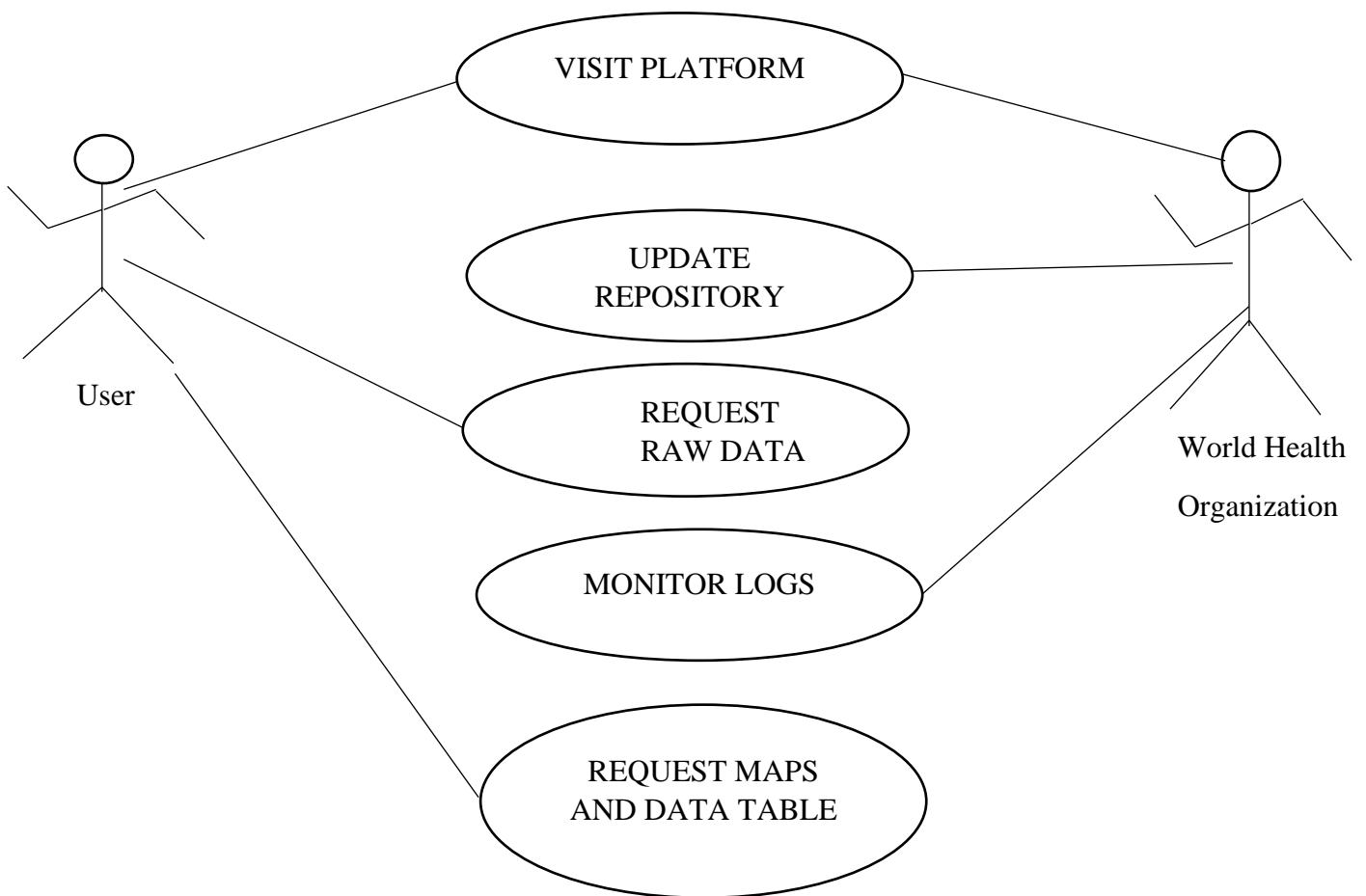
Data used in the map can be downloaded in .CSV format.

2.2 Context diagram



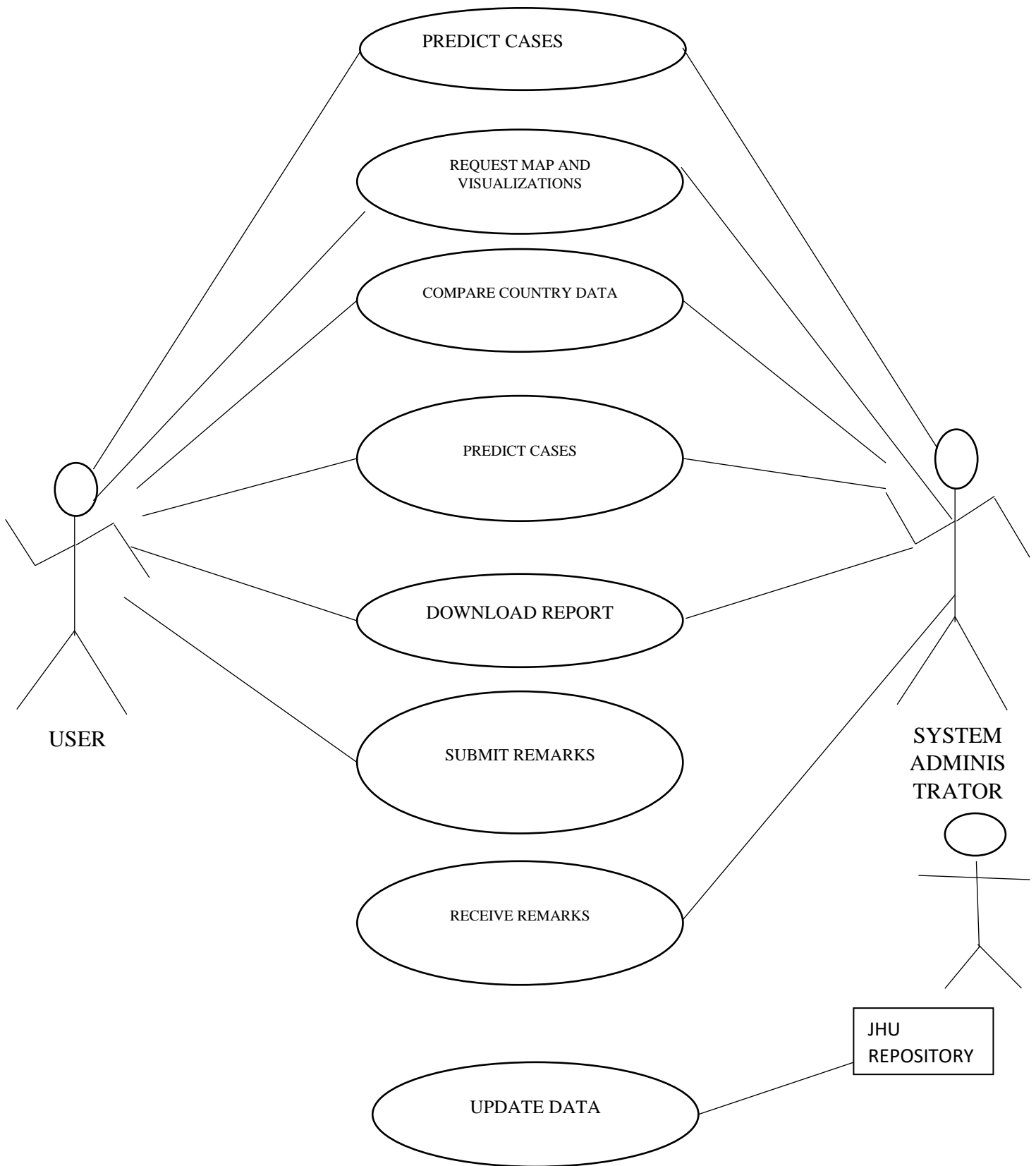
2.3 Use case diagram

The following diagram shows how the different actors interact with the system;



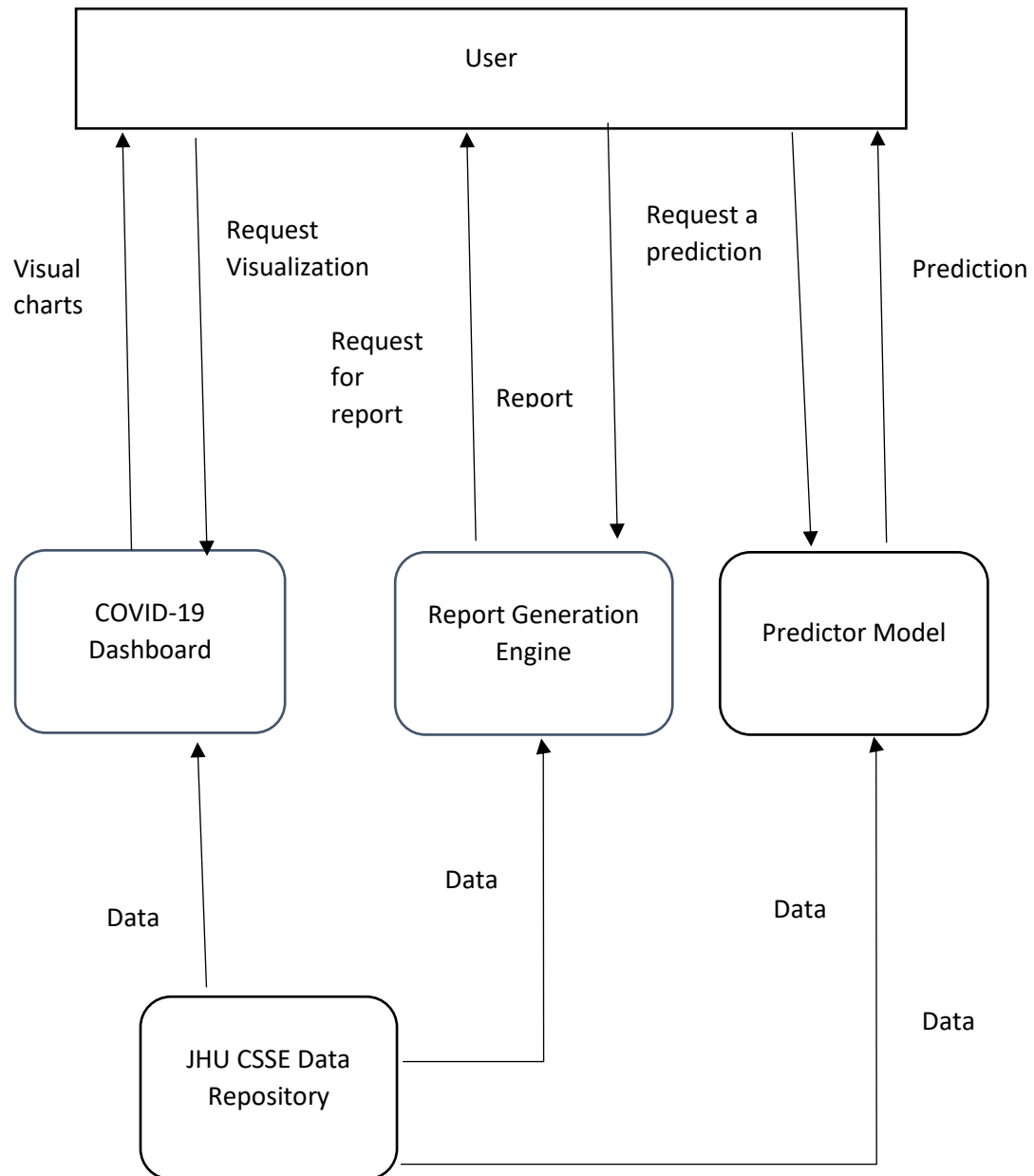
3. Proposed System

3.1 Use case diagram



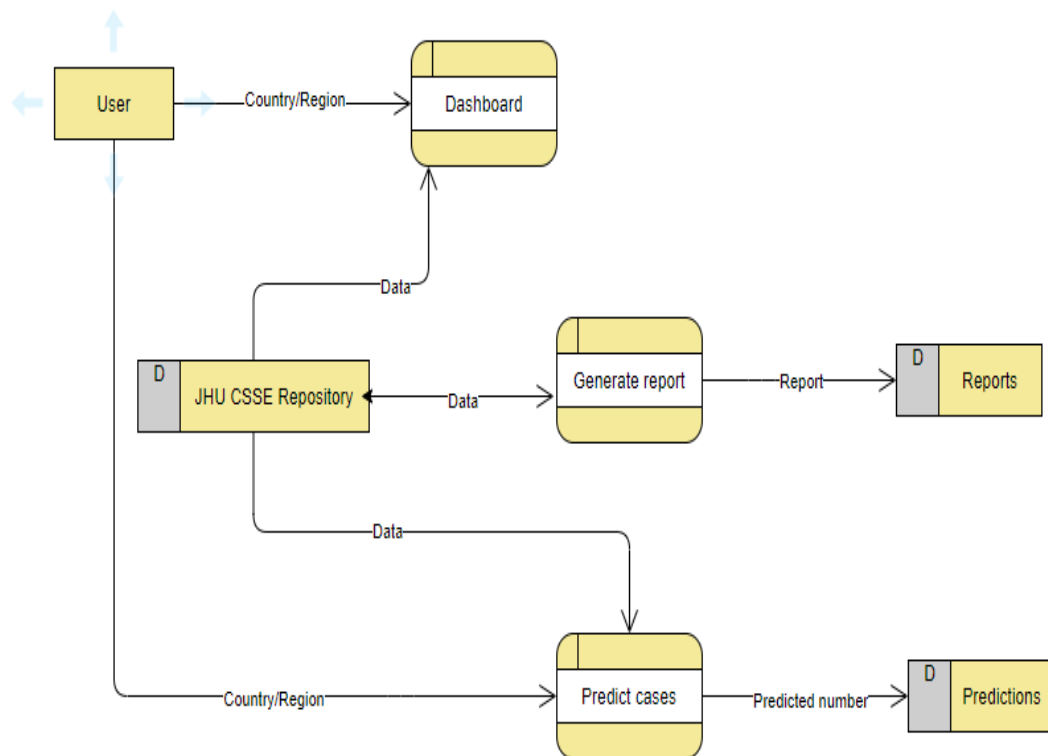
3.2 Context Diagram

The following diagram illustrates the system, its parts and its environment, showing how entities interact with it;



3.3 Data flow diagram

The following is a representation of the flow of data through the system;



4. Requirements

This section is a summarization of the following groups of requirements for the proposed system;

- a) User requirements
- b) Functional requirements
- c) Non-functional requirements

4.1 User requirements

This section describes what activities that users must be able to perform.

The activities include;

- Users can access the system anytime and anywhere they may be
- Many users can access the system all at the same without noticeable delays
- A user is capable of generating a report
- A user is capable of generating a prediction of the cases
- Users have the ability to compare country trends of their own chosen pairs

4.2 Functional requirements

This is a statement of services the system provides, how the system reacts to particular inputs, and how the system behaves in given situations.

- The user shall request a visual representation of cases and/or deaths. The system shall show a dashboard of the cases globally.
- The user shall select a country pair and be able to compare their trends.
- The user shall enter a country and request the prediction of cases and receive the projection.
- The user shall request a report and one shall be generated and optionally sent to their email.

4.3 Non-Functional requirements

These are requirements specify or constrain characteristics of the system as a whole. They are;

Security

The system will provide HTTPS connections from the hosting service to the client device accessing it.

Ease of use

Considered the level of knowledge possessed by the users of this system, a simple but quality user interface shall be developed to make it easy to understand and required less training.

Error handling

Error shall be considerably minimized and an appropriate error message that guides the user to recover from an error shall be provided as validation of user's input is highly essential

Availability

The system must be available 24 hours a day, 7 days a week. Should there be a major maintenance, the system will be expected to notify the users in good time and must not be unavailable for more than 24 hours

Usability

The system will provide a user-friendly interface for the user to interact with the system. The user can easily navigate through the system without being stranded.