Project Title: Localize the Openbravo ERP system into Sinhala language and Implement it with the university system.

Research Component: Human Resources Management

Project Id: 16-071

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DECLARATION

I declare that the this project report or an part of it was not a copy of a document done by any organization, university any other institute or a previous student project group at SLIIT and was not copied from the Internet or other sources.

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1. Introduction

1.1 Purpose

The purpose of this Software Requirements Specification (SRS) document is to illustrate the software requirements of "Localize the Openbravo ERP system into Sinhala language and Implement it with the university system" which is to be developed, with reference to both its internal and external operations and its capabilities. This LOERPS System which will be developed by the group 16-071 for 4th year research at Sri Lanka Institute of Information Technology (SLIIT) as their final year project.
This document was composed after a number of discussions with the project team as well as the specialized person (Patricia San Juan – Openbravo Localization Lead in Spain) in the field and considering the complete requirement specifications of this project. Under this proposed solution here describes about Human Resources Management (HRM). Mainly all the users requirements, system requirements (Defining what should be implemented), functional and non-functional requirements that are meant to be implemented in the product are specified in this document. Since a complete description of the function to be performed by the proposed software is provided in this document, this will help out the readers and users to determine whether the software specified really addresses the current problem context and whether it meets the needs of the targeted community. Then it discusses how the proposed system differs from those approaches. This is written with the purpose of providing a better understanding about the Procurement Management, its feature, its sub modules, how each sub modules work and the relationship between those sub modules to the end users developers and those who are interested about this research area. In this document the system is graphically represented as so as to make the readers find it convenient to understand and it is presented in a simplified manner in order to address an audience with different levels of technical capabilities and relevant knowledge.

1.2 Scope

LOERPS System is an ERP system which will be developed by our research group for local people to make their day to day business managements easier. As a localized ERP system our software makes a user friendly experience when working with the LOERPS. To achieve this goal, our group refers recommended articles related with Openbravo localization guide and create and update translation modules article.

This research area focuses on giving a better resource planning experience in Sinhala language to the users, who are struggling with current Enterprise Resource Planning (ERP) methods. This document tends to cover the user requirements and system requirement of the proposed solution localized ERP web application which is going to be developed under the before mentioned research idea. As well as it contains related to research information collected from the literature review together with goals, objectives of the intended system and a diagrammatical overview of the system to guide the developers and to give an overall idea of the system to the users.

LOERPS is an ERP system which gives a reality resource planning system for users. Through this system here explains details related to how the resource planning and localization is done under Procurement management. This application area covers Requisition to Receipt and invoicing parts of the Procure to pay business flow and Supplier returns business process.

Sinhala is the mother tongue in Sri Lanka and most of Sinhalese are not expert by using English, but there should be an appropriate way to connect with the modern world according to their aptitude and also gain benefits form the latest technology, since that the main objectives of proposed system are localize the openbravo ERP system into Sinhala language and implement that localized ERP system to our university system. Cost reduction, cycle time reduction and quality improvement can be taken as operational benefits. Cost of labor cost reduction means minimize the customer service, finance, human resources likewise. Cycle time reduction goes with the customer support activities in order to fulfillment customer requirements. As a university their target customers are students and they should fulfill students' requirements. Also under the quality improvement we are decided to implement how we can minimized the error rate, maximized data reliability and accuracy.

1.3 DEFINITIONS, ACRONYMS AND ABBREVIATIONS

SLIIT	Sri Lanka Institute of Information Technology
LOERPS	Localized Openbravo Enterprise Resource Planning system into Sinhala
OS	Operating System
ERP	Enterprise Resource Planning
JDK	Java Development Kit
SRS	Software Requirement Specification
IDE	Integrated Development kit
OS	Operating System
MB	Mega Byte
GB	Giga Byte

1.4 Overview

1.4.1 Overview of the Software

The solution is extremely user-friendly, and provides extensive configuration options. The solution enables executives and HR managers to easily manage employee records, teams & work-shifts, payrolls & attendance. Accounting entries can be automatically processed according to pre-set rules. As many as 50 user interface screens are part of the solution, including ones for employee self-service.

Major features include:

- HR Org initial Setup
- Employee Records Screen
- Leave Management
- Time & Attendance Management
- Import Employee Information & Attendance
- Payroll Management
- Reports - Leave tracker report, Attendance report, Salary pie chart, etc.

1.4.2 Organization of this SRS

Chapter 1: This gives a widespread introduction of the research component on the whole. This contains the purpose of the SRS and the scope of the research area. This chapter also includes capabilities and in capabilities of the research component, main goal, objectives and user benefits of the system.

Chapter 2: This chapter introduces the limitations, constraint and various software, hardware and communication requirement of this product. At the same time, the product is compared with other similar products that are available currently to provide a better perspective of the product to the user.

Chapter 3: This chapter represents the High Level Architecture of the overall system and gives a detailed description about the all sub systems related to the application for non-technical users.

Chapter 4: System requirements are describe here. This section goes with the technical users and External interface requirements, Performance requirements, Design constraint and Software system attributes which are non-functional requirements. Also class diagram that list classes pertaining to the domain of the application and are adequate for organizing all of the requirements are included.

Chapter 2

2 Overall Descriptions

2.1 Product perspective

There are many resources planning system all around the world. But many of them are in English language and implemented cost is very high. By using this application can do a better resource planning system relates to the Human resources management in Sinhala language. System interfaces will be very familiar with users and it is very useful and by going through these can do better resource plan.

This web application is a cloud base web application. So it is very useful to keep relation with other details which are related to Human resources management such as financial details. So user can easily access other relevant details also.

2.1.1 System interfaces

Proposed system will be developed by using Open bravo 3.0 which is its latest version. For the server it's essential to have some system interface, such as windows and Linux distribution OS. And also PostgreSQL server 9.5 is the database server which is more profitable business models with wide-scale deployment. Java will be used to develop the proposed ERP system and since that the system will be accessed through the available Java libraries and methods. Apache Tomcat 7.0 and Apache Ant 1.9 are the other recommended versions.

2.1.2 User interfaces

All interfaces are user friendly, very useful and easy to use.

Personal sable Workspace and Widgets

Enjoy an easily customizable portal-style home page from which users can directly access all recently visited windows and documents, and administer the available widgets. Widgets are user interface elements that can be either placed in any users' workspace tab or be part of a generated window. They can be used to display a wide range of different information ranging from static content, dynamic database data in list form, custom html content, or complete external URL's.

Spreadsheet-style Familiarity

Conduct order taking and execution of other time-critical tasks with an editable spreadsheet-style grid that's familiar and fast to learn for users. Enjoy advanced grid functionality like column sorting, sizing and freezing, records grouping, add formula and summary columns or exporting grid content to a spreadsheet.

2.1.3 Hardware interfaces

Recommended hardware interfaces such as :

- A computer with an i3 processor or higher
- 4GB RAM or higher
- Display with a 1680x1050 resolution

2.1.4 Software interfaces

Java based = multiplatform

Openbravo runs wherever the Java JDK works. This currently means:

- **Operating systems:** Windows, any Linux distribution, FreeBSD, Mac OSX, Solaris and more.
- **Architectures:** x86, x86_64, IA64, Sparc, PowerPC, AIX.

Either PostgreSQL or Oracle should also be supported by your target system

Software stack

If a new major version is not listed here it means it is not yet tested and it's not officially supported.

Stack component	**Supported versions**	**Recommended version**	**Notes**
Java 2 SE	6, 7, 8	Latest 7.x	OpenJDK, Sun JDK and IBM JDK supported Java8 support got an important bugfix in PR16Q1
PostgreSQL	9.1.x, 9.2.x, 9.3.x, 9.4.x, 9.5.x	Latest 9.3.x	With UUID support enabled (contrib) PostgreSQL 9.5 supported starting with PR16Q1

Oracle	11g, 12c	11gR2	Oracle XE not supported - Oracle 12c supported starting with PR15Q3
Apache Tomcat	6.0.x, 7.0.x, 8.0.x	Latest 7.0.x	Tomcat 7 supported starting with PR15Q1 Tomcat 8 supported starting with PR15Q4
Apache Ant	1.7.1, 1.8.x, 1.9.x	1.9.x	-
Apache HTTP Server	2.2.x, 2.4.x	Latest 2.4.x	Optional but recommended
Apache mod_jk connector	1.2.x	Latest 1.2.x	Optional but recommended
Apache Tomcat Native	1.1.x	Latest 1.1.x	Optional but recommended

2.1.5 Communication interfaces

Web browsers

It is strongly recommended to use at least the recommended versions of the mentioned browsers to ensure a better user experience as Openbravo 3 does benefit greatly from the improved performance in those versions.

In the PR16Q2 release, the list of supported/recommended browsers is:

Web browser	Minimum required	Recommended version
Firefox	38	45 or higher
Chrome	48	49 or higher
Internet Explorer	9	11 or higher
Edge (EdgeHTML)	12	13 or higher
Safari	8	9 or higher

In the PR16Q1 release, the list of supported/recommended browsers is:

Web browser	Minimum required	Recommended version
Firefox	38	38 or higher
Chrome	46	47 or higher
Internet Explorer	9	11 or higher
Safari	8	9 or higher

In the PR15Q4 release, the list of supported/recommended browsers is:

Web browser	Minimum required	Recommended version
Firefox	38	38 or higher
Chrome	44	45 or higher
Internet Explorer	9	11 or higher
Safari	7	8 or higher

Network connectivity

Here there are example configurations, depending on the number of concurrent users to be supported. These assume the server is hosted with a fast connection so it's network is not a limiting factor.

Downstream bandwidth	Concurrent users
3Mbit/s	<=10
10MBit/s	<=20
100MBit/s	<=100

As every usage scenario is different and there's no standard the real bandwidth usage in practice may differ from those given above.

2.1.6 Memory constraints

A computer with an i3 processor, 4GB RAM and display with a 1680x1050 resolution is a comfortable setup for the Openbravo 3 web client.

In the case of a virtualized solution (VMware, VirtualBox, Xen, etc), the **Host system** on which the virtual machine is running should have at least 3GB of RAM for 32bit instances and 4GB for 64bits, to ensure that in addition to the virtual machine the host system is not continuously swapping to ensure a smooth operation.

2.1.7 Operations

All normal and special operations required by the user are listed below

- User should enable the internet access from his computer.
- Download the ERP system from openbravo repository.
- Open the application to connect the server
- To proceed with the system procurement should create an account.
- Login to the system using username and password
- Admin can handle other users' login details.

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2.1.8 Site adaptation requirements

- User interfaces should be in Sinhala language
- User have to provide procurement details in Sinhala language only

2.2 Product functions

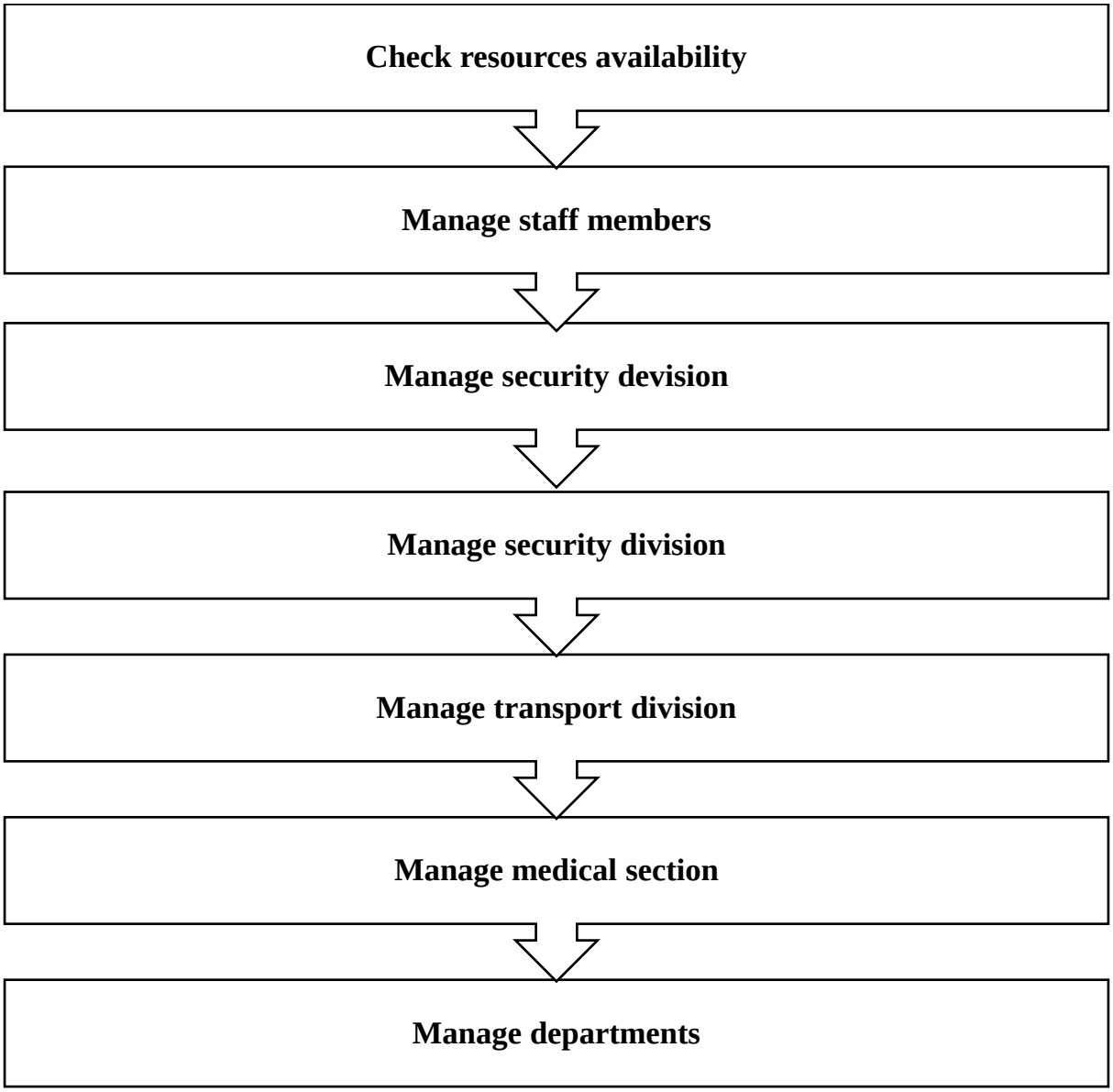

Figure 1-Product Functions

2.3 User characteristics

User must have computer usage experiences and internet usage experiences. Also this is not very complex system and can do the resource planning easily in Sinhala language.

2.4 Constraints

- Should have a computer with an i3 processor or higher
- Should have 4GB RAM or higher
- Should have display with a 1680x1050 resolution
- Other constraints are mentioned in Software interface recommended version column

2.5 Assumptions and dependencies

When suggesting the items which are related to the items searched by the user, the suggestions will be working only for Sinhala words.

2.6 Apportioning of requirements

When predicting about the future transactions, rather than helping the Management the system can be developed in order to give predictions to the suppliers.

Chapter 3

3 Specific requirements

3.1 External interface requirements

3.1.1 User interfaces

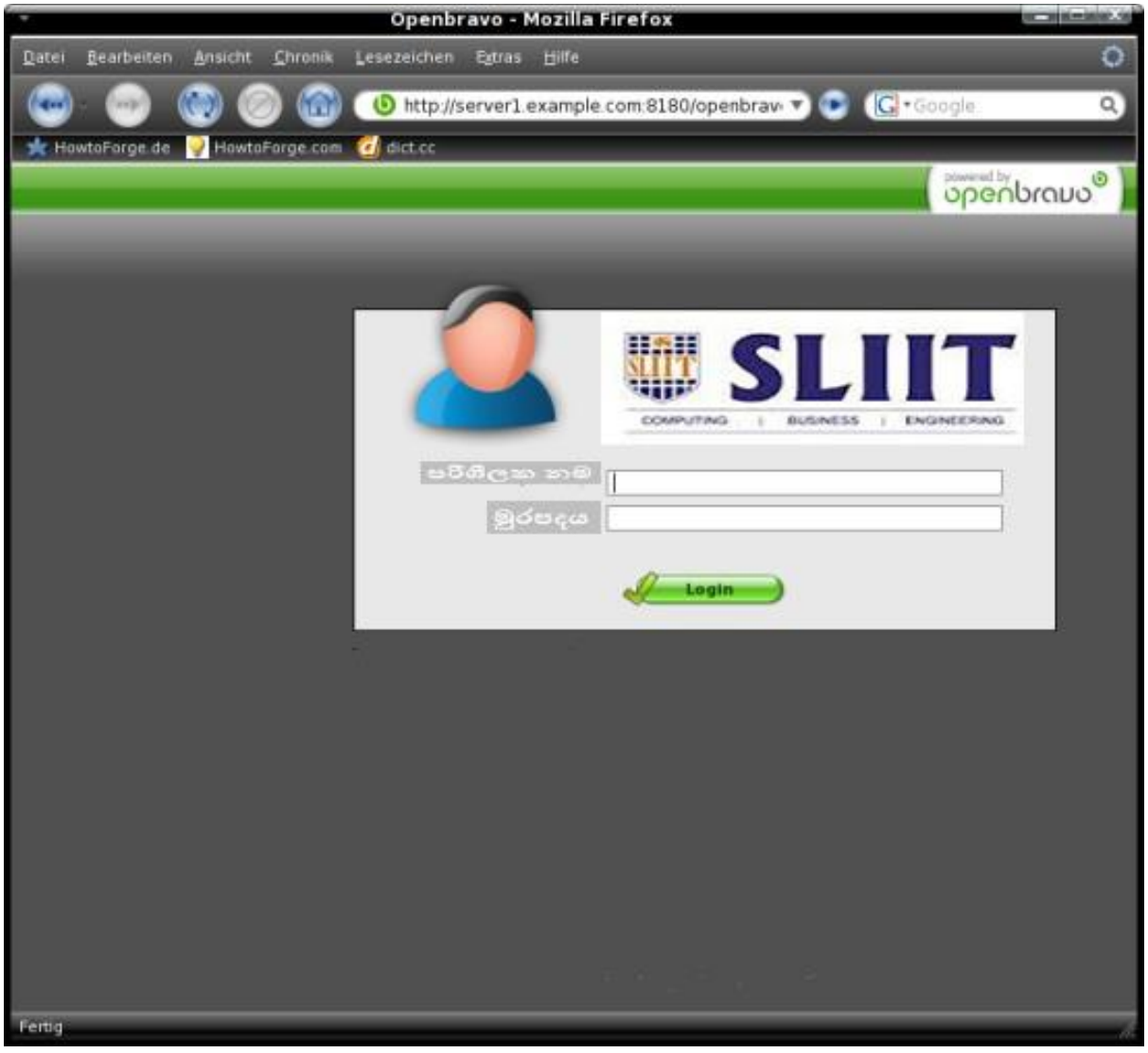

Figure 2-Interface1

Figure 3-Interface 2

3.1.2 Hardware interfaces

- Wi-Fi router- The computers can connect with the server using Wi-Fi coverage and when performing development and testing tasks.
- Service providing server- Predict the future transactions in done inside the server. It will connect with website and send an email to the management section.

3.1.3 Software interfaces

- Operating System.
- PostgreSQL server 9.5.x
- Apache Tomcat 7
- Ant server 1.9
- Java development Kit (JDK)

3.1.4 Communication interfaces

High bandwidth technologies should be used for better experience (Good internet Connection).

The computers which are used for the testing purposes during the application development should be supported with a high speed data communication method such as 3G, 4G, and Wi-Fi.

3.2 Classes/Objects

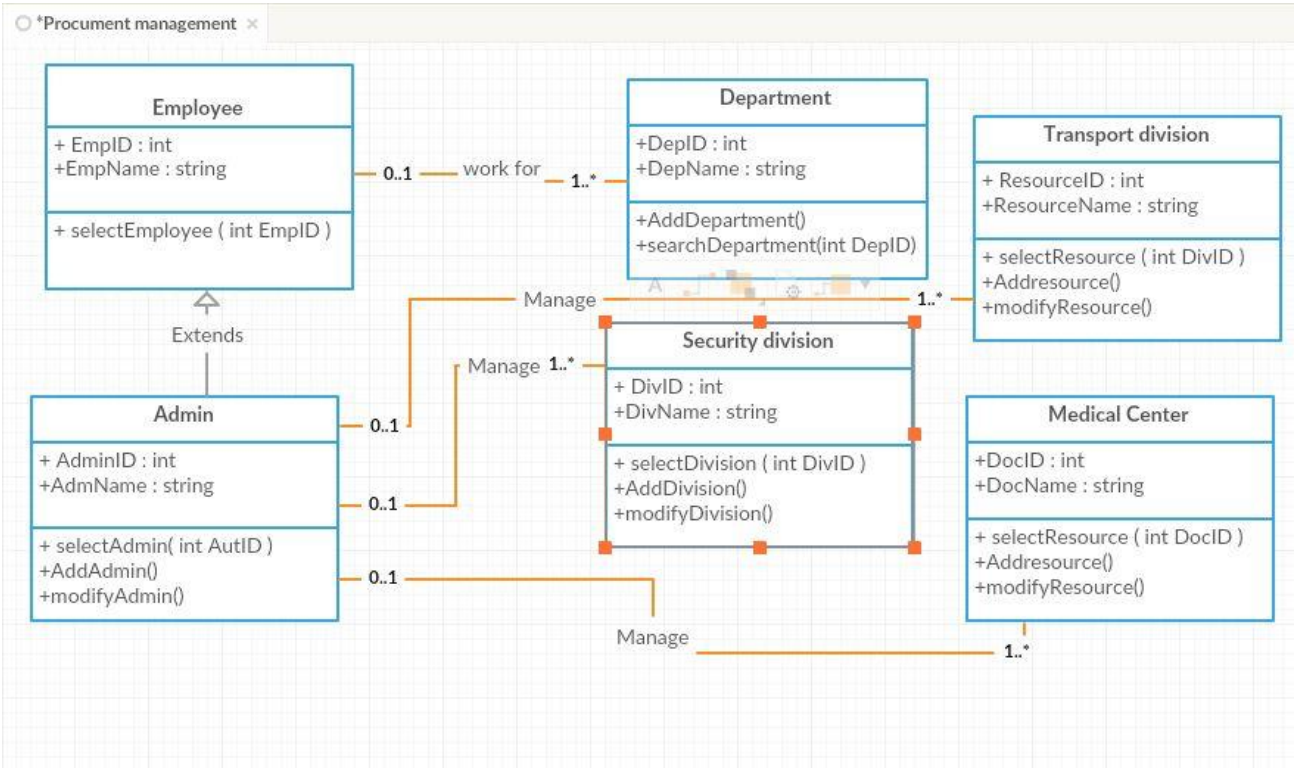

Figure 4-Class Diagram

3.3 Performance requirements

For the efficient performance for the system following hardware is required

- Windows XP 64 bit OS or above
- Intel 2.2GHz Corei3 due processor or above
- 4GB RAM or above
- 250GB hard disk or above
- display with a 1680x1050 resolution

3.4 Design constraints

During the design stage the major constraint that will be faced is the limitation of available time. The project group expected to complete this project during ten months of period.

3.5 Software system attributes

3.5.1 Reliability

The system will perform according to the specifications mentioned in this document. This is developed according to the standards so it will not fail the customer

3.5.2 Availability

System will always be available at the all the time after application is started. System should be able to operate continuously without the need of regular system restart.in the case of system crash ,system should be able to auto recover in more than two minutes.

3.5.3 Security

Top managers only have all the assess permission in the system others can only work with the system. Some functions are disabling for the other user so system is secure.

3.5.4 Maintainability

Maintainability is defined as the probability of performing a successful repair action within a given time. In other word maintainability measures the case and speed with which a system can be restored to be operational status after a failure occurs .when we want to make a change in the program we do not need to change its each part in OOP (object Oriented Program) change in one place make automatically change other place, which provide component reusability.

Chapter 4

4 Supporting information

4.1 Appendices

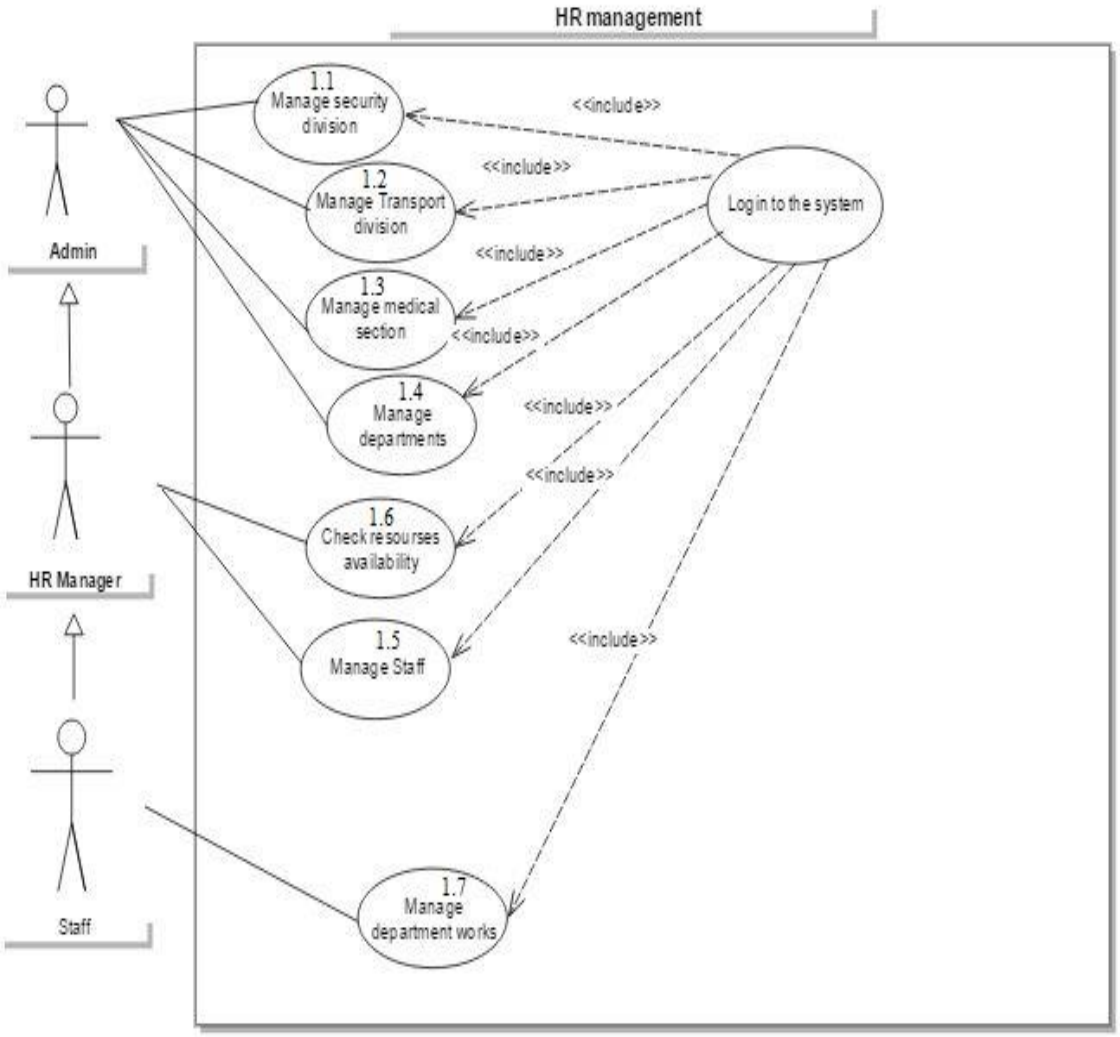

Figure 5-Use case Diagram

Use case Name	Manage security division	
Index Number	1.1	
Primary Actors	Admin	
Secondary Actors	Security division manager	
Description	Step	Action
	1 2 3 4	Login to the system. Check whether the separate systems are working properly. Identify the resources are available. Generate report.
Extension	Step	Action
	1.1 2.1 3.1	If user not logging to the system, redirect to the main logging page. If system failure found, allocate maintaining team to repair that. If maintaining team has less resources, full fill those artifacts immediately.

Figure 6-Use case Scenario1

Use case Name	Manage Transport division	
Index Number	1.2	
Primary Actors	Admin	
Secondary Actors	Transport division manager	
Description	Step	Action
	1 2 3	Login to the system. Check whether resources are available. Generate report.
Extension	Step	Action
	1.1 2.1	If user not logging to the system, redirect to the main logging page. If division has less resources, full fill those artifacts immediately.

Figure 7-Use case Scenario2

Use case Name	Manage medical section	
Index Number	1.3	
Primary Actors	Admin	
Secondary Actors	Assistant Manager	
Description	Step	Action
	1 2 3	Login to the system. Check whether resources are available. Generate report.
Extension	Step	Action
	1.1 2.1	If user not logging to the system, redirect to the main logging page. If division has less resources, full fill those artifacts immediately.

Figure 8-Use case Scenario3

Use case Name	Manage Staff	
Index Number	1.5	
Primary Actors	Admin	
Secondary Actors	HR manager	
Description	Step	Action
	1 2 3	Login to the system. Check Staff details. Give appropriate authentication to them.
Extension	Step	Action
	1.1	If user not logging to the system, redirect to the main logging page.

Figure 9-Use case Scenario4

Use case Name	Manage departments	
Index Number	1.4	
Primary Actors	Admin	
Secondary Actors	HR manager, Department heads	
Description	Step	Action
	1 2 3 4	Login to the system. Check Staff details. Allocate appropriate workload to them. Generate report
Extension	Step	Action
	1.1 2.1	If user not logging to the system, redirect to the main logging page. If department has less resources, full fill those spaces immediately.

Figure 10-Use case Scenario5

4.2 Reports

1. Leave tracker report
2. Attendance report
3. Salary pie chart
4. CCTV camera daily report
5. Monthly transportation budget report
6. Monthly medical report

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