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

Research Component : Student Registration

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

This Software Requirements Specification document provides a detailed description of the behavior 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. Under this proposed solution here describes about Student Registration management .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 Student Registration 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

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 because lack of knowledge. 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.

1.2.1 The software product to be produced by name

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 Student Registration management. This application area covers details related to student inquires student registration details management, Intake details, and module details etc.

1.2.2 The research area capabilities and incapability's

Capabilities

- User can view Students registration details.
- User can create annual student intake plan.
- User will be able to see registered and applied students details.
- Entrance exam details can be modified and add.
- Database control.
- Can send an email by mentioning next year intake details to the students who are failed the entrance exam.
- User can view payment details and can get payment slip.
- View and evaluate semester fee details.
- Payment details can be viewed and modify.
- Predict the future transactions to the Admin.

The system will analyze the past data and predicts what sort of registration will happen. The techniques of data mining will be used to analyze and to predict. After predicting, an email will be generated and will be sent to the admin .The content of the email, will help the management when taking decisions for the future. The management can decide what amount of students' should be taken per year, and what to not.

Incapability's

- The system is not capable of identifying words of other languages other than Sinhala language.

1.2.3 The application of the software

When the new intake register time period this application can use. If the organization uses this application they can easily manage their workload. Otherwise they should spend more time to handle newly added details with manually. The main purpose of this system is management team can identify their workload clearly and it is a kind of segmentation of the workload. It helps to maintain human specialization also.

1.2.3.1 Benefits

- Student can do online registration.
- Management section can get managerial decisions correctly.
- Managing team can identify what are the future implementations and what is the current working procedure likewise.

1.2.3.2 Objectives

- Satisfy the user with given requirements (Assist the student registration details on proper manner).
- Give a good idea about the current status like (whether student registration is done or payments is successful or not).
- Give the predictions for the future registration.

1.2.3.3 Goals

The main goal of this proposed solution is give a better students registration planning application in Sinhala language to the Student registration division.

1.3 DEFINITIONS, ACRONYMS AND ABBREVIATIONS

LOERPS	Localized Openbravo Enterprise Resource Planning system into Sinhala
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

This system can be divided into several sub modules by considering the complexity and the performance. We divide it in to main four divisions according to their working process.

- Student registration management
- Examination management
- Human Resources management
- Procurement management

Each department has several workloads according to the goals which are gain. Student registration management manages all the student records and registration process. Examination Department handles all Examinations and related processes. Human resources management is the kind of core element in the system. Because Human resource management can have authentication for handle all the staff of the organization. Then the procurement management is for fulfill the organizational needs and wants of intangible or tangible.

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 student registration 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 Students registration management such as examination details. So user can easily access other relevant details also.

2.1.1 System interfaces

To use web interface of Openbravo 3.0 any modern office system would work. Since Openbravo is a web application it can be used on any device that is capable of running current web browser. As with most web based applications, a faster CPU and more RAM makes the GUI snappier and more pleasant to use. Larger displays also make users more productive using wide grids, forms and multiple tabs.

For the system interface it is essential to have some system interface such as

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

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.

Powerful Tree-Navigation

Facilitate data navigation through hierarchical data structures with powerful tree navigation capabilities

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 its 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.

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

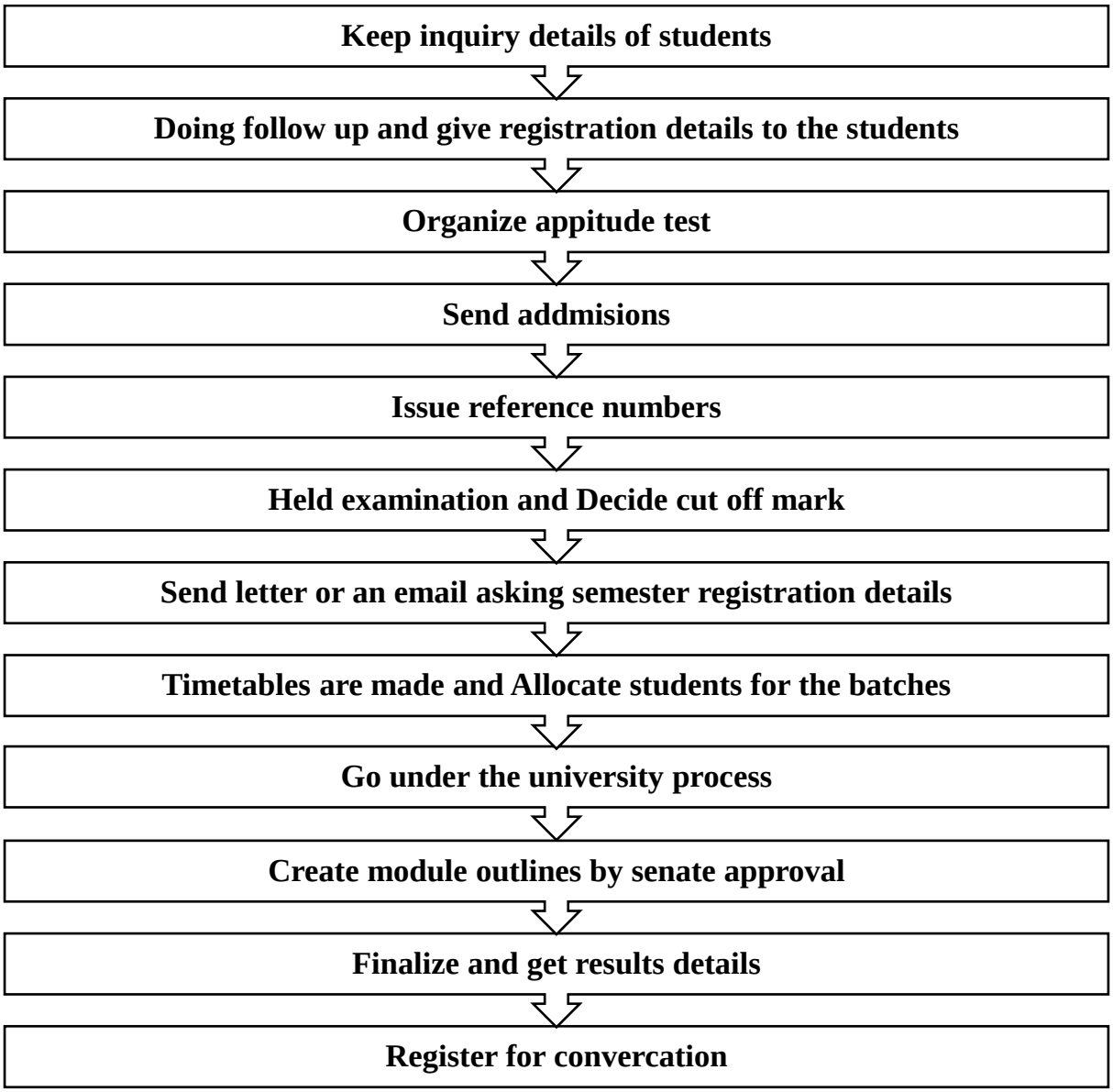

Figure 1-Product Function

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-Interface2

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
- 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

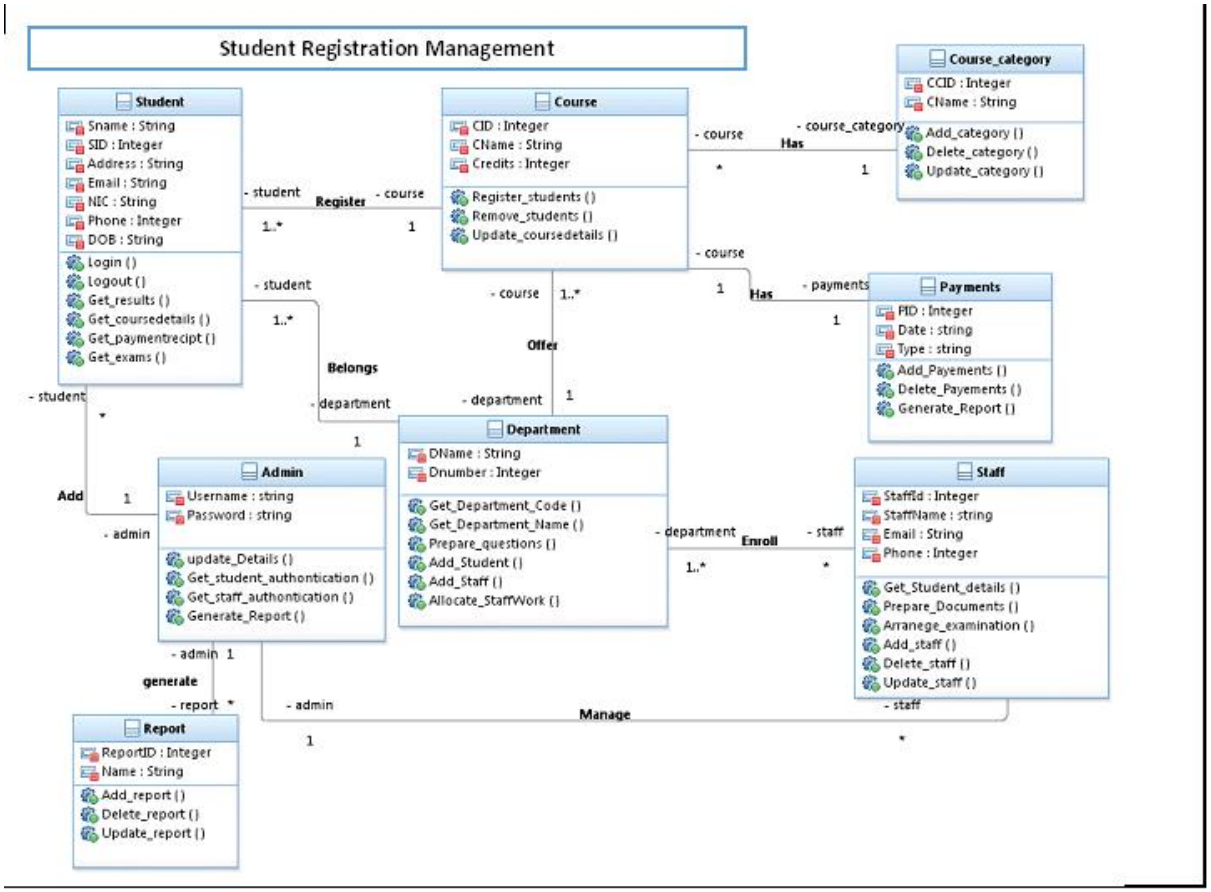

Figure 4-Class Diagram

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

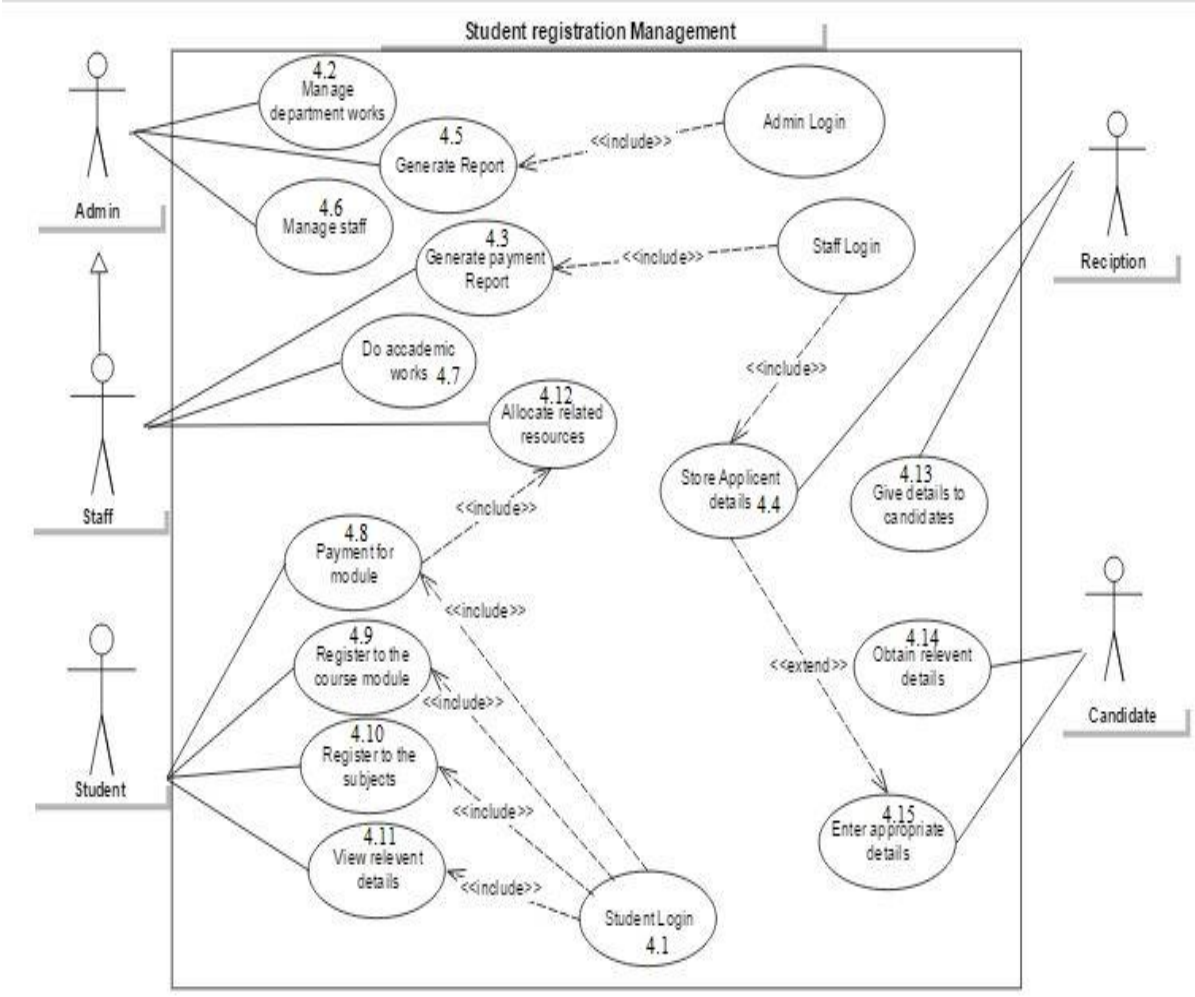

Figure 5-Use case diagram

Use case Name	Student Login	
Index Number	4.1	
Primary Actors	Registered user	
Secondary Actors		
Description	Step	Action
	1 2 3 4 5	Use case start when the registered user clicks the login button. System prompts login interface. The user enters the username & password. System checks the username & password. User login to the system.
Extension	Step	Action
	4.1	User enters invalid username & password, the system prompts an error message.

Figure 6-Use case Scenario-1

Use case Name	Manage department works	
Index Number	4.2	
Primary Actors	Department managers	
Secondary Actors	Assistant managers	
Description	Step	Action
	1 2 3 4	Logging to the system. Check resources details. Allocate work for staff. 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 7-Use case Scenario-2

Use case Name	Generate payment report	
Index Number	4.3	
Primary Actors	Department manager	
Secondary Actors	Staff	
Description	Step	Action
	1 2 3 4	Logging to the system Check student registration details Check payment details Distribute the payment slip
Extension	Step	Action
	1.1	If user not logging to the system, redirect to the main logging page.

Figure 8-Use case Scenario-3

Use case Name	Store applicant details	
Index Number	4.4	
Primary Actors	receptionist	
Secondary Actors	Other student registration staff member	
Description	Step	Action
	1 2 3 4	Logging to the system. Categorized applicant for relevant categories. Store applicant details in DB. Generate Aptitude text id .
Extension	Step	Action
	1.1 2.1	If user not logging to the system, redirect to the main logging page.

Figure 9-Use case Scenario -4

4.2 Reports

1. List of eligible student for registration
2. Registered student list
3. Batch and time table allocation list
4. Registered student list of convocation

5 References

[1] [Online]. Available: http://wiki.openbravo.com/wiki/Procurement_Management.

[2] [Online]. Available: http://wiki.openbravo.com/wiki/ERP_2.50:Functional_Documentation/Procurement_Management.

[3] "User Interfaces," [Online]. Available: http://www.openbravo.com/platform/features/user-interface/.

[4] U. Ada Wong The University of Hong Kong The University of Warwick, "Critical Failure Factors in ERP Implementation," 2003.

[5] T. Alok Mishra Atilim University, "Achieving Business Benefits from ERP Systems," 2016.

[6] F. I. LIngaya's University, "International Journal of Advanced Research in Computer Science and Software Engineering," 2013.

[7] Openbravo. [Online]. Available: http://wiki.openbravo.com/wiki/Openbravo_On_Demand_FAQ.

[8] Openbravo. [Online]. Available: http://wiki.openbravo.com/wiki/Product.

[9] Openbravo. [Online]. Available: http://wiki.openbravo.com/wiki/How_to_create_a_Table.

[11] Openbravo, "How_to_create_a_Java_Based_Process," [Online]. Available: http://wiki.openbravo.com/wiki/How_to_create_a_Java_Based_Process.

[12] Openbravo, "how-to-create-an-openbravo-workspace-widget," [Online]. Available: http://planet.openbravo.com/blog/how-to-create-an-openbravo-workspace-widget/.

[13] Openbravo, "Interface Design Guidelines," [Online]. Available: http://wiki.openbravo.com/wiki/User_Interface_Design_Guidelines.

[14] Openbravo, "User Manual," [Online]. Available: http://wiki.openbravo.com/wiki/ERP_2.50:User_Manual.

[15] Oppenbravo. [Online]. Available: http://wiki.openbravo.com/wiki/Production_Management.