

AMBO UNIVERSITY WOLISO CAMPUS
SCHOOL OF TECHNOLOGY AND INFORMATICS
DEPARTMENT OF INFORMATION SYSTEMS

Title: Web Based Vacancy Management System for Ambo University Woliso Campus

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May 28, 2021

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University Woliso Campus**

**Submitted to Department of Information Systems in Partial
Fulfilment of the Requirement for the Degree of Bachelor of
Science in Information Systems**

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Web Based Vacancy Management System for AUWC

Declaration

This is to declare that this project work which is done under the supervision of “Habtamu Keno” and having the title “Web Based Vacancy Management System” is the sole contribution of our Groups member’s.

The Project is our own and has not been presented for a degree in any other university with this functionality and all the sources of material used for the project/thesis have been properly acknowledged.

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Web Based Vacancy Management System for AUWC

Certificate of approval

This is to confirm that the project report entitled “web-based Vacancy management system for the Ambo University Woliso Campus ” have been read and approved as the requirement of the department of Information systems for partial fulfillment of the honor of Bachelor Degree in Information systems, at Ambo University.

Approved by examination committee

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Web Based Vacancy Management System for AUWC

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Acronyms

AUWC	Ambo University Woliso Campus
AUWC VMS	Ambo University Woliso Campus Vacancy Management System
AUWC VMS DB	Ambo University Woliso Campus Vacancy Management System
BUC	Business Use Case
CSS	Cascading style sheet
HRM	Human Resource Manager
MySQL	My System Query language
NFR	Non Functional Requirement
ODBC	Open Database Connectivity
OOSAD	Object-oriented System Analysis and Design
PHP	Hypertext Preprocessor
SDLC	System Development Life Cycle
SQL	System Query Language
SUC	System Use Case
UI	User Interface
UML	Unified Multi Language
VMS	Vacancy Management System

Abstract

This project is aimed at developing a web-based Vacancy Management System for the Human Resource Management office for Ambo University Woliso Campus. Some features of this system will be creating vacancies, storing applicant data, and Scheduling exams, results for the applicant and finally Hiring of the applicant.

In chapter one the introduction and background of the organization, background of the system, the problem statement, the objectives, scope and limitation and significance of the project has been included. Chapter two contains the requirement analysis activities such as the identification of major functions of current system, business process of existing system and business use case with its description, business rules analysis, scanned report formats and forms of existing system, analysis of current system strength, weaknesses, opportunities and threats which help us to get clear picture of the current AUWC vacancy system problem. Similarly, in chapter three we described proposed system such as current software architecture, proposed software architecture and methodology and tools of project. Moreover, functional and non-functional requirement of proposed system, feasibility study of the proposed system. lastly in chapter four UML of proposed system such as use case diagram, use case description, sequence diagram, collaboration diagram, activity diagram, state chart diagram, deployment diagram, component diagram, class modeling, database design and user interface screenshots.

CHAPTR ONE

1 INTRODUCTION

In today's life everybody can communicate each other in everywhere. They share information, technology and knowledge. More recently it is the use of the computers and information technology to improve the efficiency and competitiveness of businesses that has led to technological change. Since technology is so rapid, there are important implications for businesses. Websites are one of the way flows of information. So People can get service by visiting websites. In some our country vacancy management system is going on manual in many places and also in Ethiopia university vacancy management system are manual ways up to now. [1] Due to this hire job seeker it has tedious processes from both sides of the job seeker and the organization which hire the job seeker. So this project is one contribution to the small number of websites that are useful in hiring and announcing of different jobs. The completed project solves the problems that had affected the Vacancy management system offices. Since it is online it reduces a lot of costs, time to travel to the find new vacancy and to announce new vacancy, work over load and it minimizes the space used to store the data. Online vacancy management system enables system will be creating vacancies, storing applicant data, and Scheduling exams, results for the applicant and finally Hiring of the applicant.

1.1 Background of Organization.

The Ministry of Science and Higher Education (MoSHE), established by proclamation number 1097/2018 in October 2018, is responsible to lead the development of science, higher education as well as the technical and vocational education and training (TVET) in Ethiopia. [2]

Ambo University is one of Higher Education located in Ambo, the capital city of West Shewa Zone of Oromia Regional State. With a population of about hundred thousand, Ambo is situated only 111 km west of Addis Ababa, and it is known for its ideal weather for living. Ambo University was established in 1939 E.C as school of Agriculture, the first agricultural school in Ethiopia. Passing through various development stages as Ambo Agriculture and Forestry Secondary School, Ambo Institute of Agriculture, Ambo Junior College of Agriculture, Jimma University Ambo College, Ambo University College, it become an autonomous University in 2001 E.C. Ambo University is one of the foremost higher learning institutions with significant contribution in the country's overall development by producing skilled human resources in various fields. In the years to come, the University has the vision of becoming one of the most prominent universities in the country surpassing in academics, research and community services giving its utmost attention to quality education. Currently, the University runs 48 graduate and 70 undergraduate programs. The programs are classified into nine colleges/institutes/schools and academic departments. Besides the main campus at Ambo, the University has three campuses at Hachalu Hundessa, Guder and Woliso. The University also owns three

research centers two of them (one at Ejere and the other at Bilo) focus on researches and conservation of indigenous trees while the third at Birbirs (about 20 km from Ambo) works on overall agricultural research and development, which is named after a prominent Ethiopian humanitarian, Abebech Gobena. Ambo University Woliso campus is the one of Ethiopian university found in central part of Ethiopia in south west part direction of Addis Ababa. It was established in May 2000 E.C. college standard also developed in the campus in 2002 by the government of Ethiopia by 24 teacher and three permanent workers 60 contract workers it was created Ambo University & Woliso campus. The campus currently runs 19 undergraduate programs and 7 postgraduate (Masters) programs on regular, evening, weekend and summer programs in multiple disciplines including: Business and Economics, Governance and Law, Engineering and Technology, and Health. There are a total of 145 academic and 195 administrative staffs currently working in the campus. The Campus aspires to be one of the full-fledged Higher Education Institutions in Ethiopia with a target of providing quality education, research and community services [3]

1.1.1 Mission and vision of the Organization.

Vision of Organization.

Ambo University Woliso campus envisions becoming a renowned university of choice in Ethiopia by 2022.

Mission of Organization.

Ambo University Woliso campus is dedicated to serve the Ethiopian Society and the world in discovery, development and application of knowledge in wide range of disciplines. The university is committed to maintain and ensure the provision of quality, cost effective, timely and need based education at undergraduate and graduate levels engaged in research and knowledge transfer; conduct short term training and consultancy and offer community services in a professional and innovative manner so as to address the need of stake holder.

1.2 Background of the system

In Ethiopia vacancy management system is going on manual in many places and also in Ethiopia university vacancy management system are manual ways up to now. Currently the job vacancy management system of Ambo University Woliso Campus is manual with many drawbacks. The process of announcing job vacancies have many problems. Whenever the organization wants to hire an employee it will go through many process. After the job vacancy made ready for announcement it should be printed and prepared with many copies. Then it will be attached on the notice board all around the campus and wherever they found a place that they think it is visible to the job seekers. The job seekers will read those attached job vacancies and apply to the office. After applying to the office they will check the progress of their application and if they are selected to the exam they will take the exam in manual ways.

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Due to this problem our system will work as bridge between the job seeker or candidate and the Ambo University Woliso Campus (recruiters). This project is an online website in which jobseekers can register themselves online and apply for job and attend the exam. This websites have facilities where prospective candidates can upload their documents and apply for jobs suited to them. The objective of these websites is to serve as a common meeting ground for jobseekers and Ambo University Woliso Campus, both locally and globally, where the candidates find their dream jobs and recruiters find the right candidate to fulfill their needs. So this project is one contribution to the small number of websites that are useful in hiring and announcing of different jobs.

1.3 Statement of the Problems

Currently AUWC Human Resource Management offices have many problems due to using all the activities are handling in manual ways up to now. Since it is manual system, the following are problems of the current system (manual system).

- ✎ Since the AUWC Human Resource Management performs post announcement, registration, grade submission, report exam result to the candidate manually, it takes much time.
- ✎ The searching and data retrieving mechanism of the system takes a lot of time.
- ✎ Information may not distribute equally for all the job seekers and in manual system (like grade point calculation takes time). Due to this candidate do not see their exam report on time.
- ✎ Candidate fills different forms during registration process takes much time.
- ✎ High budget for different resources (like copy machine ink, paper, pen etc.).
- ✎ Less in security because user's file stored on paper and every one can access it
- ✎ Uses many human labor
- ✎ Needs many hard copies that takes huge storage space in order to store user information and service given to applicant.
- ✎ The services provided by the office are not as fast as possible because the service providers are busy with the paper and paper related activities

By considering or looking on these difficulties or problems of the AUWC HRM office specifically vacancy announcement and examination system we will intend to do our project to solve some problem of the organization and provide a solution for the University. Therefore, we will need to improve existing systems by eliminating manual works and increase the speed of process and able to make it available to be online to give the service. So that AUWC VMS allows jobseeker to view the announcement and take examination.

1.4 Objectives of the Project

1.4.1 General Objectives

The general objective of the project is to develop web based Vacancy Management system for Ambo University Woliso Campus.

1.4.2 Specific Objectives

- ↳ To Study about problem of the existing system
- ↳ To Gather required information for proposed system
- ↳ To design user friendly system
- ↳ To minimize transport cost
- ↳ To store files on the database
- ↳ To perform registration and reservation of vacancy for the person who want jobs.

1.5 Scope and Limitation of the Project

1.5.1 Scope of the Project

Generally our project scope is focused on Ambo University Woliso Campus vacancy management system. So the scope of this project is to develop and implement a new web based vacancy management system which will avoid the problems associated with the manual processing. The proposed system includes the following scopes:-

- ↳ Informing the announcement to the candidate.
- ↳ Provide jobseeker with registering on the site
- ↳ Provide job seekers with uploading their
- ↳ To provide online examination and getting a results
- ↳ Provide jobseeker validation by id.
- ↳ Restricting Time of exam by system.
- ↳ It enables system admin to manage the account and Human Resource Management office manage Vacancy and examination.

1.5.2 Limitation of the Project

Some limitation in our project is:

- ↳ Our system does not serve the Applicant or users who are not able to see (blind people).
- ↳ The system can support only English Language.

1.6 Risks, Constraints and Assumptions

Risks

Different risks may have been happened in the project like:

Time management: lack of continuously doing the project on time.

Resource: Resources may not be enough to achieve our objective.

Cost: since the campus didn't assign any budget, and group members have no any income, it is clear that there is financial/cost risk during this project work

Constraints

The following are the constraints of our system:

- ✍ Internet if there is no internet or connection, nobody can access the system.
- ✍ Time frames & hard Deadlines.
- ✍ Resources like time, budget.
- ✍ Reference and technical material may not be satisfactorily available.

Assumptions

- ✍ We assume that our team members have all the required skills.
- ✍ We assume that all relevant stakeholders uses the system has access to the internet

1.7 Significance of the Project

The proposed system has the following significance

- ✍ The system can save time for the jobseeker and organization.
- ✍ Reduce resource wastage
- ✍ Supplies timely vacancy information for jobseeker
- ✍ Information resources can be searched easily (like organization and exam information's).
- ✍ The authorized access to information resources files of the system is more advanced. This means secured login to the system will be developed.
- ✍ Online VM System enables the users to have the typical examination facilities and features at their disposal.

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1.7.1 Beneficiaries of the Project.

After the project is successfully implemented it provides the following benefits for the Applicant (system users) and AUWC Human Resource management office.

Applicant:

The proposed Vacancy system allows Applicant to:

- ✚ View organization information.
- ✚ View vacancy announcement.
- ✚ Register themselves for the job.
- ✚ View schedule.
- ✚ Take exam.
- ✚ View exam result.
- ✚ Submit comment.

AUWC Human Resource management office:

Our system allows AUWC Human Resource management to:

- ✚ Registrar applicant
- ✚ View applicant information.
- ✚ Post vacancy announcement.
- ✚ Prepare schedule.
- ✚ Post the result.
- ✚ View comment.

1.8 Budget and Time Schedule of the Project.

1.8.1 Budget of the Project

Hardware cost estimation

Materials	Quantity	Unit price	Total price
Hard disk	1	-	Free(lab)
Paper	200	0.25	50.00 Birr
Pen	2	20	20.00 Birr
Flash disk	2	250	500.00 Birr
Pc	1	-	Free(lab)
Print	1	100	100
Total			670.00birr

Table 1. 1 Budget for hardware cost estimation

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Software cost estimation

No.	Software	Cost
1	XAMP server-to run PHP programs	Free
2	Microsoft office word 2013- to write documentation	Free
3	Operating System (Windows 10)	Free
4	Microsoft PowerPoint 2013	Free
5	Sublime- to edit codes	Free
7	Edraw Max- to draw diagram	Free
8	SQL database	Free
	Total cost	0.00 Birr

Table 1. 2 Budget for Software cost estimation

1.8.2 Time Schedule of the Project

ID	Activities	Start	Finish	Duration	Apr 2021					May 2021					Jun 2021					Jul 2021					
					28/3	4/4	11/4	18/4	25/4	2/5	9/5	16/5	23/5	30/5	6/6	13/6	20/6	27/6	4/7	11/7	18/7	25/7			
1	Proposal	3/29/2021	4/16/2021	15d	<div></div>																				
2	Requirement Analysis	4/19/2021	5/3/2021	11d	<div></div>																				
3	Design	5/4/2021	5/28/2021	19d	<div></div>																				
4	Implementation	5/31/2021	6/25/2021	20d	<div></div>																				
5	Testing	6/28/2021	7/28/2021	23d	<div></div>																				

Table 1. 3 Time Schedule of the Project

1.9 Team Composition

Our group is accountable for all activity of this project and we work in an organized way. On this project we are working on Online VM System for AUWC. Our team has five members. Although each team member has his own responsibilities in developing the system the following points are highly respected and practiced by every member.

Team members	Responsibility of the team
1.Jiregna Turura	In all activities
2.Dame Elias	Analysist and Designer
3. Tamem Junde	Requirement gathering and testing
4. Astwel Adise	Requirement and data gathering
5. Ayenew Ayesheshem	Requirement and data gathering

Table 1. 4 Team Composition

The team should: -

- Build strong relationships with each other including the information systems department and Ambo University Woliso Campus human resource management.
- Provide technical knowledge in developing standards tools, processes, and best practices.
- Organize and prioritize group tasks and allocate resources to manage time effectively to deliver results.
- Be an active member of the team to participate in defining and implementing activities related to the configuration of system development. This may include scheduling, executing, and documenting system build processes.
- Seek out innovative ideas, new tools and processes, making recommendations upon evaluation and exploration of new tools and processes

1.9.1 Communication plan

As a team member, we communicate each other by discussing on the issues in general, for example we design on paper before writing on the computer. And sometimes we divide and do a separate task to facilitate the project to proceed based on the schedule. And we regularly contact our advisor (necessarily as we finish one phase of SDLC) to submit the progression of work and irregularly to ask questions related to the project development, to get advice, information and resources necessary to our system development. And our team contact each other through Face to face, Telegram and by mobile.

1.10 Organization of the Project Document

The rest of the document is divided into different parts for better understanding. The document above this line can be considered as part one. Part two of the document is all about the requirements analysis, overview of existing system and its functionality. In part three we discuss what the proposed system, methodology tools. In part four on this section we show system requirements and use cases diagrams we discussed what the system should look like intermesh of deployment, Architectural, User interface.

CHAPTER TWO

2 REQUIREMENT ANALYSIS

2.1 Overview of Existing System

Existing system of AUWC VMS process is going on manual ways. Registration and taking exam materials are also a paper based or a manual. Since the system currently uses manual system it is not economically sufficient i.e. there is a redundancy of activities and main HRM office (wastage of material and time), exam report is prepared each and every time of finding new applicant with an unnecessary number of copies (wastage of material). The applicant fills different forms during registration and these forms are checked by concerned HRM employee on different offices this process takes much time.

2.2 Major Functions of the Existing System.

The main activities of the Vacancy system are:

- ✎ HRM announce new vacancy by TV, Radio and different magazine.
- ✎ The Job seekers/Applicant open the job application form
- ✎ Job seeker/applicant fill the form.
- ✎ Applicant registered by using scanning method convert into softy copy of the document
- ✎ They send their job vacancies to the office.
- ✎ The HRM office are checks the filling data and to display the registration is success full.
- ✎ Prepares exam and exam schedules.
- ✎ Applicant take the exam.
- ✎ HRM post the result on notice board.
- ✎ End the process.

2.3 Business process existing system

Existing vacancy system of AUWC is generating various reports such as vacancy announcement, form registration of vacancy, post results of jobseeker and etc. in different formats by using existing system's various documents.

2.3.1 Vacancy announcement formats of existing Vacancy system of AUWC

Vacancy announcement Formats

0113410137 PNE

አዲስ ዘመን ግርብ የክፍት የሥራ ቦታ 26 ቀን 2013 ዓ.ም | 19

ክፍት የሥራ ቦታ ማስታወቂያ

በአምቦ ዩኒቨርሲቲ የወሊሶ ካምፓስ ከዚህ በታች በተዘረዘሩት ክፍት የሥራ መደቦች ላይ ብቁ የሆኑትን ሥራ ፈላጊ አመልካቾችን አወዳድሮ በቋሚነት መስተጠር ይፈልጋል በመሆኑም መሰረርቱን የምታግኑት መመዝገብ የምትችሉ መሆኑን አናስውታለን፡፡

ተ. ቁ.	የሥራ መደብ መጠሪያ	ደረጃ	የሥራ መደብ የመታወቂያ ቁጥር	ብዛት	ተፈላጊ ችሎታ		
					የትምህርት ደረጃ	የትምህርት ዓይነት	የሥራ ልምድ
1	የኮምፒውተር ጥገና ቱክኒሻን III	IX	8.5/ወሊሶ-693	1	ቲሺቲ በደረጃ 3 የተመረቀ	በአይ.ቲ/በኮምፒውተር ሳይንስ	4 ዓመት በኮምፒውተር ጥገና ሥራ
2	ሲስተም አድሚኒስትሬተር II	IX	8.5/ወሊሶ-688	1	የመጀመሪያ ዲግሪ	በኮምፒውተር ሳይንስ፣ በኢንፎርሜሽን ሲስተም፣ ኢንፎርሜሽን ማኔጅመንት/MIS	2 ዓመት በሲስተም ጥናትና ተያያዥነት ባለቅው
3	የኔትዎርክ አድሚኒስትሬተር I	VIII	8.5/ወሊሶ-685	1	የመጀመሪያ ዲግሪ	ኢንፎርሜሽን ሳይንስ፣ በኮምፒውተር ሳይንስ፣ ኢንፎርሜሽን ሲስተም/ሳይንስ/ ቱክኒኖሎጂ ማኔጅመንት	0 ዓመት
4	የኮምፒውተር ጥገና ቱክኒሻን II	VIII	8.5/ወሊሶ-692	1	ቲሺቲ በደረጃ 3 የተመረቀ	በአይ.ቲ/በኮምፒውተር ሳይንስ	2 ዓመት በኮምፒውተር ጥገና ሥራ
5	ፋርማሲ ፕሮግራም III	XIV	8.5/ወሊሶ-653	1	የመጀመሪያ ዲግሪ	በፋርማሲ	6 ዓመት አግባብ ያለው በፋርማሲ የተገኘ የሥራ ልምድ
6	ሀይጅንና አካባቢ ጤና አጠባበቅ/የሥራ ደህንነት ፕሮግራም III	XIII	8.5/ወሊሶ-655	1	የመጀመሪያ ዲግሪ	በሀይጅንና አካባቢ ጤና አጠባበቅ/የሥራ ጤንነትና ደህንነት ባለሙያ	6 ዓመት የሥራ ልምድ
7	ሜዲካል ሳብራቶሪ ቱክኒኖሎጂ ፕሮግራም II	XII	8.5/ወሊሶ -651	1	የመጀመሪያ ዲግሪ	ሜዲካል ሳብራቶሪ ቱክኒኖሎጂ	3 ዓመት በሜዲካል ሳብራቶሪ ቱክኒኖሎጂ ቱክኒኖሎጂ

FOR RESEARCH POSITIONS
Job Titles: Economists
Location: Woliso, Ethiopia

Web Based Vacancy Management System for AUWC

2.3.2 Form registration of vacancy of existing Vacancy system of AUWC

Form registration of vacancy

<p> 1. 姓名: _____ 2. 性别: _____ 3. 年龄: _____ 4. 职业: _____ 5. 住址: _____ 6. 联系电话: _____ 7. 电子邮箱: _____ 8. 身份证号: _____ 9. 婚姻状况: _____ 10. 教育程度: _____ 11. 工作经历: _____ 12. 兴趣爱好: _____ 13. 自我评价: _____ 14. 其他事项: _____ </p>	<p> 1. 姓名: _____ 2. 性别: _____ 3. 年龄: _____ 4. 职业: _____ 5. 住址: _____ 6. 联系电话: _____ 7. 电子邮箱: _____ 8. 身份证号: _____ 9. 婚姻状况: _____ 10. 教育程度: _____ 11. 工作经历: _____ 12. 兴趣爱好: _____ 13. 自我评价: _____ 14. 其他事项: _____ </p>	<p> 1. 姓名: _____ 2. 性别: _____ 3. 年龄: _____ 4. 职业: _____ 5. 住址: _____ 6. 联系电话: _____ 7. 电子邮箱: _____ 8. 身份证号: _____ 9. 婚姻状况: _____ 10. 教育程度: _____ 11. 工作经历: _____ 12. 兴趣爱好: _____ 13. 自我评价: _____ 14. 其他事项: _____ </p>	<p> 1. 姓名: _____ 2. 性别: _____ 3. 年龄: _____ 4. 职业: _____ 5. 住址: _____ 6. 联系电话: _____ 7. 电子邮箱: _____ 8. 身份证号: _____ 9. 婚姻状况: _____ 10. 教育程度: _____ 11. 工作经历: _____ 12. 兴趣爱好: _____ 13. 自我评价: _____ 14. 其他事项: _____ </p>	<p> 1. 姓名: _____ 2. 性别: _____ 3. 年龄: _____ 4. 职业: _____ 5. 住址: _____ 6. 联系电话: _____ 7. 电子邮箱: _____ 8. 身份证号: _____ 9. 婚姻状况: _____ 10. 教育程度: _____ 11. 工作经历: _____ 12. 兴趣爱好: _____ 13. 自我评价: _____ 14. 其他事项: _____ </p>	<p> 1. 姓名: _____ 2. 性别: _____ 3. 年龄: _____ 4. 职业: _____ 5. 住址: _____ 6. 联系电话: _____ 7. 电子邮箱: _____ 8. 身份证号: _____ 9. 婚姻状况: _____ 10. 教育程度: _____ 11. 工作经历: _____ 12. 兴趣爱好: _____ 13. 自我评价: _____ 14. 其他事项: _____ </p>
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2.4 Business Rule of Existing System.

- ⇒ HRM office first announce new vacancy by using different magazine or post on notice board.
- ⇒ Applicant registered if they have valid document and valid information.
- ⇒ Candidate must register before Taking Exam.
- ⇒ Exam shall be conducted according to Vacancy schedule.
- ⇒ Applicant take interview after the exam.
- ⇒ HRM post the result of job seeker on Notice board.

2.5 Business Use Case Modeling.

A use-case model is a model of how different types of users interact with the system to solve a problem. As such, it describes the goals of the users, the interactions between the users and the system, and the required behavior of the system in satisfying these goals. It is a single unit of meaningful work [4]

Each Use Case has a description, which describes the functionality that will be built in the proposed system. It has two types:

- ↳ Business/Existing use case
- ↳ System use case

Business /Existing Use Case

It is known as business or abstract use case. Essential use cases are abstract, lightweight, technology-free dialogues of user intention and system responsibility that effectively capture requirements for user interface design [5]

2.5.1 Actors and Use Case Descriptions.

Actors

- ↳ HRM office
- ↳ Applicant
- ↳ Evaluator

Use Cases

- ↳ Prepare exam
- ↳ Prepare schedule
- ↳ Generate announcement
- ↳ Evaluate applicant
- ↳ View announcement
- ↳ Register applicant
- ↳ Take exam
- ↳ Take interview
- ↳ View Result
- ↳ View schedule

Web Based Vacancy Management System for AUWC

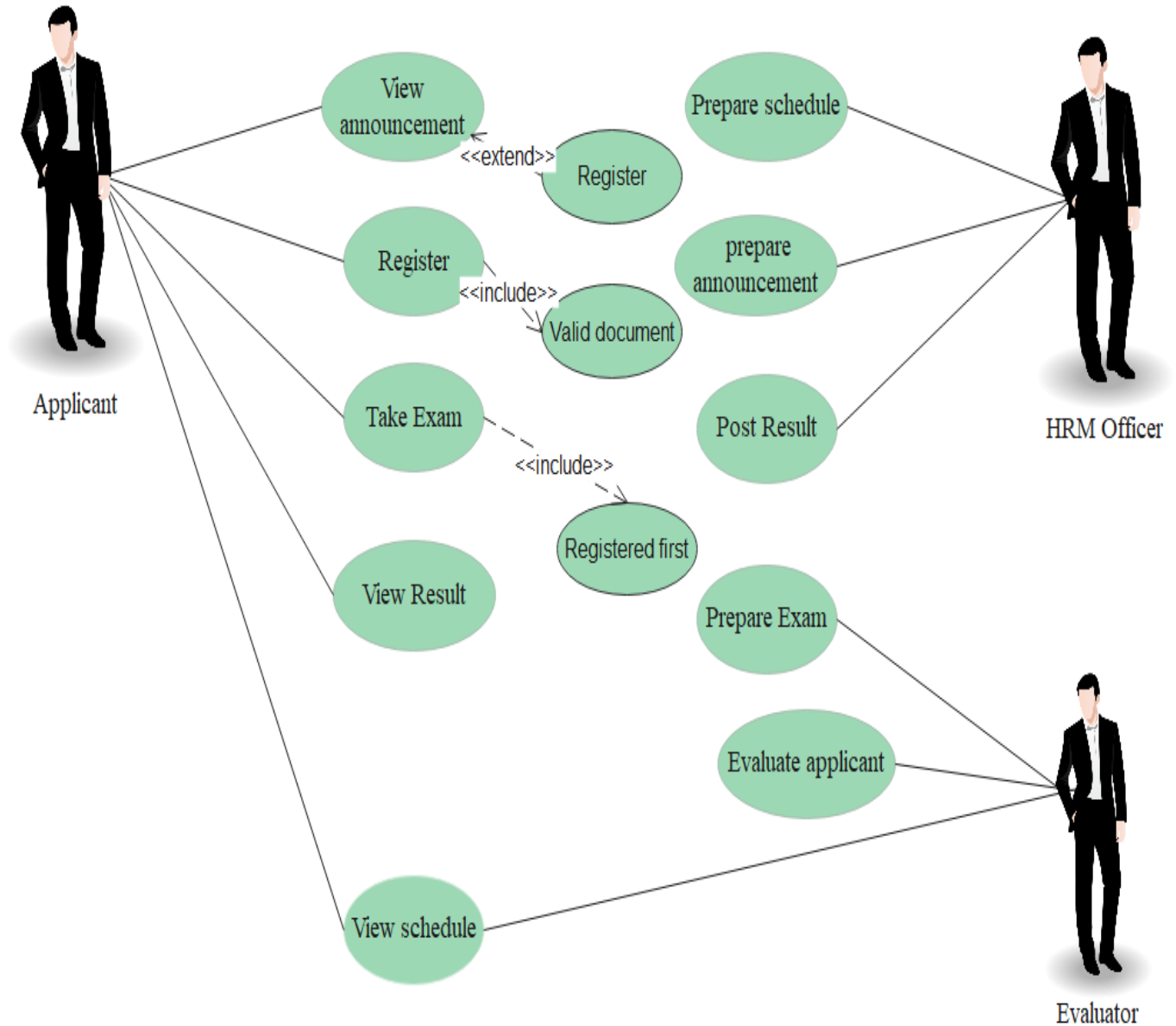


Figure 2. 1 Business Use Case for AUWC Vacancy Management System

Web Based Vacancy Management System for AUWC

Business Use Case Description for View result UC-01

Use case Identifier	UC-01
Use Case Name	View result
Purpose	To see Exam result
Participant Actor	Applicant
Pre-Condition	Applicant Must take a exam
Description	The applicant to see their exam results
Event Flow	<ol style="list-style-type: none">1. The jobseeker must take the exam first2. The jobseeker will search the exam result3. The jobseeker will see their exam result Use case ends
Post-Condition	The Applicant will see their result

Table 2. 1 Business Use Case Description for View result

Business Use Case Description for View Schedule UC -02

Use case Identifier	UC-02
Use Case Name	View Schedule
Purpose	To inform Applicant the day they take Exam and manage the schedule.
Participant Actor	Evaluator and Applicant
Pre-Condition	There should be a schedule created
Description	The applicant to know the schedule
Event Flow	<ol style="list-style-type: none">1. The applicant will go to the notice board2. The applicant will search the schedule based on their need3. The applicant will get schedule End use case
Post-Condition	Applicant will know about the schedule

Table 2. 2 Business Use Case Description for View Schedule

Web Based Vacancy Management System for AUWC

Business Use Case Description for View Announcement UC-03

Use case Identifier	UC-03
Use case name	View Announcement
Purpose	To find new vacancy
Participant Actor	Applicant
Pre-Condition	There should be Announcement
Description	To view the announcement information
Event Flow	<ol style="list-style-type: none">1. There should be announcement2. The user should go to the notice board to see the announcement3. The user search for the announcement4. The user will see announcement Use case ends
Post-Condition	The Applicant will see announcement

Table 2. 3 Business Use Case Description for View Announcement

Business Use Case Description for Register applicant UC-04

Use case Identifier	UC-04
Use case name	Register applicant
Purpose	Register for new vacancy
Participant Actor	Applicant
Pre-Condition	The Applicant must have document that is enough for registration
Description	The applicant to fulfill all process for register

Web Based Vacancy Management System for AUWC

Event Flow	<ol style="list-style-type: none">1. The HRM office post a date for registration2. The applicant brings all valid information to register3. The HRM office sees if the information is valid4. The applicant fills his/her information in the form provided5. The applicant registered Use case ends
Alternative Flow	<ol style="list-style-type: none">A. If applicant brings invalid information, use case endB. If the registration date ends use case also ends
Post-Condition	Applicant will be register

Table 2. 4 Business Use Case Description for Register applicant

Business Use Case Description for Prepare Exam UC-05

Use case Identifier	EUC-05
Use case name	Prepare Exam
Purpose	To select Applicant
Participant Actor	Valuator
Pre-Condition	The applicants are register first
Description	To prepare exam for the applicant
Event Flow	<ol style="list-style-type: none">1. The applicant must register first2. HRM office will prepare exam3. HRM office will prepared exam Use case ends
Post-Condition	The HRM office will be prepared the exam

Table 2. 5 Business Use Case Description for Prepare Exam

2.6 SWOT analysis of existing system.

Strength of existing system

Strengths are the strong parts of existing system that can be directly controlled.

- ✎ It need high professional applicant.

Weakness of existing system

Weaknesses represent areas of existing system that can be improved by the proposed system. After the study of existing system the following weaknesses were identified.

- ✎ Takes time during applicant registration because they use some workers for a number of applicants which makes the applicant to wait a lot until they get their turn.
- ✎ Less accurate to Restricting Time of exam by system.
- ✎ Has no ways to generate Applicant id automatically.
- ✎ There is no control and security mechanism with in the office.
- ✎ Applicant's information especially exam report is not secured that is it can be seen by other peoples.
- ✎ The candidate do not see their exam report on time.

Opportunity of the existing system.

- ✎ AUWC Vacancy system may announcement new vacancy on Addis Zemen magazine if it is loosed.
- ✎ AUWC Vacancy system may take Exam for applicant from the related department of job seeker's.

Threat of the existing system.

- ✎ Unethical HRM office of Vacancy system may change applicant Result, change Applicant information/status.
- ✎ Unethical employee of Vacancy system may give chance for their relative first.

2.7 Problems of the Existing System

- ✍ Since the AUWC office performs registration, exam result submission, ID and exam report manually, it takes much time.
- ✍ Duplicator of the exam paper with ordered number of copies.
- ✍ Duplication of data occurs when data input in to the system.
- ✍ Processing the input data in order to get an output takes much time because of the manual system (like exam point calculation takes time). Due to this candidate do not see their exam report on time.
- ✍ The data stored takes more rooms.
- ✍ Currently almost there is no control and security mechanism with in the office.
- ✍ Applicant's information especially exam report is not secured that is it can be seen by other peoples, because there is no authentication mechanisms.
- ✍ The current system takes time during applicant registration because they use some workers for a number of applicants, which makes the applicant to wait a lot until they get their turn.
- ✍ The services provided by the office are not as fast as possible because the service providers are busy with the paper and paper related activities.

CHAPTER THREE

3 PROPOSED SYSTEM.

3.1 Overview of Proposed System.

The general overview of our proposed system is designed to address the problems of the existing manual system of vacancy services. The proposed system solves those entire problems in the existing system. Because the system is very integrated; it control all the data input and error which happen during data registration. It will provide online vacancy announcement for the applicant or jobseeker. The new system will be able to access and retrieve different data effectively and efficiently. When they sit for exam the system capture them by video camera immediately as they start up to the end of given time and stop and save them on the database to show them directly as take by themselves or not, after that evaluator check photo of registration date and video of examination date and insure as the registered applicant take exam by themselves or not.

Our proposed system will perform the following functionalities:-

- ✎ The system makes the working process attractive and easy to use.
- ✎ The system supports to utilize human and material resource for recruiting new applicant efficiently.
- ✎ The authorized users can access and modify applicant's information easily.
- ✎ The system keeps applicant's data consistently.
- ✎ Applicant can perform registration for recruit everywhere if internet access exist that makes comfortable environment for them.
- ✎ Result will be very precise and accurate and will be declared in very short span of time because calculation and evaluations are done by the system itself.
- ✎ The system minimizes the work load of HRM office employers.
- ✎ The system minimizes the cost of resources.
- ✎ The system makes the working process attractive and easy to use.
- ✎ The system supports to utilize human and material resource for recruiting new applicant efficiently.
- ✎ The authorized users can access and modify applicant's information easily.
- ✎ The system keeps applicant's data consistently.
- ✎ Applicant can perform registration for recruit everywhere if internet access exist that makes comfortable environment for them.

3.2 The Architecture of the Proposed System

Existing Vacancy system software architecture

Currently Ambo University Woliso Campus Vacancy system is not using software for which we can draw its architecture, because now the system is manual and keeps all available applicant information in paper-based documents.

Proposed vacancy system software architecture

The current system doesn't use any computerized system to provide service. Hence there is no system architecture, so we are going to develop the proposed system architecture determines the type of interactions that the components are going to have. The architecture that does this work uses Client/Server architecture. In this type of architecture the server is responsible to receive a request from the client and respond to the request, whereas the client is responsible to interact with that of the users of the system. The server does two types of work. The first type is a web server, which is responsible to receive browsers' request through http protocol and responds accordingly.

Whereas the second type of server is a database server, which is responsible to provide the requested database services to the web server. The database server is generally responsible for modification and insertion of data to the database. It can only communicate with the web server. The client side is a web browser which receives requests from the user of the system and responds to the request by communicating with the web server. If the user has a request on data, the browser passes the request to the web server then the web server pass the request to the database server.

The following figure shows the architecture of the system.

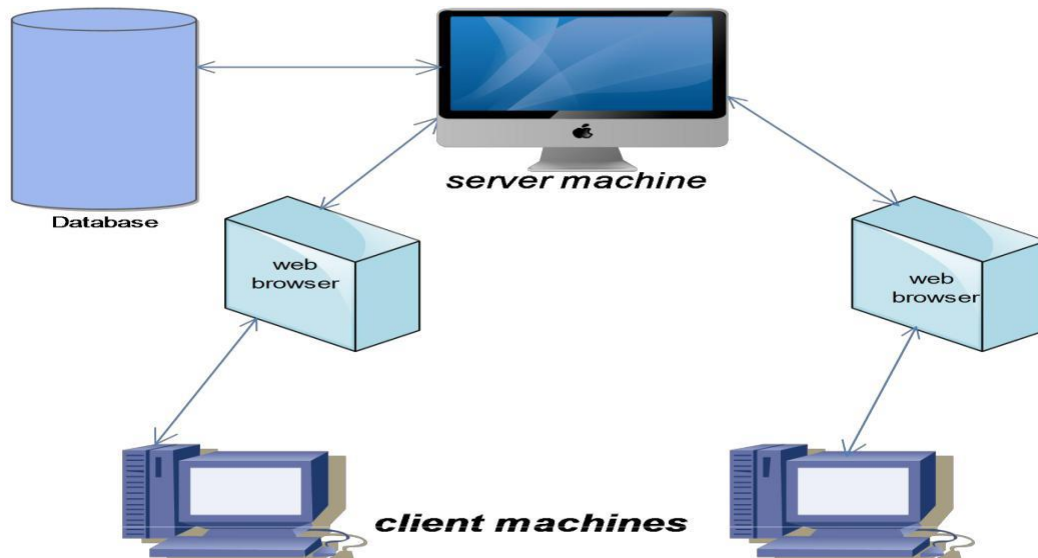


Figure 3. 1 System Architecture for Vacancy System

3.3 Methodology and Tools of the Projects.

Data Source

In order to fulfill the requirement to do or accomplish our project, we have followed and use the following methods and, tools and techniques as mentioned below.

3.3.1 Methodology for Data Collection

Primary method of data collection

Interview:-We have gathered information formally through interview of different people and AUWC HRM manager's Mr. Adugna Kitaba

Observation:-This method is also used to collect data, done by direct observing the working environment, thus we have observed that prepare announcement and vacancy process is manual.

Document review: For more information about existing system we referred relevant documents and other relevant materials like job tracking management system and ethiojob.net.

Secondary method of data collection

We have used Internet to access some website about background information about online vacancy system and different references. [6]

3.3.2 Methodologies for System Analysis and Design.

We decided to use object-oriented system analysis and design (OOSAD) method for system analysis and design because object-oriented approach has the features like, inheritance which enable reuse of code, encapsulation and polymorphism.

3.3.3 Coding and Implementation

We used apache as web server to implement the proposed system and the following technology as front and back end to implement the system. The reason why we choose apache is simple to work with, and it is simplest web host mechanism.

Front end	Back end	Database
Html	PHP	MySQL database engine
✓ Java script ✓ CSS		

We will use the following software's to develop our system interface and implementation.

HTML5: Hypertext Markup Language, a standardized system for tagging text files to achieve font, color, graphic, and hyperlink effects on World Wide Web pages.

PHP: PHP (Hypertext Preprocessor) is a widely-used open source general-purpose scripting

language that is especially suited for web development and can be embedded into HTML.

JAVASCRIPT: an object-oriented computer programming language commonly used to create interactive effects within web browsers.

XAMPP MySQL server: allows users to define the data in database and manipulate that data.

Notepad, sublime text 3: it is an editor for the code

XAMP server64 bit version 3.2.4.

3.3.4 Testing Methodology

Unit testing: first we will test each unit at each system, so if a problem is encountered it will immediately maintain at which the problem is occurred.

Integration testing: after we test each unit of the proposed system we will perform and integration test to check whether the system meets all the functional requirements. When a number of components are complete, it will test to ensure that they integrate well with each other, the operating system and other components.

System testing: after all of the above testing is checked we will test our system by other peoples and we will conduct some comments how they get our system.

3.3.5 Testing strategy

White-Box testing strategy

In these types of testing, our system will be tested by our advisor whether the code to verify and validate functionalities works as expected or not. Also we will have details looks into the source code again and again for finding out which unit/chunk of the code is inappropriately working.

Black-Box Testing Strategy

The tester does not have access to the source code. But a tester will interact with the system's user interface by providing inputs and examining outputs without knowing how and where the inputs are worked upon.

3.3.6 Installation

During the installation of the system we will use parallel installation method because of when the new system is crush or destroyed the old system or existing system used, it involves the operating of both systems being run for a period of time, this allows problems with the new system to be found without loss of data. Install the new system in parallel preferable running it side by side with existing system for a trial period of to ensure we get the same end results with both systems.

3.3.7 Documentation

After Vacancy management system project will complete fully we will submit to the project work to the organization in the form of the pdf and set up form. The document in a pdf form used to as more evidences or to a source for reference. To setup the system, there must be visual basic 6.0 software installed on the computer before it can work.

3.3.8 User Training and Support

Our members of the project team will conduct training for the various organizational employees. We will allow the end users to be better informing about how and why the system is developed. The functional experts on the team or we will more knowledgeable with the system. This will be more inclusive training for staff. Generally, we will train the employee, or organizational employee for 2-4 days for 1hr/a day. Our team will be support the organization by attaching the pdf in to the help link. We will also support by attaching procedures about how the system run.

3.3.9 Maintenance

Our system is a continuous process of making modifications and upgrading the application. This usually commences after the application has gone into use. Since the Ambo University Woliso Campus vacancy Management processes or the working situation is continuance. As business processes or the working situation change, applications that support our system must evolve to reflect these changes. Thus, for this application to perform optimally and to meet changing user requirements it must be modified continuously, simply we can modify some part of the system. Similarly we can use corrective maintenance, this requires in the event that an error occurred when the application is in use. Corrections must be made to changes discovered that can cause malfunctioning of the system.

3.4 Tools

3.4.1 Hardware tools

We use different hardware to develop our project.

Computer: Highest processor speed and latest CPU, 4GB RAM, Hard disc 500 GB

Network cable: we use it to get the internet access by connecting internet line from internet switch to computer for further reading and search of information from internet.

Flash Disk and CD: we used it for the movement of data from one machine to another. We used both CD and flash disk when we move our data from one machine to another.

3.4.2 Software tools

Microsoft office word: It is very useful because it takes less time to write and format the text, communicative effectively smart diagram and chart tools, quickly assemble document. By looking its useful properties we used Microsoft office word to type our project work to get all the above the benefits of it.

Power point: we use it to present the document in forms that can be understood easily. We also used it to present our presentation in short and brief way.

MYSQL: this software was used to create the database of the project.

NOTEPAD++, Sublime: Sublime is important to write our html code and PHP codes.

JavaScript: JavaScript is very interesting language used to validate data and develop different messages. We used to validate our data which we used in html code.

Star UML, Wonder share Edraw Max: To develop the UML diagrams our project team used this software.

3.5 Requirement specification

3.5.1 Functional requirements

A functional requirement defines a function of a software system on its component. A function is described as a set of in out, the behavior and output.

Our system has the following functional requirements:

- ✎ The system allows the applicant to create account for new vacancy announcement.
- ✎ The system allows the applicant to Upload their document/ resume to be registered
- ✎ They System allows the HRM to download the applicant resume/document
- ✎ The system allows system users (Administrator, Evaluator, HRM office, jobseeker's) to login by entering correct user type, username and password.
- ✎ The system allows system administrator to manage user (create account for the new users, delete existing account when account holder is finished he/she work, activate and deactivate user account for the specified time if he/she finished their work).
- ✎ The system allows jobseeker can see vacancy announcement in simple ways
- ✎ The system allows jobseeker can see the examination date in details.
- ✎ The system allows jobseeker can take examination.
- ✎ The system should store all the data related with all the tasks performed in registration and users into a database.
- ✎ The system allows jobseeker can get organization background information
- ✎ The system allows the evaluator to prepare exam, add and Edit questions.
- ✎ The system allows jobseeker can get results of exam on online
- ✎ The system allows the campus can conduct online examination And View Results.

3.5.2 Non-functional requirement

Non Functional requirement (NFR) specifies the quality attribute of a software system. They judge the software system based on Responsiveness, Usability, Security, Portability and other non-functional standards that are critical to the success of the software system [7].

Some of these are:-

Compatibility: The system would be fully compatible with different type of browser like Microsoft Internet Explorer, Mozilla Firefox, opera mini and Google chrome.

Reliability: Our system will be able to process work correctly and completely without being aborted.

Efficiency: The new system should perform all tasks with low cost and within the short time.

Maintainability: The will be easily maintainable in case of problems because it is not complex system and it runs on familiar operating system so that it is not complex to maintain.

Concurrency: The system supports multiple accesses of users. And it gives service to multiple users concurrently.

Availability: The system is available for the user whenever there is an internet connection.

User Interface: The interface of the system will be user friendly which is ease and attractive for the user.

Security: The system is secured because every user accesses the system using his/her own account.

Usability: The system is designed to have user-friendly interfaces and easy navigation which enhances users' efficacy of usage. It is also designed in such a way that users can easily learn how to interact with the system.

3.6 Feasibility study

Feasibility study is the test of the system proposal made to identify whether the user needs may be satisfied using the current software and hardware technologies, whether the system will be cost effective from a business point of view and whether it can be developed with the given budgetary constraints [8]

3.6.1 Economic feasibility

Our systems to be developed are economically feasible and the benefit is outweighing the cost. Since this project computerizes the existing system, by now the reduction of cost for materials used in manual operation becomes beneficiary to the organization.

Generally the system that we will develop, AUWC VMS brought a number of tangible and intangible benefits.

Tangible benefit

In the project going to be computerized there will be reduction of cost for materials used for manual operation such as: pen, paper, human power, and save data storage and time that we are brought in during manual system.

Intangible benefit: this benefit that cannot be expressed in terms of money. The intangible benefit that the system will give is listed as following: -

- ↳ Reduce Resource Consumption
- ↳ Increase security
- ↳ On time information
- ↳ Increase speed of activity.

3.6.2 Technical feasibility

In Technical Feasibility study, one has to test whether the proposed system can be developed using existing technology or not. our system to be developed by using technologically system development techniques such as PHP, Java script, css and Mysql database without any problems and the group members have enough capability to develop the project. So the system will be technically feasible.

3.6.3 Operational Feasibility

Our system requires very less human power. It provides simple user interface in which the employee of office can access easily, and more accurately. Maintenance is less and easy. The system will have GUI interface and very less user-training is required to learn it. The system is so simple to use, so no any special skills will be required to use the system. So the system is operationally feasible.

3.6.4 Schedule feasibility

Time feasibility is a measure of how reasonable the project is completed within the given time. By estimating the given time to each of the activities we will try to complete the project on time. Therefore, our project is timely feasible.

CHAPTER FOUR

4 SYSTEM DESIGN

4.1 Overview of System Design

System Design phase is process of describing, organizing, and structuring system components at architectural design level and detailed design level. Build a system Design converts functional models from analysis into models that helps to represent the solution for the problem. In system Designing process we can use structured or object oriented approaches.

In the case of Vacancy management system our system design modeling, will fill the gap between the system specification produced during requirement elicitation and analysis which is concentrated on the purpose and the functionality of the Vacancy management system.

Vacancy system design is the process of defining its components, its modules its interfaces, and data for a system to satisfy specified requirements. It is intermediate language between requirements and code and also it is the first step in moving from problem domain to solution domain proceeding from abstract to more concrete representations. It is a creative activity. It determines the major characteristics of a system. In this chapter we will use different type of diagrams that are useful to design the proposed system.

4.2 Design Goals

In our system development process system design part is very important so as to make the implementation of the proposed system very easy. The different types of the system modeling techniques that are used to make easy the implementation of the system such as deployment and component modeling are show in detail.

Some of the design goals are:

Security: The system should be secured that unauthorized user cannot access the data that does not concern with them.

Reliability: The system should be reliable.

Fault Tolerance: The system should be able to give response (error message) when the user enter incorrect input. This recommends the user to enter correct input.

Throughput: Since online Vacancy management system has web application it is able to perform many tasks at any time.

Usability: online vacancy management system provide easy user friendly interface for users of the systems. It also provides help menu which gives brief description how to use the system so that user can be able to use it easily.

Memory: online vacancy management requires the following space to run the system. Desktop or laptop computers and web server computers having more than 4GB of RAM and high storage capacity and processing speed.

4.3 UML of the Proposed System

4.3.1 System Use Case Diagram

In the use cases an actor interact with the system to perform a piece of meaningful work that helps them to achieve a goal and has access to define their overall role in the system and the scope of their action [9]

Depending on the above explanation actors in this system are the following:

- ✎ **Applicant:** The applicant views his/ her information online and submits information about his/her profile and exam information to the AUWC HRM office.
- ✎ **HRM office Directorate (Ambo University Woliso Campus):** The organization post new announcement and generate report about the job.
- ✎ **Evaluator:** control the exam at the examination room, prepare exam and upload the exam from the applicant.
- ✎ **Administrator:** The administrator manages the overall system.

Web Based Vacancy Management System for AUWC

The most important and basic use cases of this system are the following:-

- ✚ Login
- ✚ Manage account
 - ✓ Create account
 - ✓ Delete account
 - ✓ Update account
 - ✓ Deactivate and activate account
- ✚ View company
- ✚ View job announcement
- ✚ Send feed back
- ✚ View feed back
- ✚ Register applicant
 - ✓ Upload document
- ✚ Register the company
- ✚ Post the job
- ✚ View applicant Info
- ✚ Prepare exam.
- ✚ View information.
- ✚ Announce vacancy.
- ✚ Prepare schedule.
- ✚ View schedule.
- ✚ View result.
- ✚ Allocate applicant.
- ✚ Take exam.
- ✚ Logout

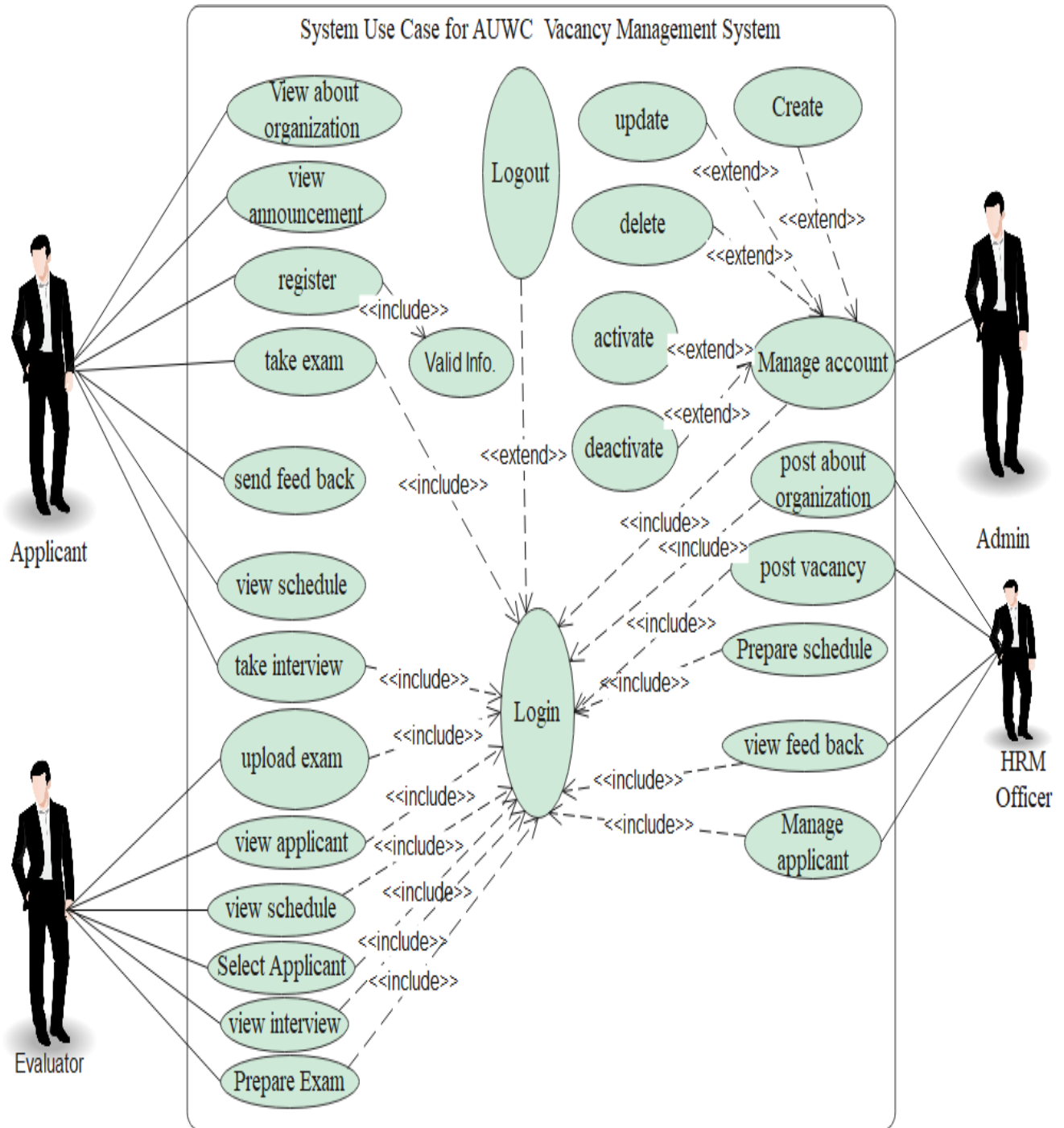


Figure 4. 1 System Use Case Diagram for AUWC Vacancy Management System

Web Based Vacancy Management System for AUWC

System use case description for Login-SUC-01

Use case name	Login
Use case ID	SUC-01
Purpose	Use to verify user to inter the website
Participant actors	Job seeker's, admin, HRM office and evaluator
Pre-condition	The user must have valid user name and password.
Description	To authenticate the user
Event Flow	<ol style="list-style-type: none">1. Open the system on any browser2. The system is displayed on the user computer3. user Clicks login link4. The system displays login form5. User inputs user name and password6. user click on login button7. The system displays the appropriate page. Use case ends
Alternative events	<p>A.5 If the username or password is incorrect.</p> <p>A.6 The system displays incorrect user name and password message.</p> <p>A.7 The system redirects to go to step 5</p> Use case ends.
Post condition	The authenticated person gets the appropriate page.

Table 4. 1 System use case description for Login

Web Based Vacancy Management System for AUWC

System use case description for manage account SUC-02

Use case name	Manage account
Use case ID	SUC-02
Purpose	Manage the website
Participant actors	Admin
Pre-condition	The Administrator must log in to the system.
Description	Admin manages account (view, activate, delete, deactivate)
Event Flow	<ol style="list-style-type: none">1. The administrator log to his/her page.2. The system displays the administrator page.3. The administrator click on manage account link.4. The system displays the option as activate, deactivate and remove account.5. The administrator select activate account, remove account or deactivate account link.6. The system displays search user information form.7. The administrator inputs unique identification of user on the provided Space and click on search button.8. The system displays the user information9. The administrator takes action to activate, deactivate or remove the account.10. The system displays succeed message as the account is activated, removed or deactivated. Use case ends
Alternative events	<p>A.7 If the administrator inputs the ID of the user that doesn't match with any account.</p> <p>A.8 The system displays error message as the no account exists with this ID.</p> <p>A.9 The system redirects to go to step7</p> Use case ends.
Post condition	The account will be activated, deactivated and removed.

Table 4. 2 System use case description for manage account

Web Based Vacancy Management System for AUWC

System use case description for manage announcement SUC-03

Use case name	Manage announcement
Use case ID	SUC-03
Purpose	To inform the applicant
Participant actors	HRM office
Pre-condition	The HRM office must log in to the system.
Description	HRM office can post, delete and update announcement.
Event Flow	<ol style="list-style-type: none">1. The HRM office log to his/her page.2. The system displays HRM office page.3. The HRM office clicks on announcement link.4. The system displays the options post, update and delete announcement.5. The HRM office select post, update or delete announcement link6. The system displays post form or update form.7. The HRM office types the announcement on the provided form or deletes or updates it and submits it.8. The system displays succeed message as the announcement is posted, updated or deleted successfully. Use case ends.
Alternative events	<p>A.6 If the form is not correctly filled.</p> <p>A.7 The system display error message that please fill the form correctly.</p> <p>A.8 The system redirects to go to step 6.</p> Use case ends
Post condition	The announcement will be posted, updated or deleted.

Table 4. 3 System use case description for manage announcement

Web Based Vacancy Management System for AUWC

System use case description for manage exam SUC -04

Use case name	Manage exam
Use case ID	SUC-04
Purpose	To prepare, delete and update exam
Participant actors	HRM office
Pre-condition	The HRM office must log in to the system.
Description	HRM office can prepare, delete and update exam.
Event Flow	<ol style="list-style-type: none">1. The HRM office log to his/her page.2. The system displays HRM office page.3. The HRM office clicks on prepare exam link.4. The system displays the options create update and delete exam.5. The HRM office select create, update or delete prepare exam link.6. The system displays create form, duration form or update form.7. The HRM office types the prepare exam on the provided form or deletes or updates it and submits it.8. The system displays succeed message as the exam is created, updated or deleted successfully. Use case ends.
Alternative events	<p>A6 If the form is not correctly filled.</p> <p>A.7The system display error message that please fill the form correctly.</p> <p>A.8 The system redirects to go to step 6.</p> Use case ends
Post condition	The exam will be created, updated or deleted.

Table 4. 4 System use case description for manage exam

Web Based Vacancy Management System for AUWC

System use case description for register applicant SUC-05

use case name	Register applicant
use case ID	SUC-05
Purpose	Register applicant for job vacancy
Participant actor	Applicant
Pre-condition	Applicant opens the home of the system.
Description	To register new Applicant.
Flow of events	<ol style="list-style-type: none">1. Applicant clicks on the applicant button.2. System display many option3. Applicant clicks on the Register button.4. The system displays Applicant registration form.5. Applicant fills registration data and click on Register button.6. The system sent id automatically End use case
Alternative flow of events	<p>A.5 If the input data has errors the system display error message</p> <p>A.6 Go to step 4 End use case</p> <p>A.7 If the registration date is finished</p> <p>End use case</p>
Post condition	The system displays registered message.

Table 4. 5 System use case description for register applicant

Web Based Vacancy Management System for AUWC

System use case description for Create account SUC-06

use case name	Create account
use case ID	SUC-06
Purpose	To authenticate the System user's
Participant actor	Admin
Pre-condition	The Administrator must log in to the system.
Description	Administrator create account to the users of the system.
Flow of events	<ol style="list-style-type: none">1. The administrator log to his/her page.2. The administrator click on User Account link.3. The system displays the option as create4. The administrator click create account link.5. The system displays the registration form.6. The administrator fills the form and submits it.7. The system displays succeed information as the account is created. <p>End use case</p>
Alternative flow of events	<p>A.1 If the account is already exist</p> <p>A.2 The system display error message that user is already exist.</p> <p>A.3 The system redirects to go to step 5.</p> <p>Use case ends.</p>
Post condition	The account would be created.

Table 4. 6 System use case description for Create account

Web Based Vacancy Management System for AUWC

System use case description for send feedback SUC-07

use case name	Send feed back
use case ID	SUC-07
Purpose	To give comment for HMR office
Participant actor	Applicant
Pre-condition	The user has their own account type.
Description	Applicant can give comment.
Flow of events	<ol style="list-style-type: none">1. The applicant initiates to give comment.2. The applicant click on the comment link.3. The system displays the form.4. The applicant fills all the required fields.5. The system display as your comments has been sent Use case ends.
Alternative flow of events	<p>A.3 If the applicant incorrect fills A.4 The system display error message. A.5 The system redirects to go to step 3.</p> Use case ends.
Post condition	The applicant sends comment to the system.

Table 4. 7 System use case description for send feedback

Web Based Vacancy Management System for AUWC

System use case description for View applicant information SUC-08

use case name	View applicant information
use case ID	SUC-08
Purpose	To identify Applicant background
Participant Actor	HRM Office.
Pre-condition	The HRM Office login into the system.
Description	To view applicant information to identify.
Flow of events	<ol style="list-style-type: none">1. The Office clicks on the “view applicant information” link2. The System displays options (delete applicant or view button) or search3. The Office click what he want option4. The system displays the searched search. End use case
Alternative flow of events	<ol style="list-style-type: none">A.1 If there is a mistake in the searching applicant,A.2 The system displays error message and go to step 2A.3 If the applicant are not register End use case
Post condition	The Office views delete the applicant information.

Table 4. 8 System use case description for View applicant information

System use case description for Take exam SUC-09

use case name	Take exam
use case ID	SUC-09
Purpose	To select high professional applicant
Participant Actor	Applicant.
Pre-condition	The applicant must open the system.
Description	To take the exam.
Flow of events	<ol style="list-style-type: none">1. The applicant click on applicant button on the home page2. The system display many option3. The applicant clicks on the “take exam” link from the AUWC VMS home page.4. The System displays form enters name, Id and vac-id.5. The applicant fills the form and submits it.6. The system displays the duration and display exam.7. The applicant fill the answer and submit it End use case

Web Based Vacancy Management System for AUWC

Alternative flow of events	A.4 If there is a mistake to fill the form A.5 The system displays error message and go to step 4 A.6 If applicant are not registered End use case
Post condition	The applicant take the exam.

Table 4. 9 System use case description for Take exam

System use case description for View result -10

use case name	View result
use case ID	SUC-10
Purpose	To know the Result.
Actor	Applicant.
Pre-condition	The applicant must open the system.
Description	To view the exam result.
Flow of events	<ol style="list-style-type: none"> 1. The applicant click on applicant button on the home page 2. The system display many option 3. The applicant clicks on the “view result” link from the AUWC VMS home page. 4. The System displays form enters name, Id and vac-id. 5. The applicant fills the form and submits it. 6. The system displays the full result. End use case
Alternative flow of events	A.3 If there is a mistake in the searching result A.4 The system displays error message and go to step 4 A.5 If applicant are not take exam End use case
Post condition	The applicant views the result.

Table 4. 10 System use case description for View result

System use case description for View announcement SUC-11

use case name	View announcement
use case ID	SUC-11
Purpose	To inform new announcement
Participant Actor	Applicant.
Pre-condition	The user opens the system.
Description	To view exam schedule information to the user.
Flow of events	<ol style="list-style-type: none"> 1. The user click on the applicant button on home page 2. The system display many options

Web Based Vacancy Management System for AUWC

	3. The user clicks on the “view announcement” link from the AUWC VMS home page. 4. The system displays the full information. End use case
Alternative flow of events	A.3 If there is no announcement End use case
Post condition	The user views the announcement information.

Table 4. 11 System use case description for View announcement

System use case description for Prepare schedule SUC-12

use case name	Prepare schedule
use case ID	SUC-12
Purpose	To inform the day exam will be taken
Participant Actor	HRM office
Pre-condition	HRM office login into the system.
Description	To prepare schedule to the applicant on the system.
Flow of events	1. HRM office clicks on prepare schedule link 2. The system display create and delete button 3. HRM office select create or delete 4. The system display create form 5. HRM office write on the form. 6. HRM office clicks on the delete button to remove or post button to post schedule to the applicant. End use case
Alternative flow of events	A.4 If there is a mistake in the data entry A.5 The system displays error message go to step 4 End use case
Post condition	The schedule is posted.

Table 4. 12 System use case description for Prepare schedule

4.3.2 Sequence Diagram

The sequence diagram of our proposed system is used primarily to show the interactions between objects in the sequential order. The main purpose of a sequence diagram our system is to define event sequences that result in some desired outcome. [10]

Online vacancy system has the following sequence diagrams.

Create account sequence diagram

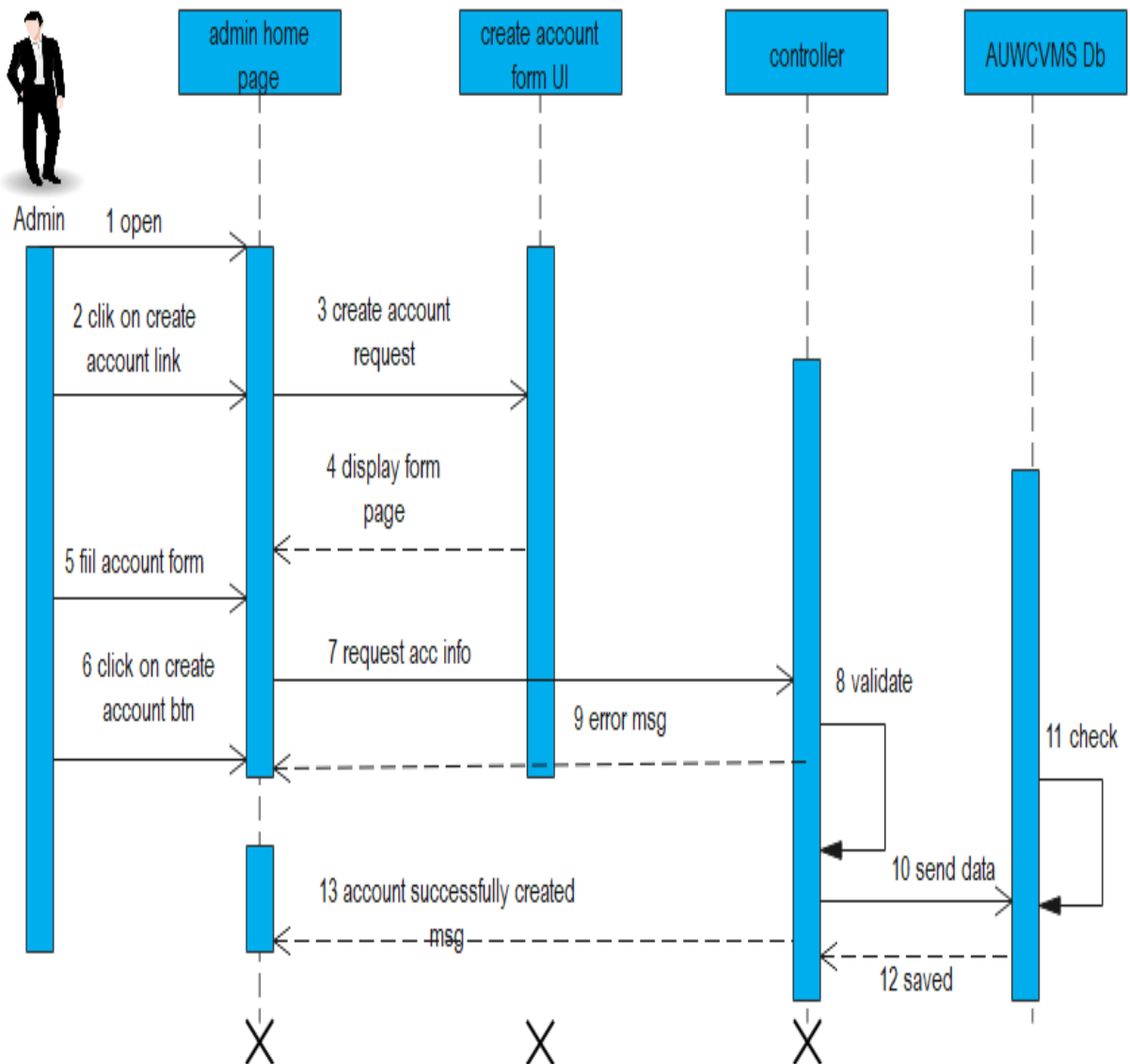


Figure 4. 2 Create account sequence diagram

Login sequence diagram

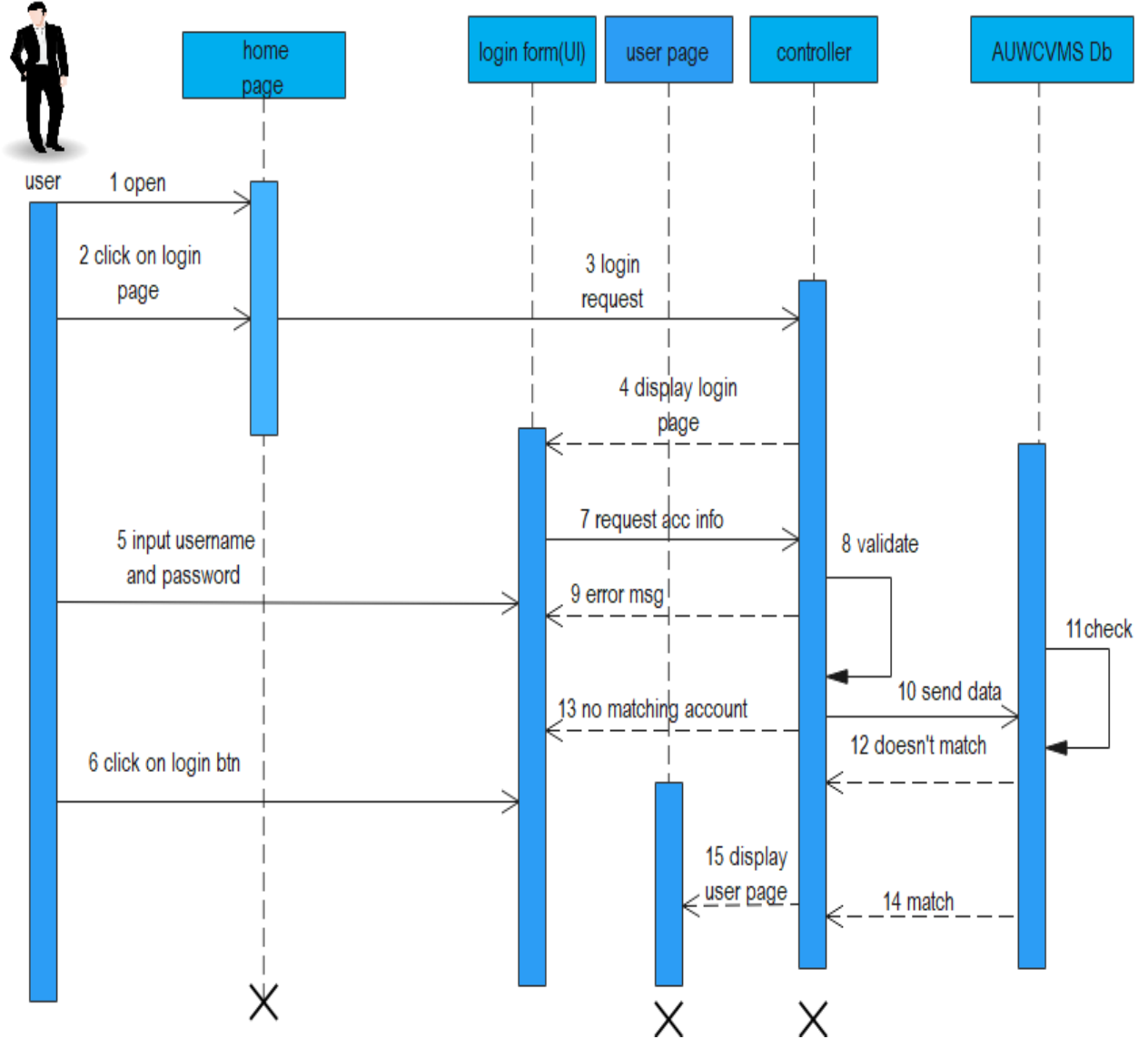


Figure 4. 3 Login sequence diagram

Post vacancy sequence diagram

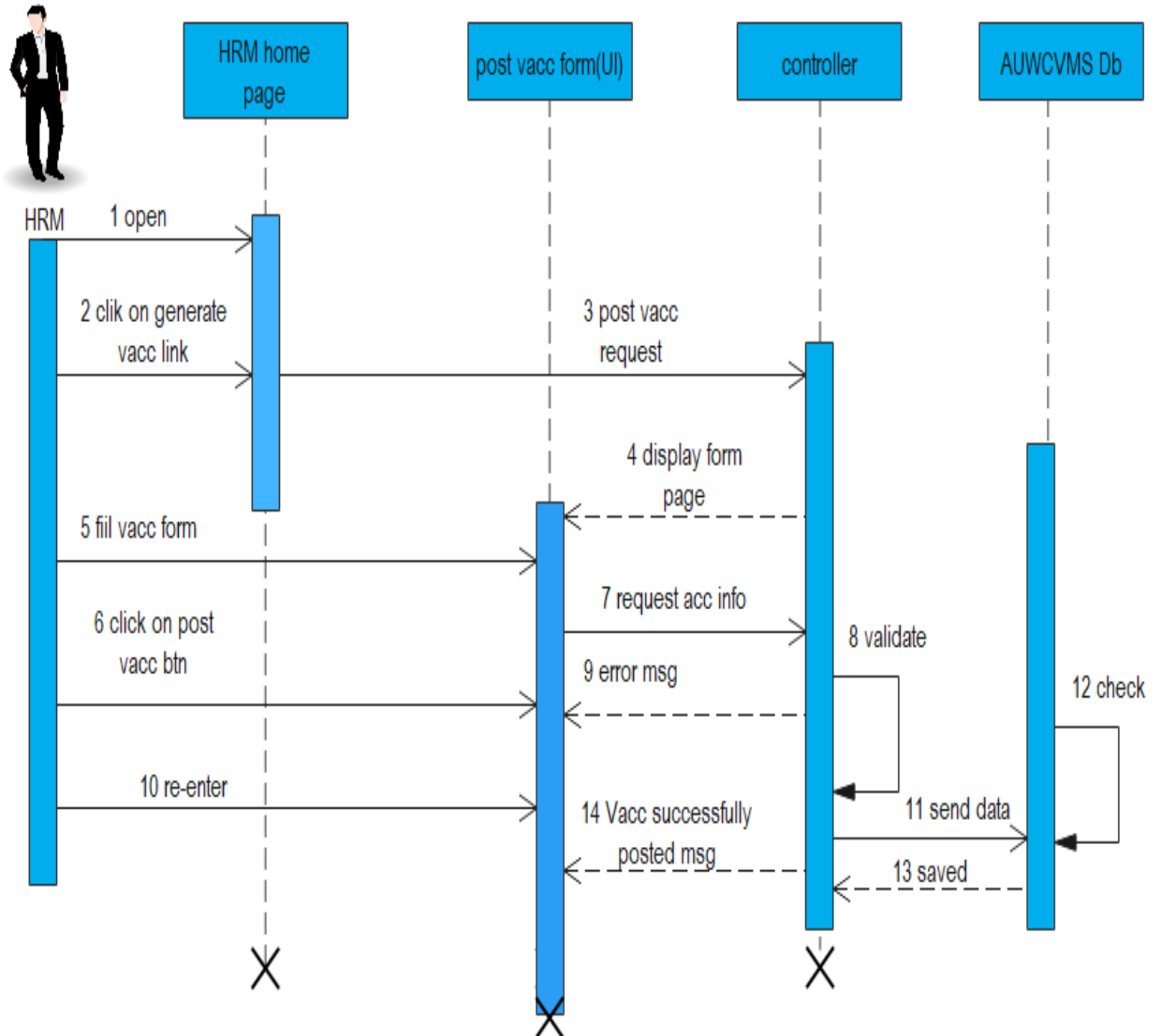


Figure 4. 4 Post vacancy sequence diagram

Web Based Vacancy Management System for AUWC

Registration sequence diagram

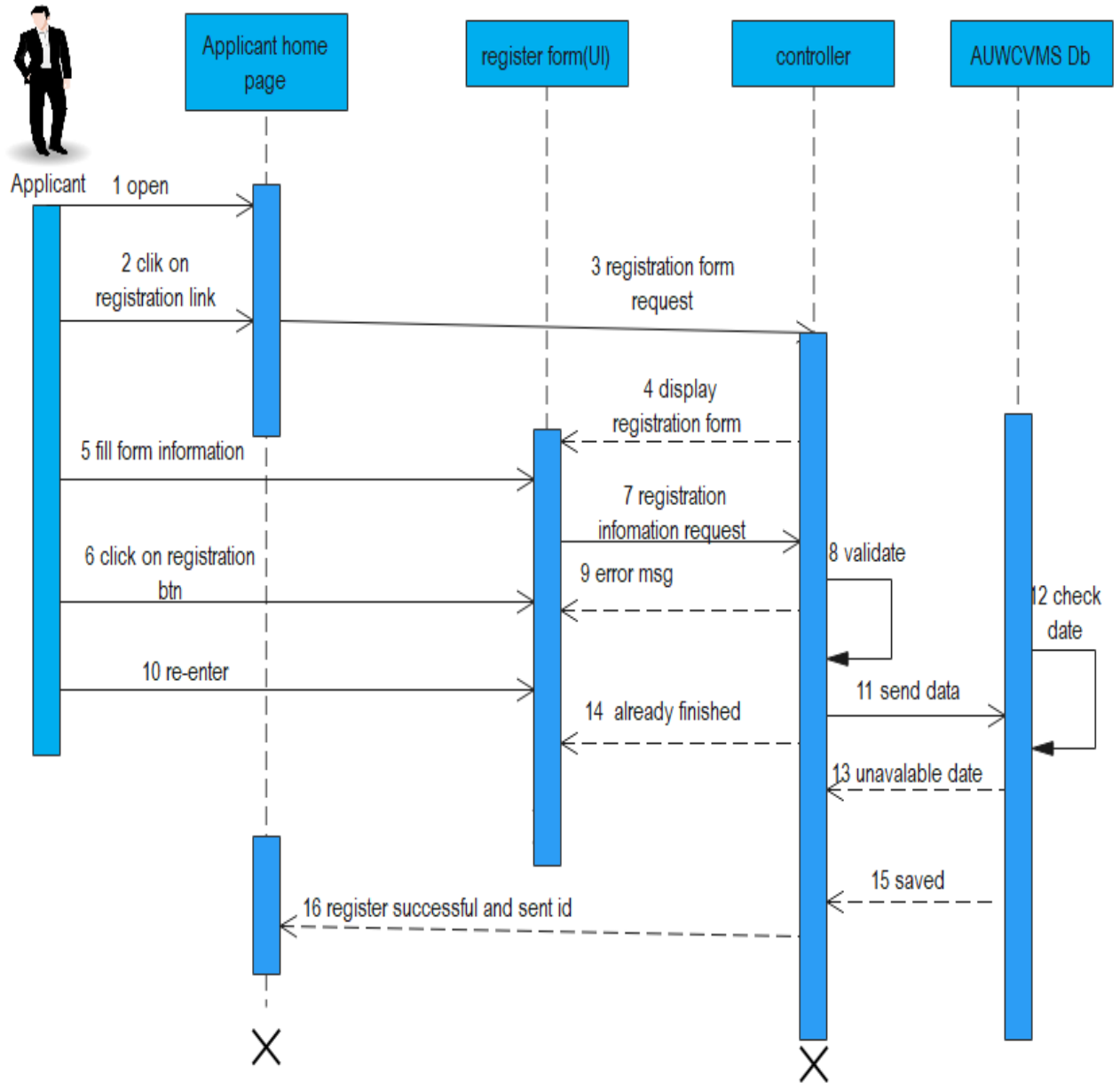


Figure 4. 5 Registration sequence diagram

Take exam sequence diagram

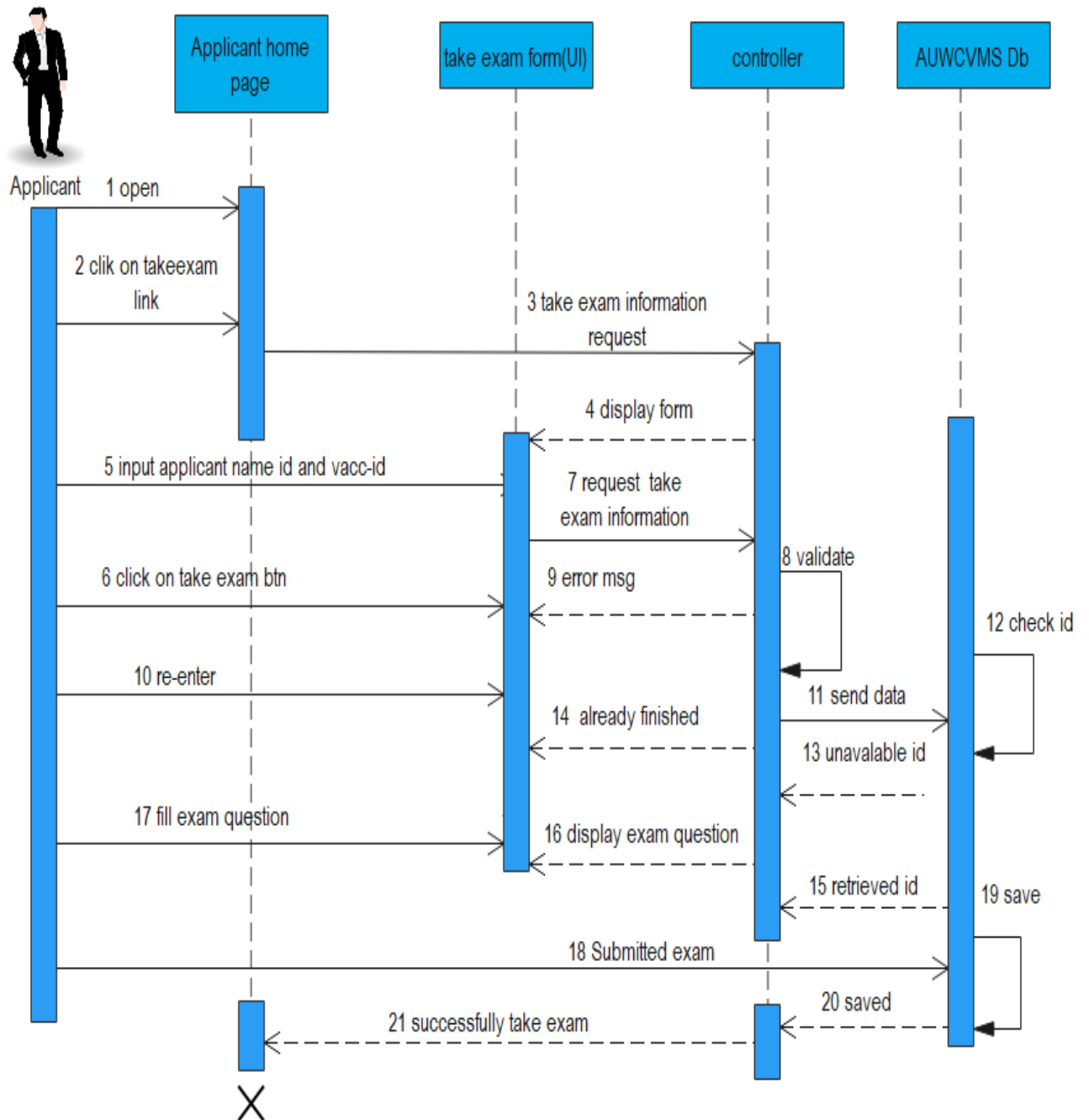


Figure 4. 6 Take exam sequence diagram

View vacancy announcement sequence diagram

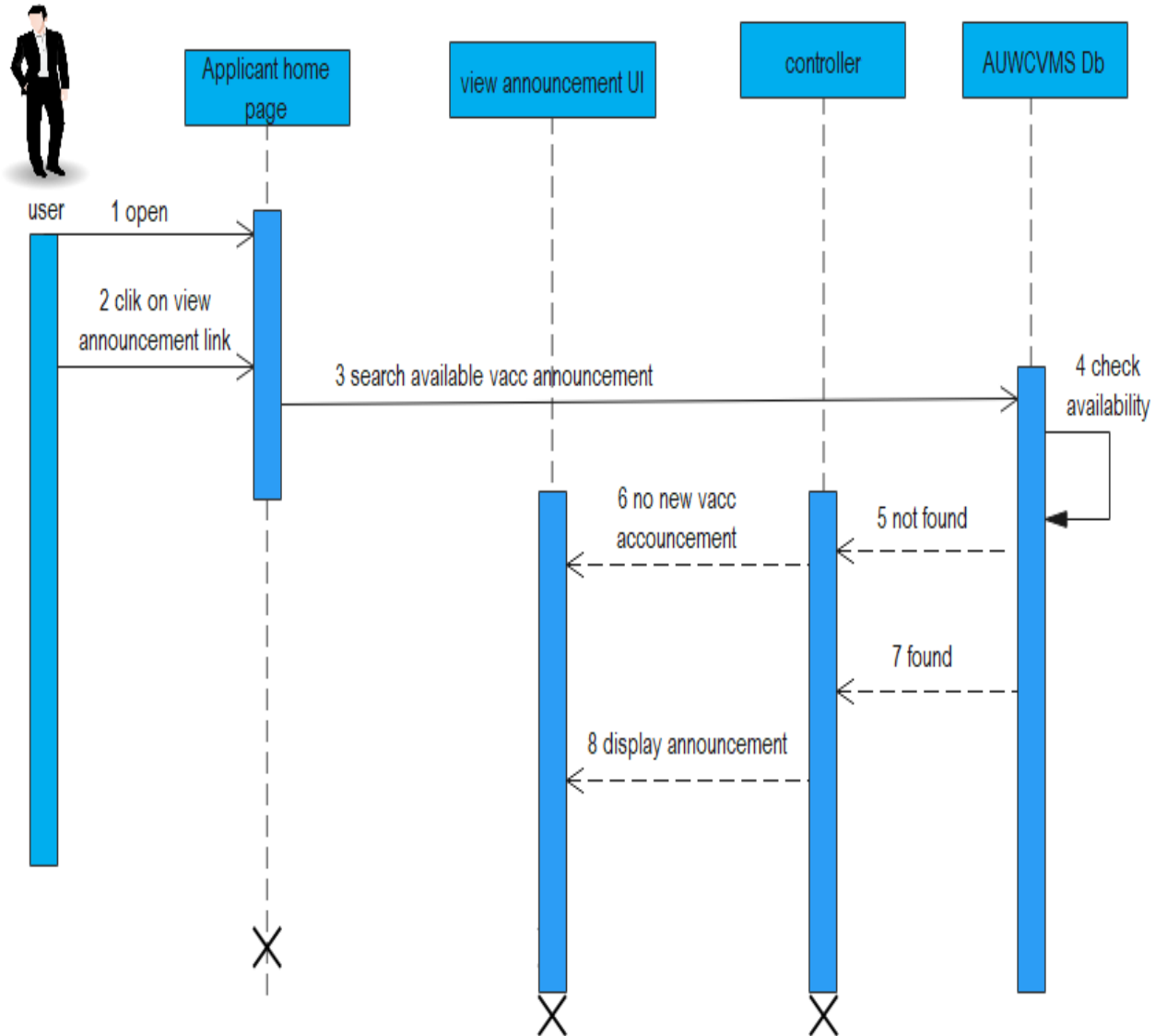


Figure 4. 7 View vacancy announcement sequence diagram

4.3.3 Collaboration diagram

A collaboration diagram is an interaction diagram that emphasizes the structural organization of the objects that send and receive messages. [11]

Collaboration diagram for login

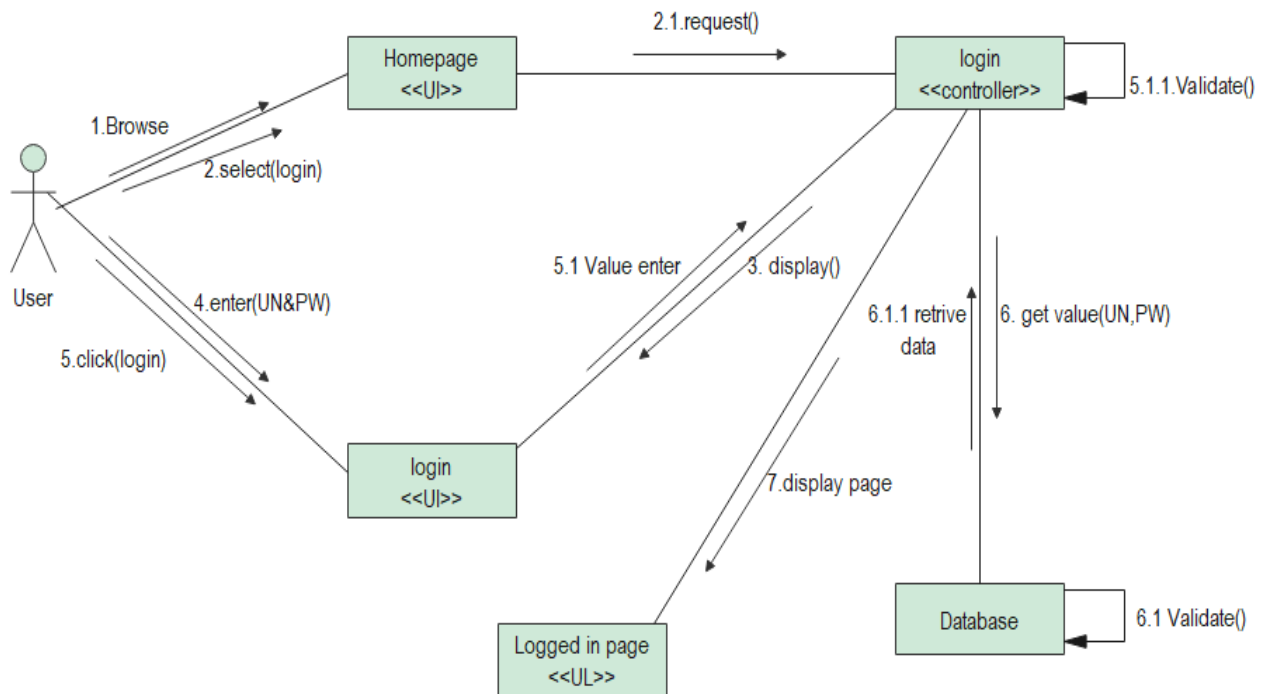


Figure 4. 8 Collaboration diagram for login

Collaboration diagram to create account

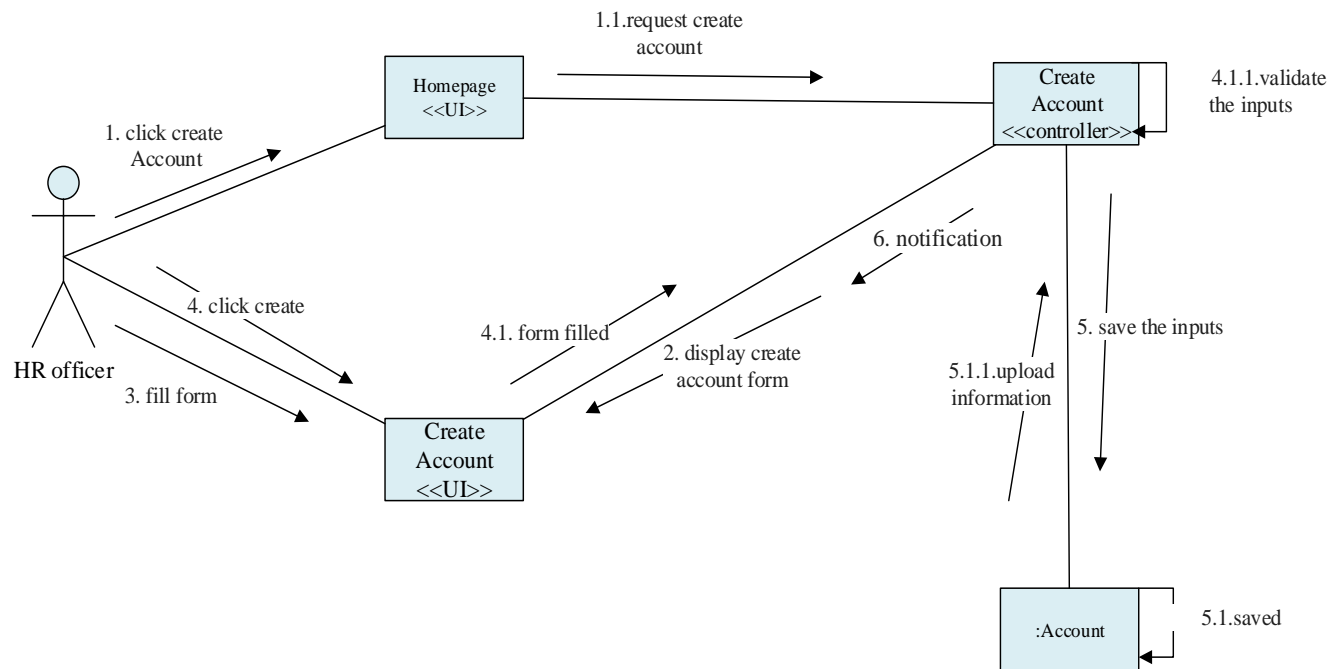


Figure 4. 9 Collaboration diagram to create account

Collaboration diagram to delete account

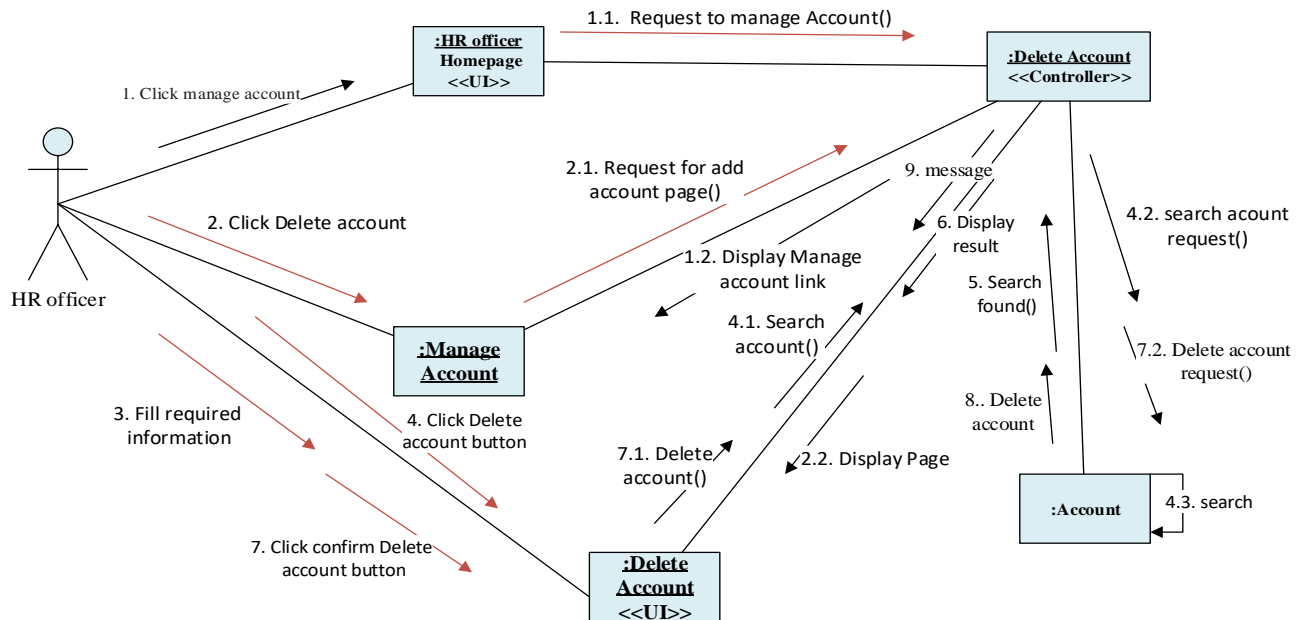


Figure 4. 10 Collaboration diagram to delete account

Collaboration diagram for applicant registration

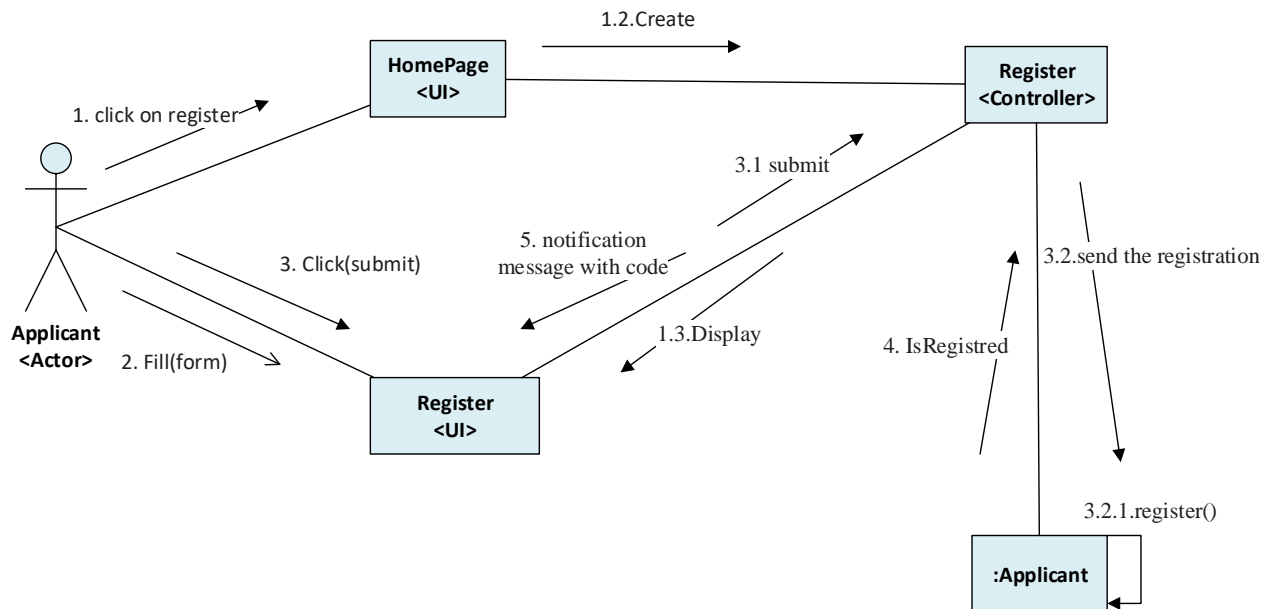


Figure 4. 11 Collaboration diagram for applicant registration

4.3.4 Activity Diagrams

Activity Diagrams are used to Document the logic of a single operation /methods, a single use case, or the flow of logic of a business operation. In many ways, Activity Diagrams are the object oriented Equivalent of flow charts and Dataflow Diagrams (DFD) from structure development [12].

Create account activity diagram

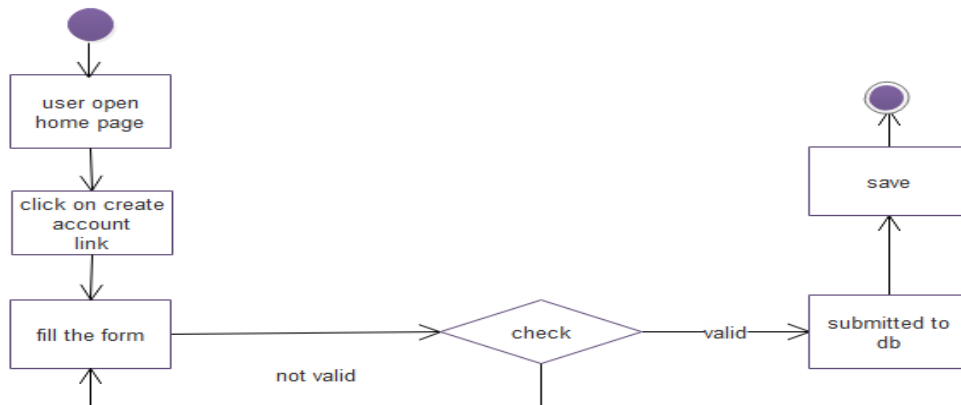


Figure 4. 12 Create account activity diagram

Login activity diagram

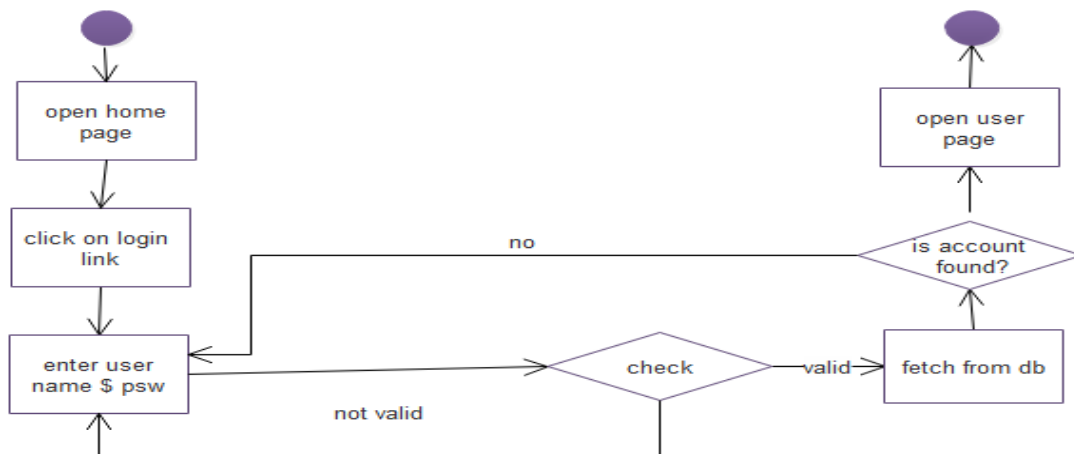


Figure 4. 13 Login activity diagram

Post vacancy activity diagram

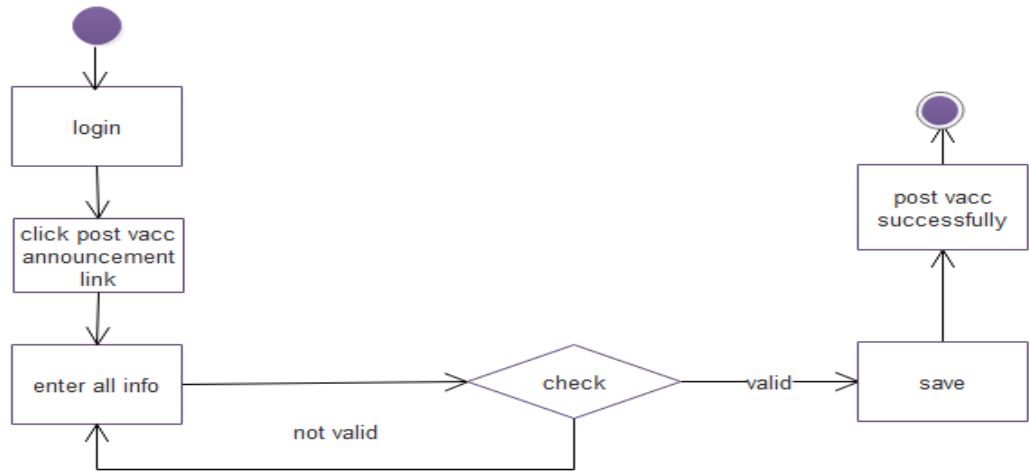


Figure 4. 14 Post vacancy activity diagram

Registration activity diagram

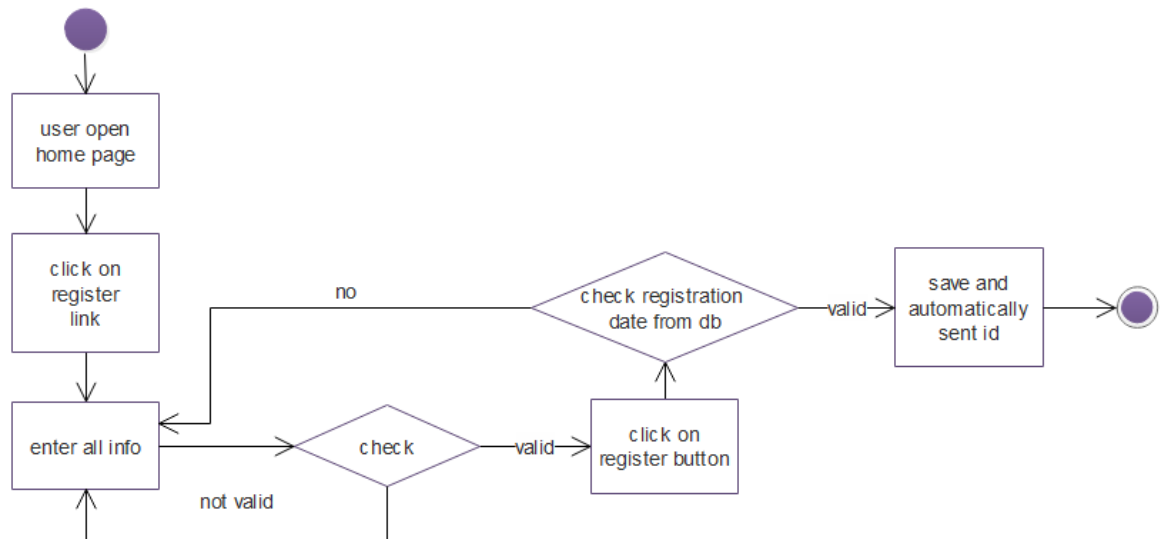


Figure 4. 15 Registration activity diagram

Take exam activity diagram

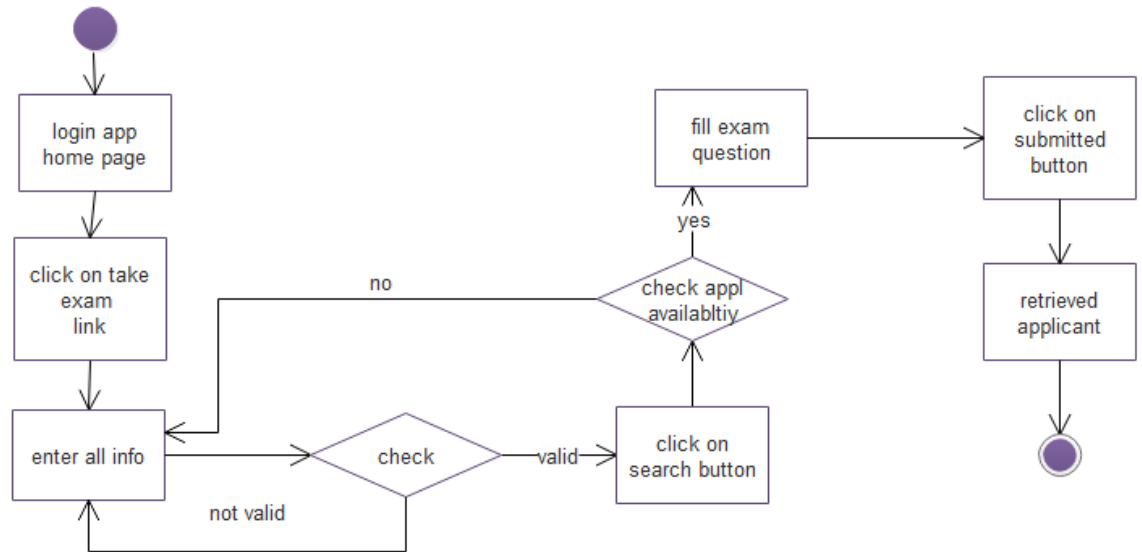


Figure 4. 16 Take exam activity diagram

View vacancy announcement activity diagram

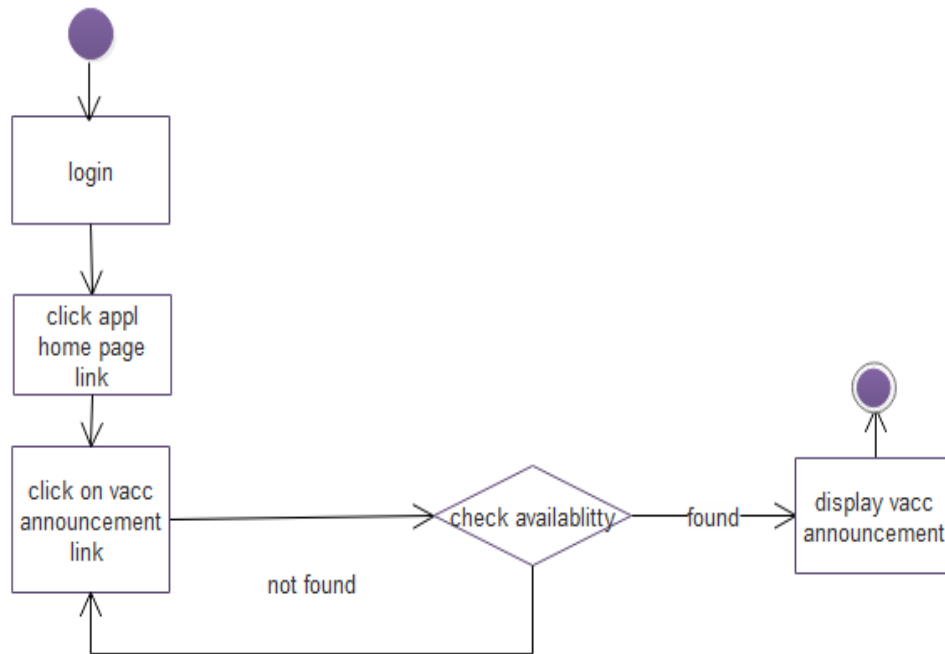


Figure 4. 17 View vacancy announcement activity diagram

4.3.5 State chart diagram

State chart diagram describes the flow of control from one state to another state. [13]

Login state diagram

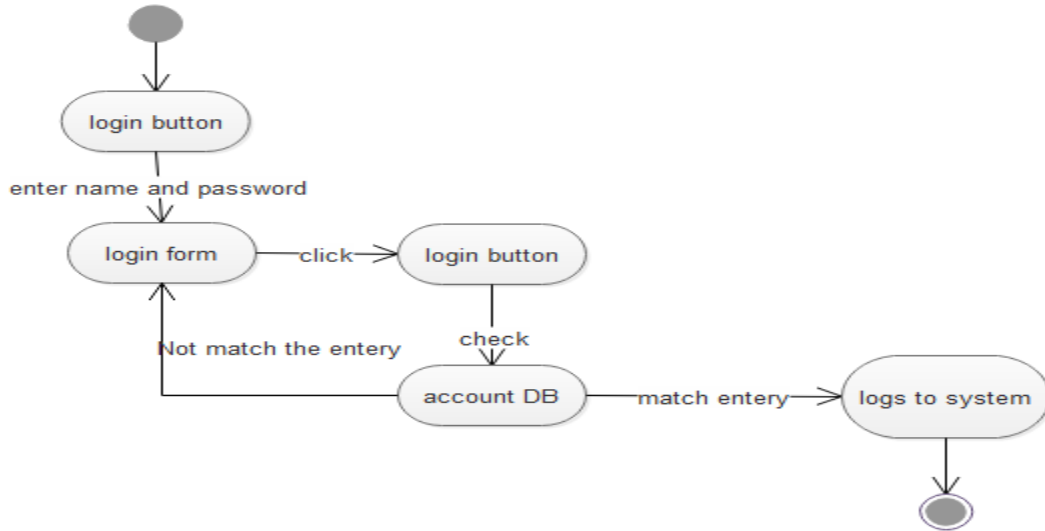


Figure 4. 18 Login state diagram

Create account state diagram

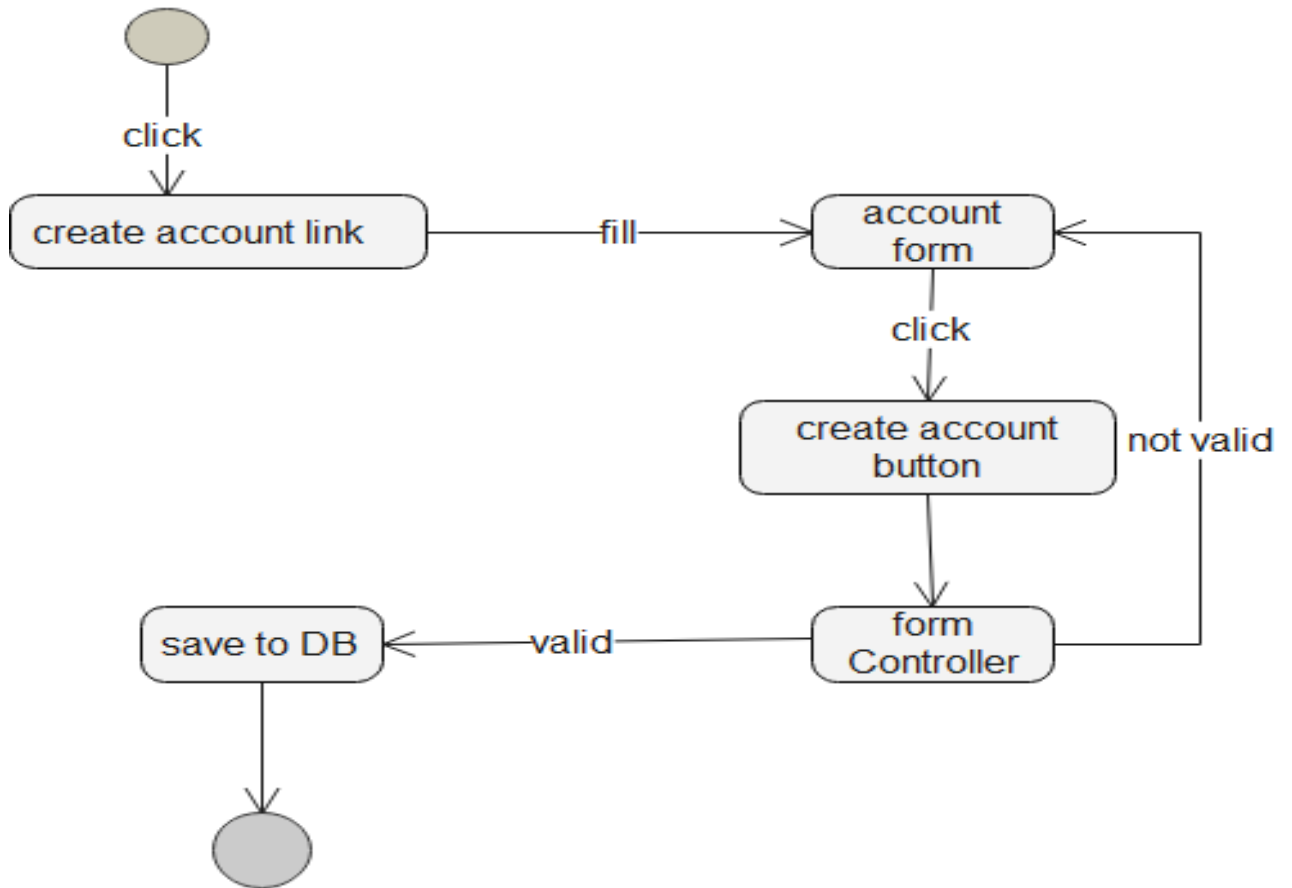


Figure 4. 19 Create account state diagram

4.3.6 Class diagram

A class diagram describes the types of objects in the system and the various kinds of static relationships that exist among them. Class diagram of our project can show the classes and the relationships among classes. Class diagram of our project can stores and manages information in the system. In the phase of conceptual class modeling we just create or classes and their interrelationship [14]

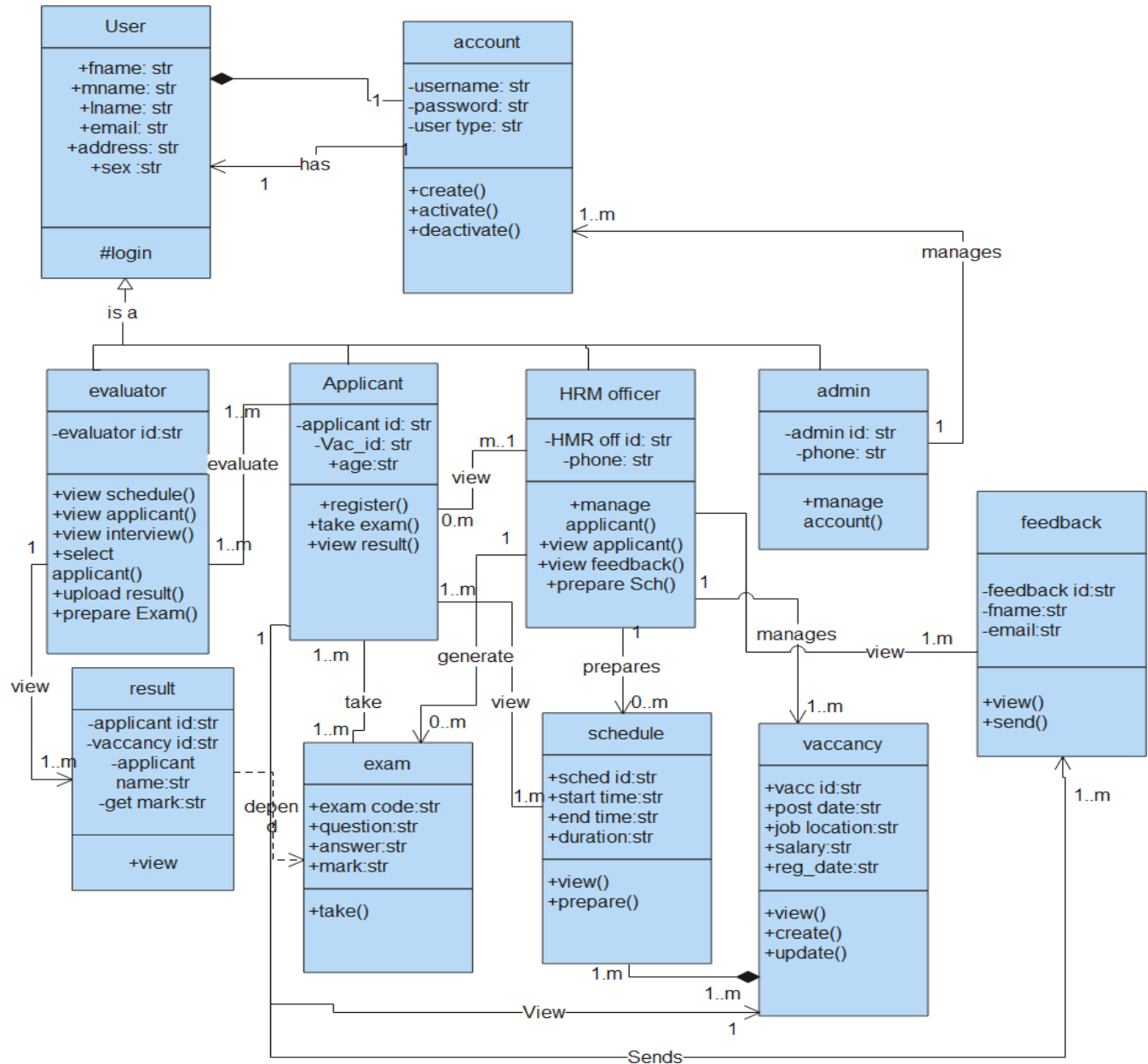


Figure 4. 20 Class Diagram for Vacancy Management System

4.3.7 Component diagram

In the Unified Modeling Language, a component diagram show how Components are wired together to form larger components and or software system they are used to illustrate the structure of arbitrarily complex systems [15].

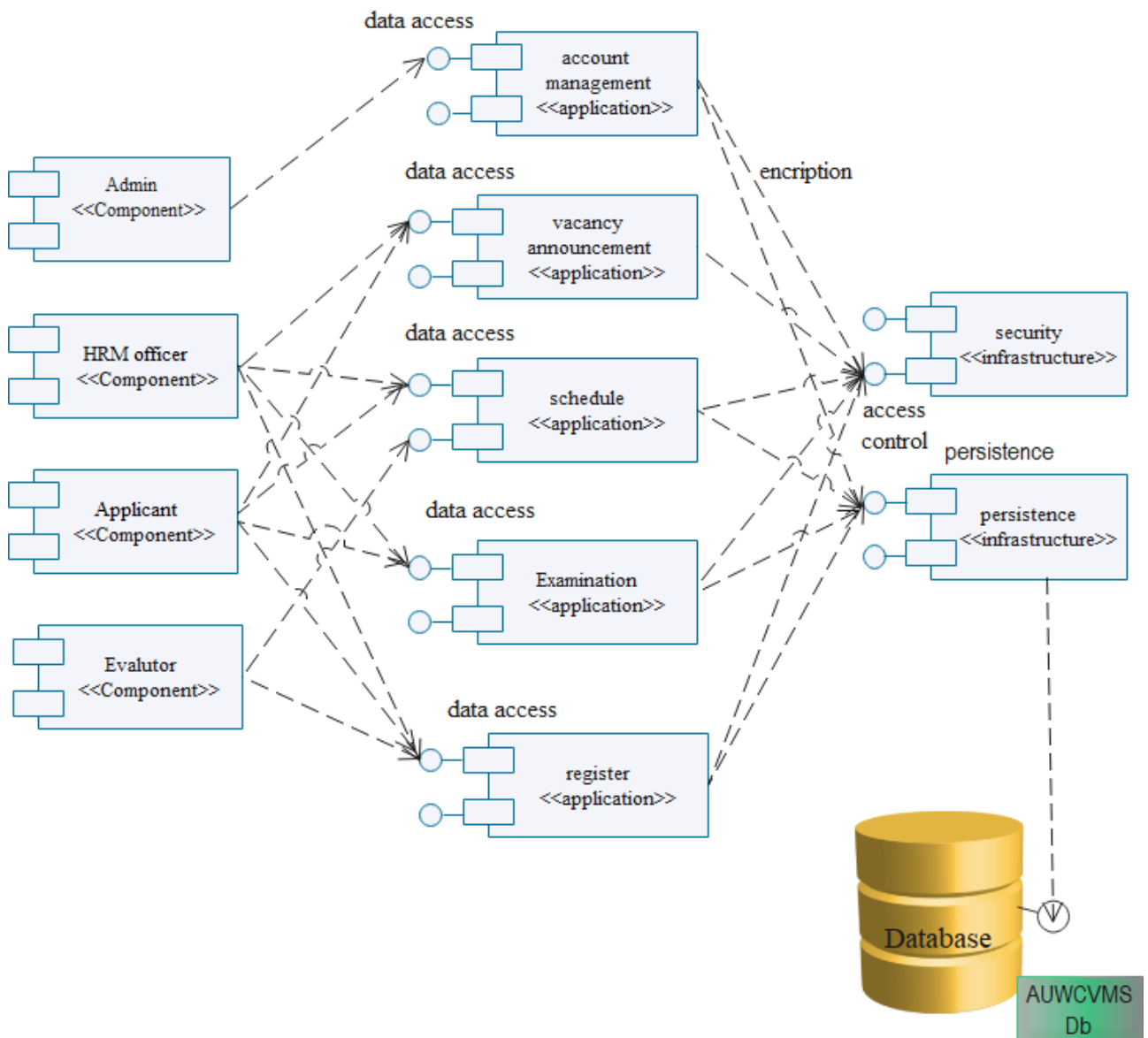


Figure 4. 21 Component Diagram for Vacancy management System

4.3.8 Deployment Diagram

Deployment diagrams of online vacancy system are used for describing the hardware components where software components are deployed [16].

The purpose of deployment diagrams can be described as:

- ↳ Visualize hardware topology of a system.
- ↳ Describe the hardware components used to deploy software components.
- ↳ Describe runtime processing nodes.

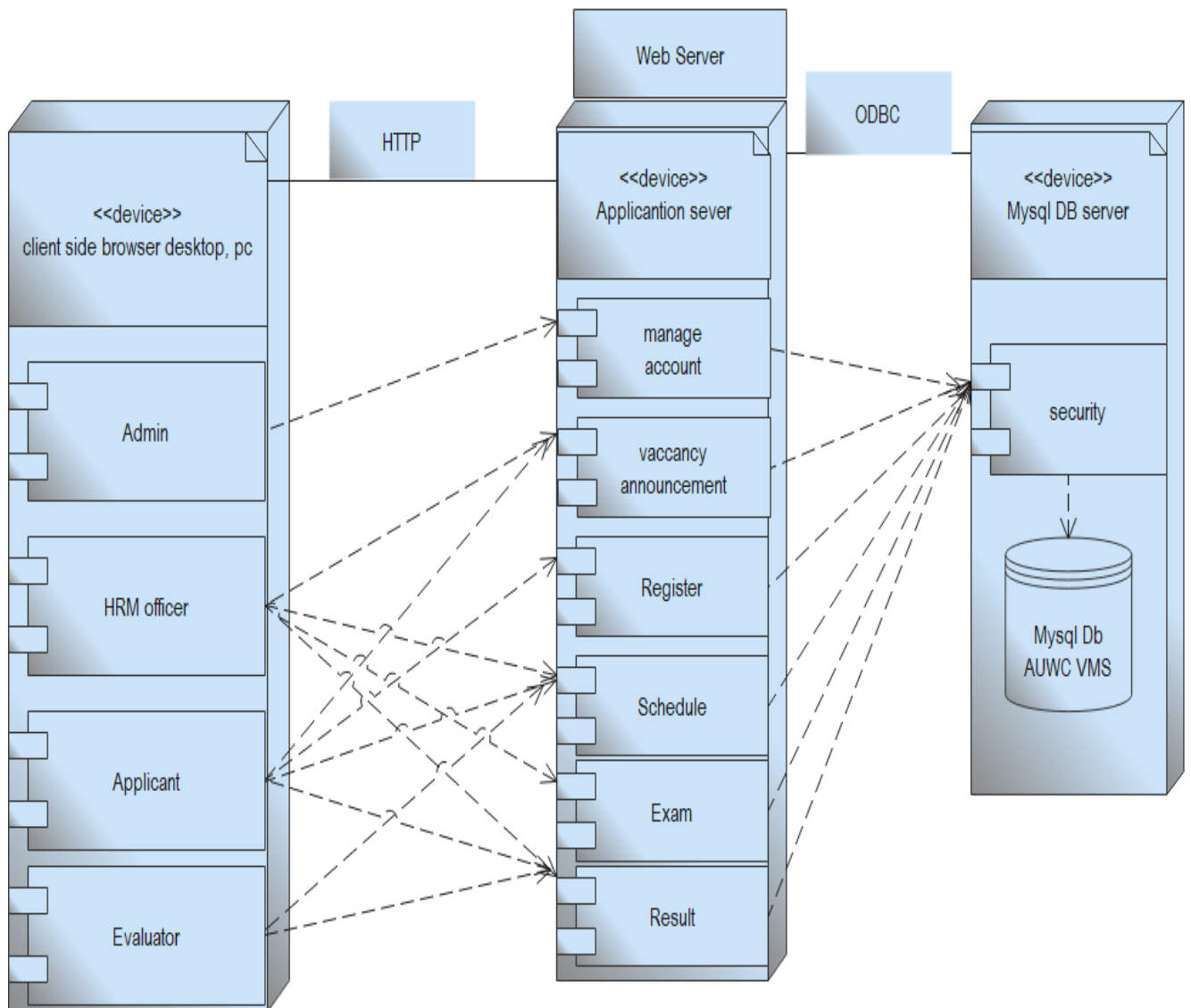


Figure 4. 22 Deployment Diagram for Vacancy Management System

Web Based Vacancy Management System for AUWC

4.4 Data persistence modeling.

Database persistence is the process of producing a detailed data model of a database.

4.4.1 Entities, attributes and schema.

Vacancy management system needs well designed database to maintain information about its entities. To design well database it is necessary to identify the entities in the vacancy management system with their perspective attributes and what is the relationship between them. In our system we identify the following entities:

No.	Entity Name	Attributes
1	Create account/Registration	<u>User-id</u> , Fname, Mname, Lname, sex, age, Email, Phone no, Address, level, Upload document, <u>Vac-id</u> , Region.
2	Vacancy announcement	<u>Vac-id</u> , Postdate, Job-location, salary, Registration date, Deadline, Level
3	Feed back	<u>Feedback-id</u> , Fname, Email, Message
4	Schedule	<u>Sch-id</u> , <u>Vac-id</u> , Begin time, End time, Duration
5	Result	<u>User-id</u> , <u>Vac-id</u> , User name, Gotmark
6	Exam	<u>Exam-code</u> , <u>User-id</u> , <u>Vac-id</u> , Mark, question.

NB: In above table attributes which is singly underlined is primary key and double underlined one is foreign key.

Table 4. 13 Entities, attributes and schema.

4.4.2 Data integrity and constraints

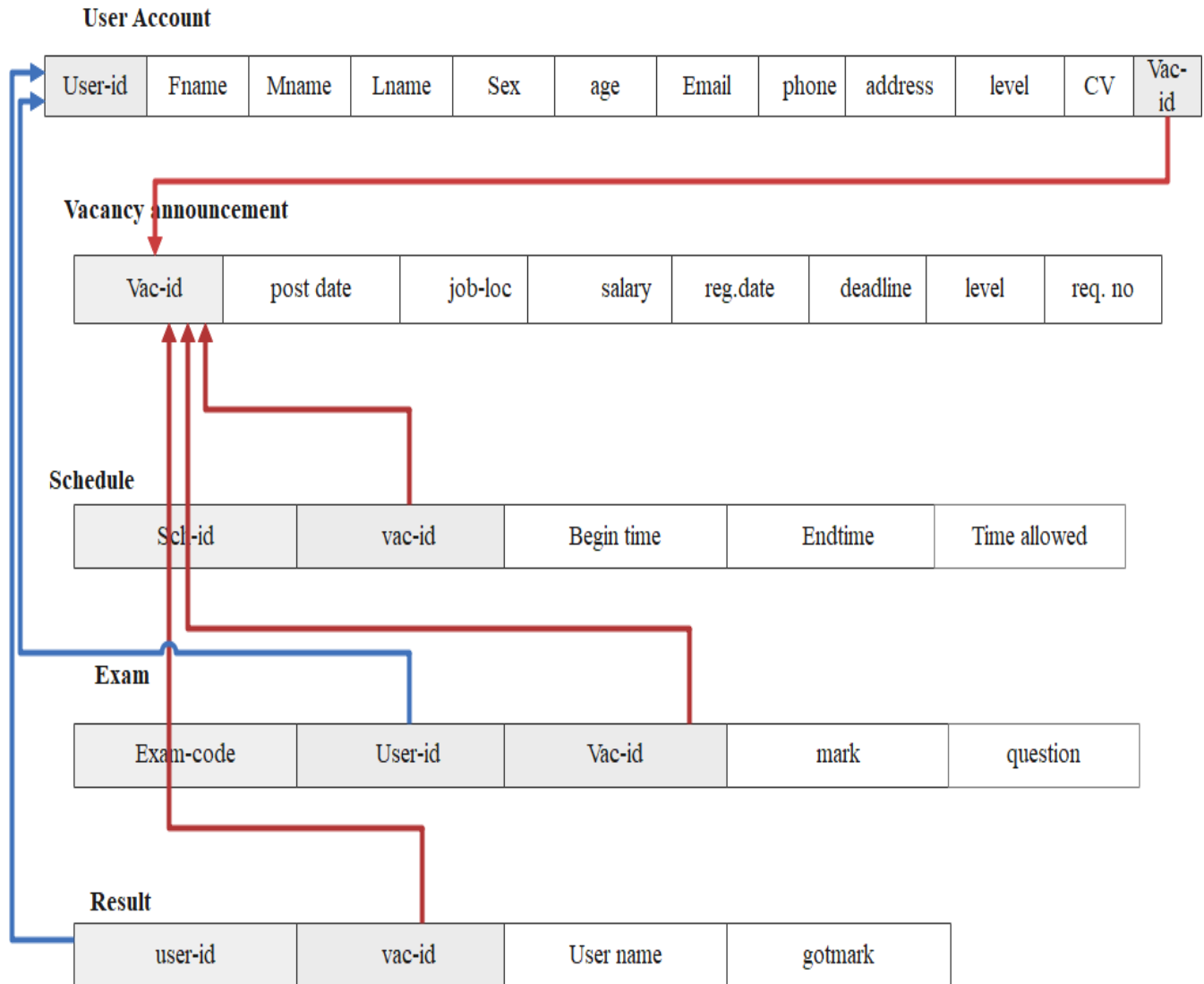


Figure 4. 23 Data integrity and Constraint

4.4.3 Database table schema.

CreateAccount/ Registration			
Attributes	Data type	Primary key	Foreign key
User –id	Int(10)	Pk	-
Fname	Varchar(20)	-	-
Mname	Varchar(20)	-	-
Lname	Varchar(20)	-	-
Sex	Varchar(20)	-	-
Age	int(20)	-	-
Email	Varchar(20)	-	-
Phone no	Varchar(20)	-	-
Level	Varchar(20)	-	-
Upload document	Varchar(20)	-	-
Vac-id	varchar(10)	-	-

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Vacancy announcement			
Attributes	Data type	Primary key	Foreign key
Vac-id	Int(20)	Pk	-
Job-location	Varchar(20)	-	-
Salary	Varchar(20)	-	-
Reg date	Varchar(20)	-	-
Deadline	Varchar(20)	-	-
Education background	Varchar(20)	-	-

Feed back			
Attributes	Data type	Primary key	Foreign key
Feedb-id	Int(20)	Pk	-
Email	Varchar(20)	-	-
Comment	Varchar(20)	-	-

Web Based Vacancy Management System for AUWC

Exam Schedule			
Attributes	Data type	Primary key	Foreign key
Sch-id	Int(20)	Pk	-
Vac-id	varchar (20)	-	Fk
Start time	Varchar(20)	-	-
End time	Varchar(20)	-	-
Duration	Varchar(20)	-	-

Exam Result			
Attributes	Data type	Primary key	Foreign key
User-id	Int(10)	Pk	-
Vac-id	varchar (10)	-	Fk
Total Mark	varchar(20)	-	-

Web Based Vacancy Management System for AUWC

Exam			
Attributes	Data type	Primary key	Foreign key
Exam-code	Int(20)	Pk	-
Vac-id	varchar (20)	-	Fk
User-id	int(20)	-	Fk
Mark	Varchar(20)	-	-
Question	Varchar(20)	-	-

4.4.4 Database model diagram

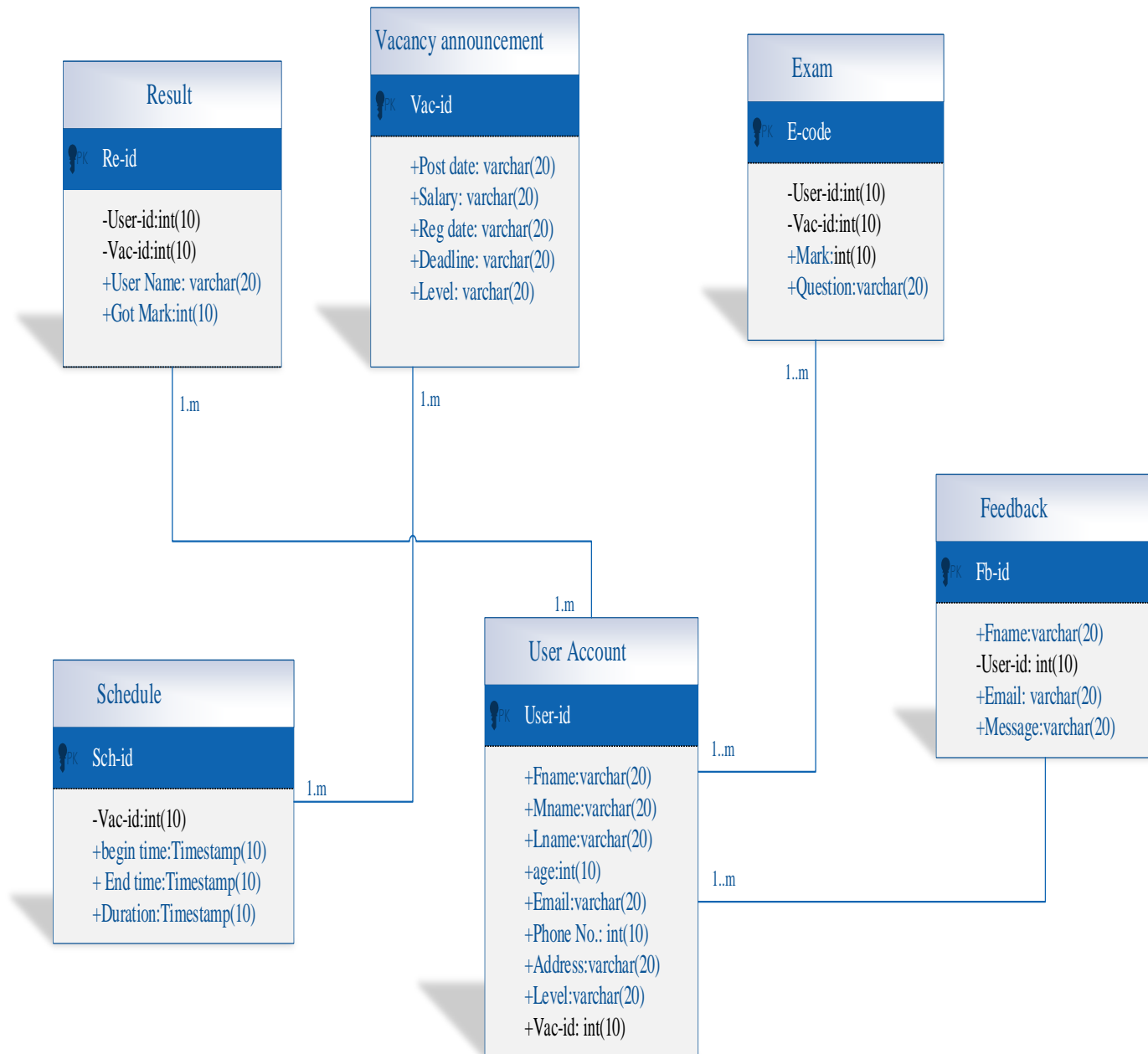


Figure 4. 24 for data base modeling diagram

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4.4.5 Normalizations

Registration table

Normalization for Registration

Create account/ Registration											
<u>User id</u>	Fname	Mname	Lname	Sex	age	email	address	Education background	Upload document	Vac-id	Phone
<u>01</u>	Jiregna	Turura	Echima	M	23	jire@,	Ambo	BSC		205	092143 092124

1st Normal form of Registration

Create account											
<u>User id</u>	Fname	Mname	Lname	Sex	age	email	address	Education background	Upload document	<u>Vac-id</u>	Phone
<u>01</u>	Jiregna	Turura	Echima	M	23	jire@	Ambo	BSC		205	092143
<u>01</u>	Jiregna	Turura	Echima	M	23	jire@	Ambo	BSC		205	092124

2nd Normal form of Registration

Vac-id	phone
205	09214343
205	092124

Normalization for Vacancy announcement.

Vacancy announcement					
<u>Vac-id</u>	Post date	Salary	Reg date	Deadline	Level
<u>001</u>	May 2021	8000	May 14, 2021	May 16, 2021	BSC, MSC

1st Normal form of Vacancy announcement

Vacancy announcement					
<u>Vac-id</u>	Post date	Salary	Reg date	Deadline	Level

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<u>001</u>	May 13, 2021	8000	May 14, 2021	May 16, 2021	BSC
<u>001</u>	May 13, 2021	8000	May 14, 2021	May 16, 2021	MSC

2st Normal form of Vacancy announcement.

<u>Vac-id</u>	Level
<u>001</u>	BSC
<u>001</u>	MSC

Normalization for Examinations.

Examinations					
<u>Exam-code</u>	User-id	Vac-id	Mark	question	Answer
<u>09</u>	<u>001</u>	<u>004</u>	45	-	-

1st Normal form it doesn't require 1st Normal form. it is normal form by itself.

Normalization for Schedule.

Schedule					
<u>Sch-id</u>	Begin time	End time	duration	Deadline	Level
<u>002</u>	4:00	4:00-5:00	1:00	May, 16,2021	Dr. , prof

1st Normal form for Schedule.

Schedule					
<u>Sch-id</u>	Begin time	End time	duration	Deadline	Level

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<u>002</u>	4:00	4:00-5:00	1:00	May, 16,2021	Prof
<u>002</u>	4:00	4:00-5:00	1:00	May, 16,2021	Dr.

2nd Normal form: it doesn't require 2nd normal form. it is normal form by itself.

5 USER INTERFACE

User interface for vacancy management system Home page

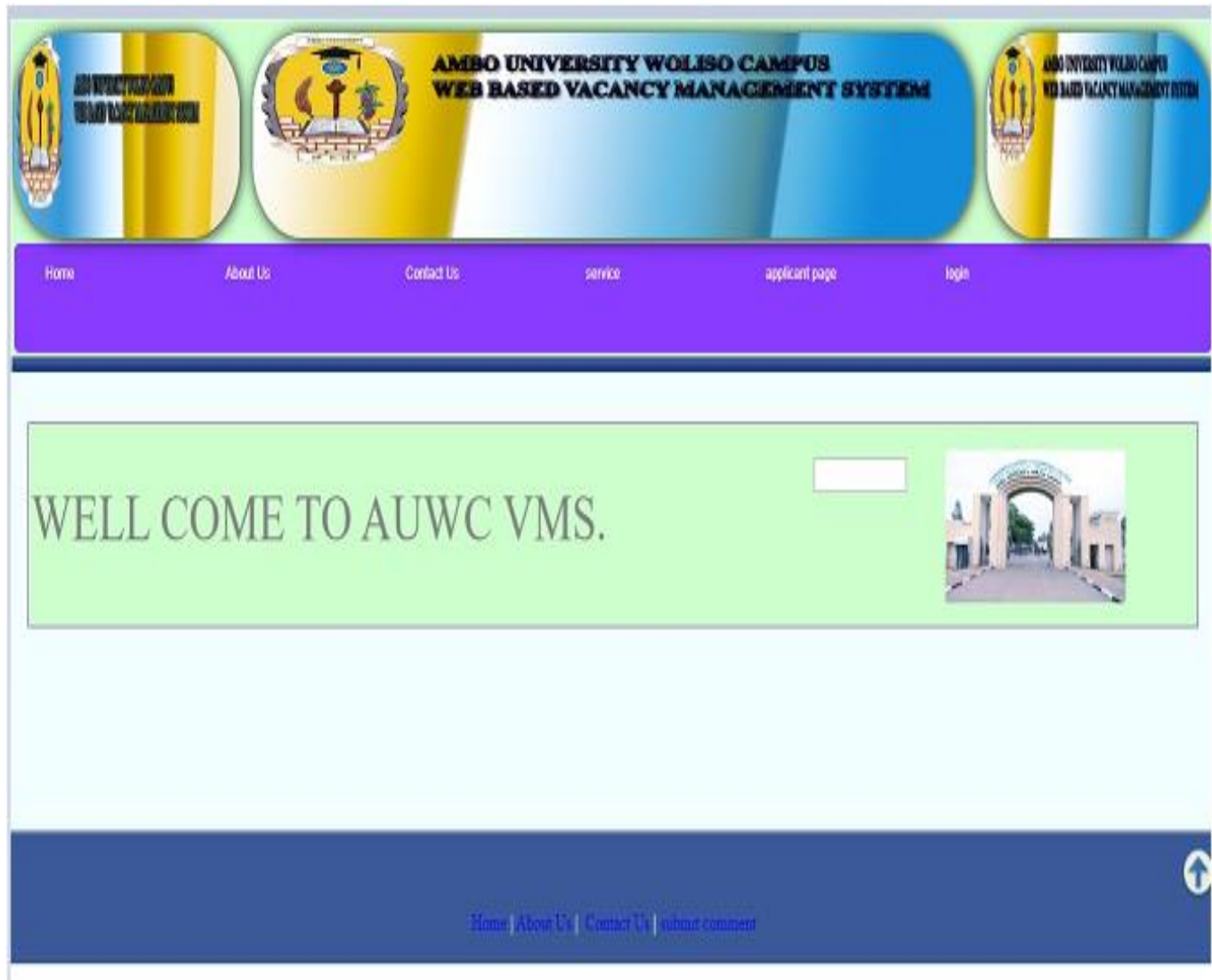


Figure 4. 25 User interface for vacancy management system Home page

User Interface for Vacancy Management System Applicant Home page

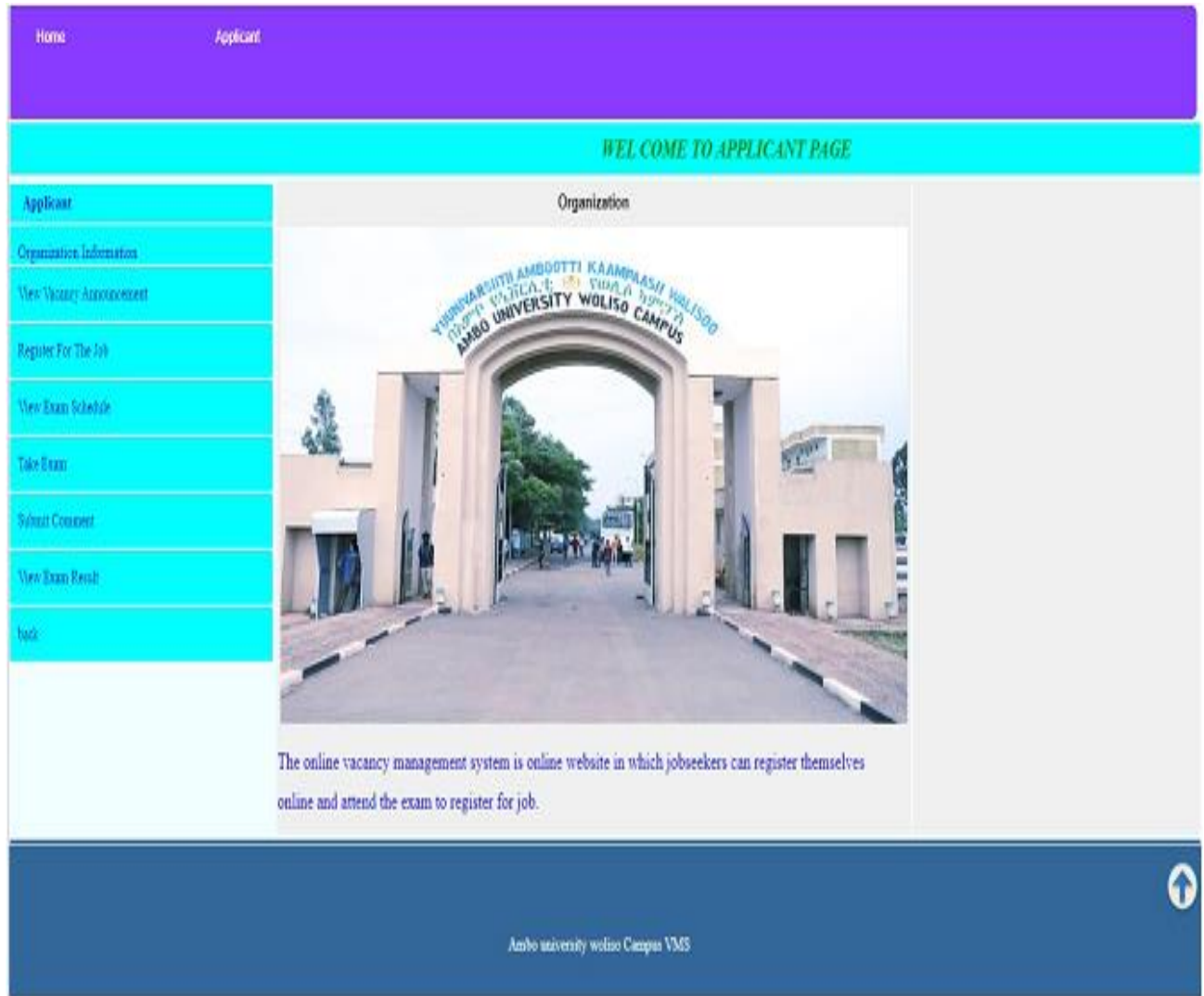


Figure 4. 26 User Interface for Vacancy Management System Applicant Home page

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User Interface for Vacancy Management System Login page

The screenshot displays the login interface for the 'AMBO UNIVERSITY WOLISO CAMPUS WEB BASED VACANCY MANAGEMENT SYSTEM'. The header features three identical logos on the left and a central banner with the system's name. Below the header is a purple navigation bar with links: Home, About Us, Contact Us, service, applicant, and login. The main content area contains a white login box with the prompt 'PLEASE INPUT USERNAME AND PASSWORD!!'. Inside this box are input fields for 'User Name:' and 'Password:', followed by 'Login' and 'Clear' buttons. A 'FORGET PASSWORD?' link is positioned below the buttons. The footer is a dark blue bar with a navigation menu: Home | About Us | Contact Us | Developers | Comment, and an upward arrow icon on the right.

Figure 4. 27 User Interface for Vacancy Management System Login page

User-Interface Flow Diagramming

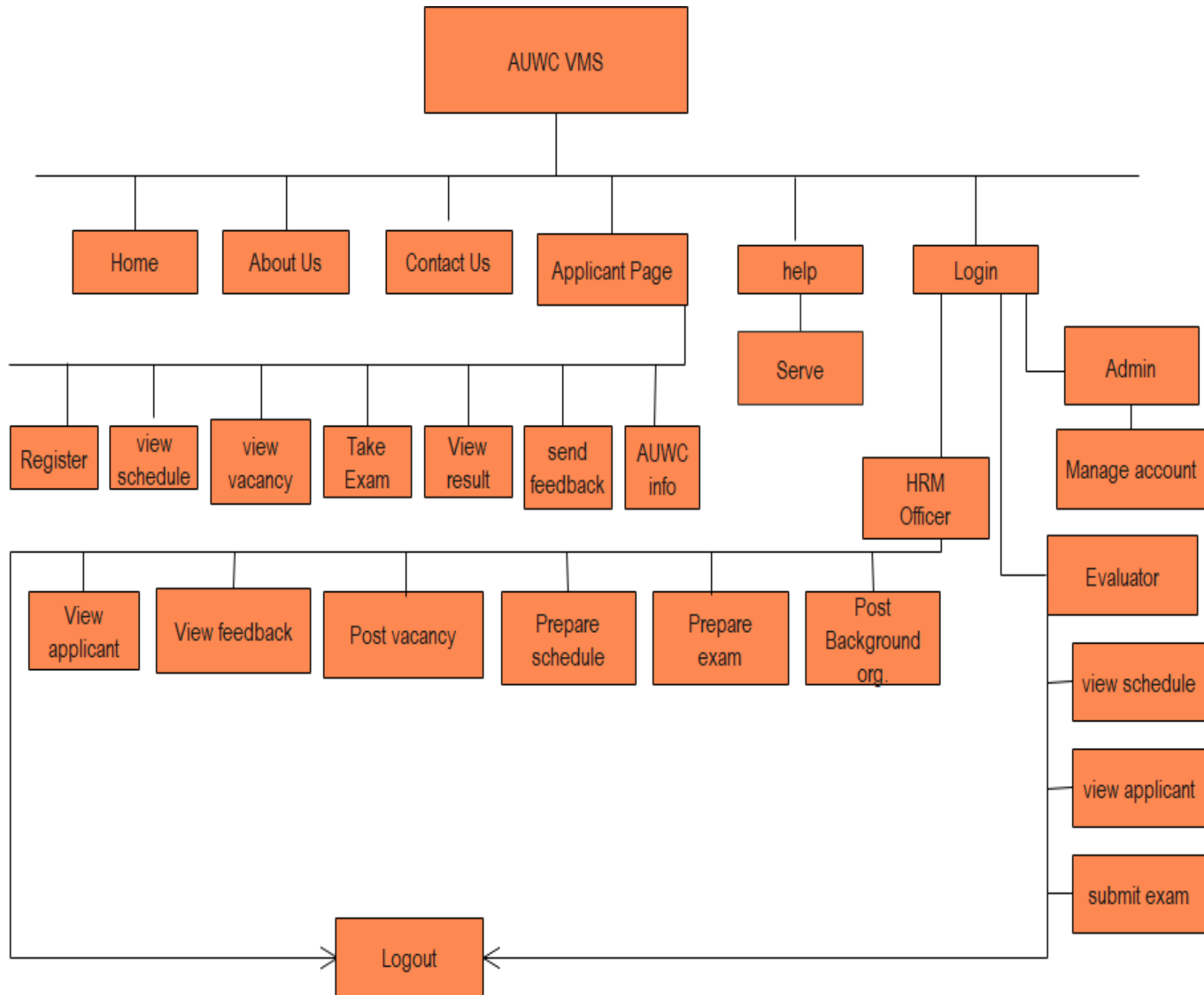


Figure 4. 28 User-Interface Flow Diagramming

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7 Appendix

While collecting how current system work for vacancy management System in HRM office we use interview to get over view of existing AUWC Vacancy management system. We interview with human Resource management office by asking the following interview questions

1. How existing Vacancy management system is working?
 - a. How to new Vacancy is announced?
 - b. How to applicant registered?
 - c. How to report applicant result?
 - d. How to prepare exam schedule for candidate?
2. What are the major problems you are facing?
3. Are you interested computerized solution for problem you are facing?