Addis Ababa Institute of Technology

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Department of Software Engineering

Job Portal

Software Design Specification

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1. Introduction

1.1 Purpose

The purpose of System Design document is to translate the business requirements and business processes into a technical design that will be used to develop the application. It contains information about the system architecture and design considerations and provides several views of the system's design in order to facilitate communication and understanding of the system. It intends to capture and convey the significant architectural and design decisions that have been made for the system.

1.2 General Overview

"Job portal" is a web application that will help employees to find job online. The implementation of "job portal" will take a Model-View-Controller system architecture. MVC is popular as it isolates the application logic from the user interface layer and supports separation of concerns. Here the Controller receives all requests for the application and then works with the Model to prepare any data needed by the View. The View then uses the data prepared by the Controller to generate a final presentable response. Within these discrete tiers are separate, self-contained components that will have clear boundaries.This clear segregation of the system into sub-layers will help guarantee the maintainability of the system. By applying a 3-tier architecture, the application is expected to allow a fairly good performance in the aspect of manipulating and dynamically accessing the immense amount of data without affecting representation layers thus enhancing the maintainability of *job portal*. The choice of the MVC architectural model was with the aim of fulfilling another key element of the system's requirements, which is security, to a greater margin. MVC provides a good foundation for implementing security components at the interfaces of each level.

1.3 Development Methods & Contingencies

The development of job *portal* system will include the following: frontend development will be written in HTML5, CSS3, JavaScript the server side application is written in PHP5The database system will be deploy on MySQL Server. This system will be running on Apache Web server.

2. System Architecture

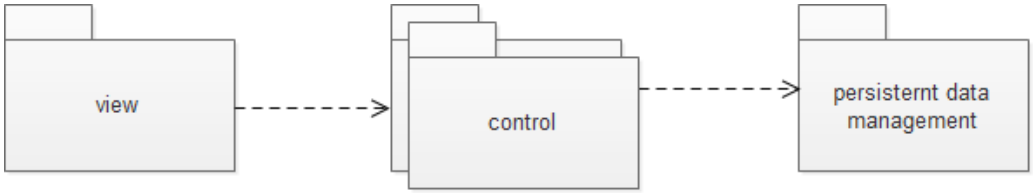

Figure 1 : system architecture

2.1 Subsystem decomposition

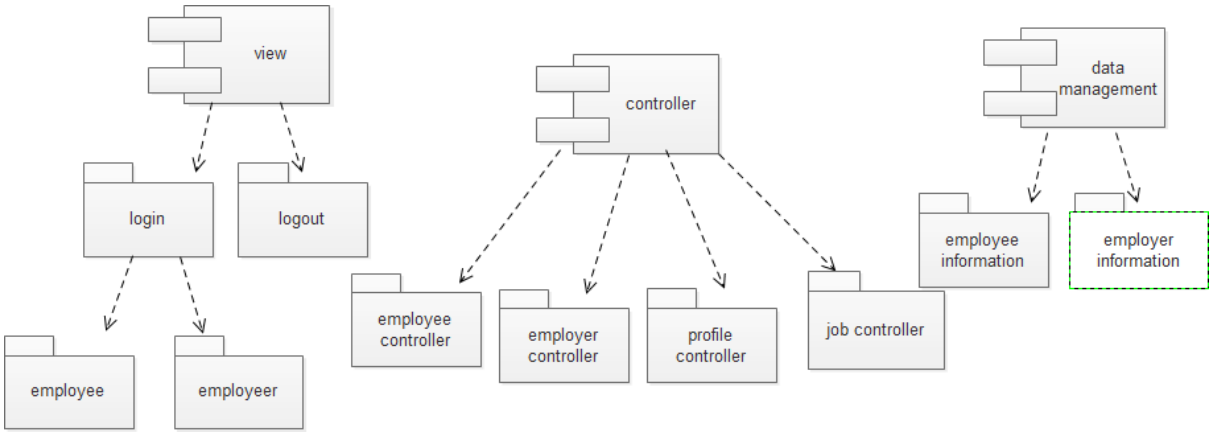

Figure 2 : subsystem decomposition

2.2 Hardware/software mapping

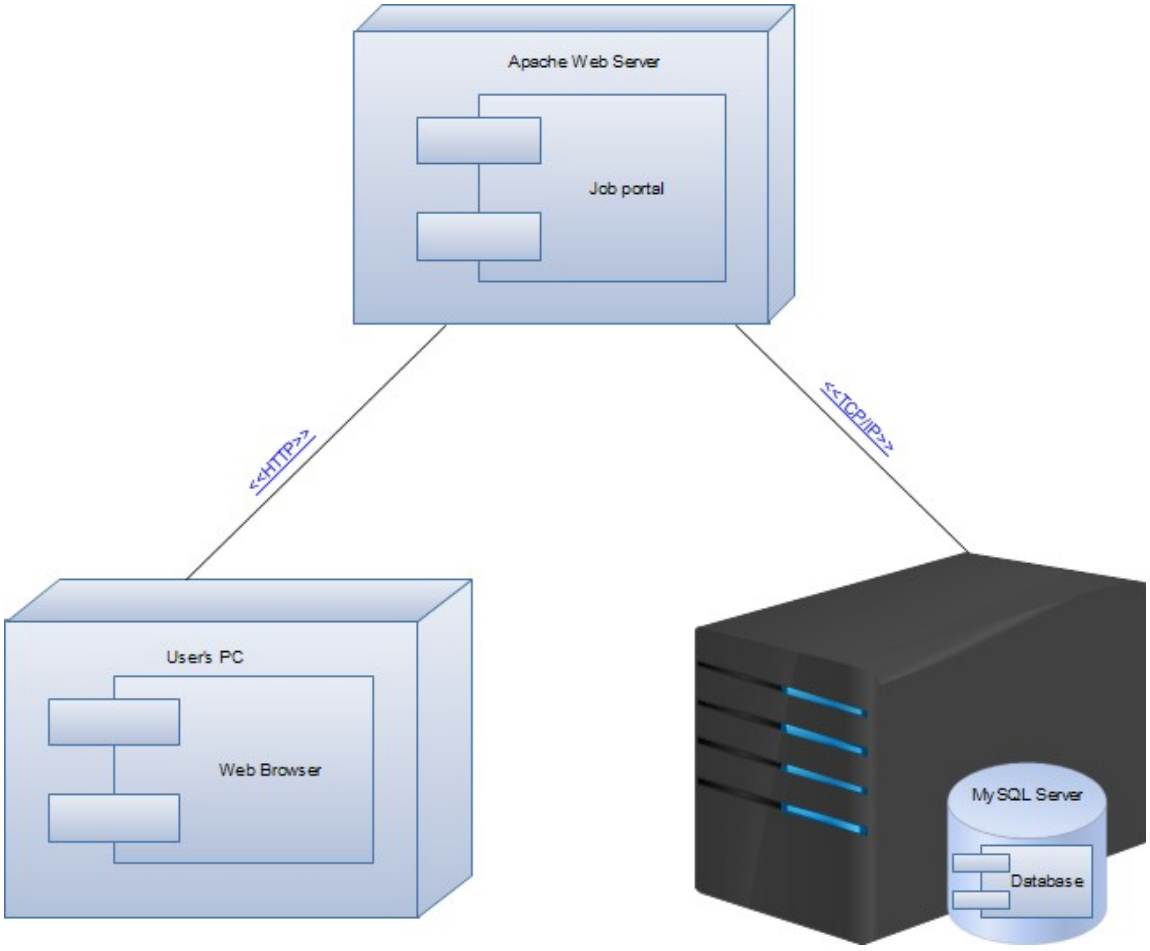

Figure 3 : hardware and software mapping

3. Object Model

3.1 Class Diagram

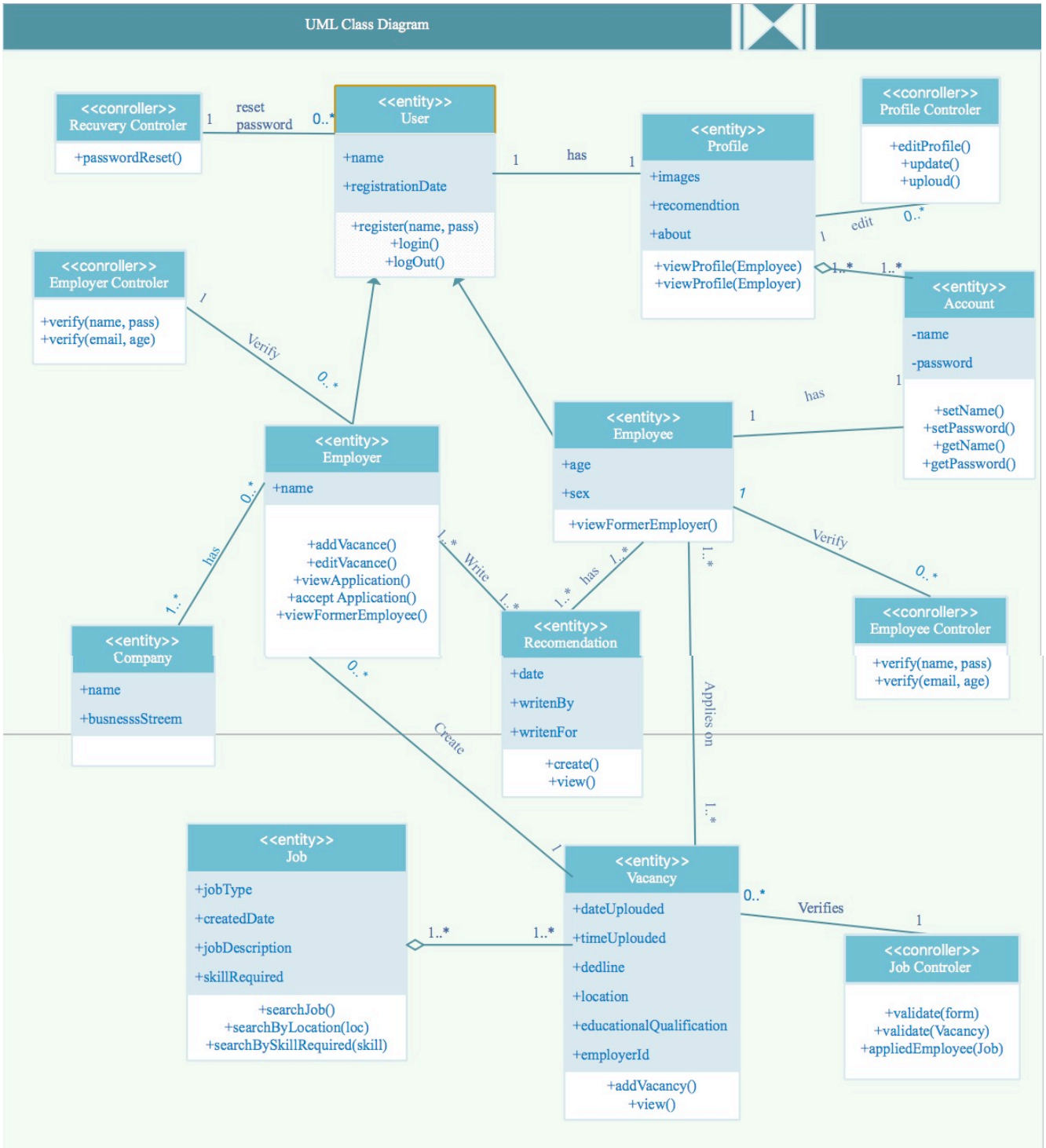

Figure 4 : class diagram

3.2 Sequence Diagram

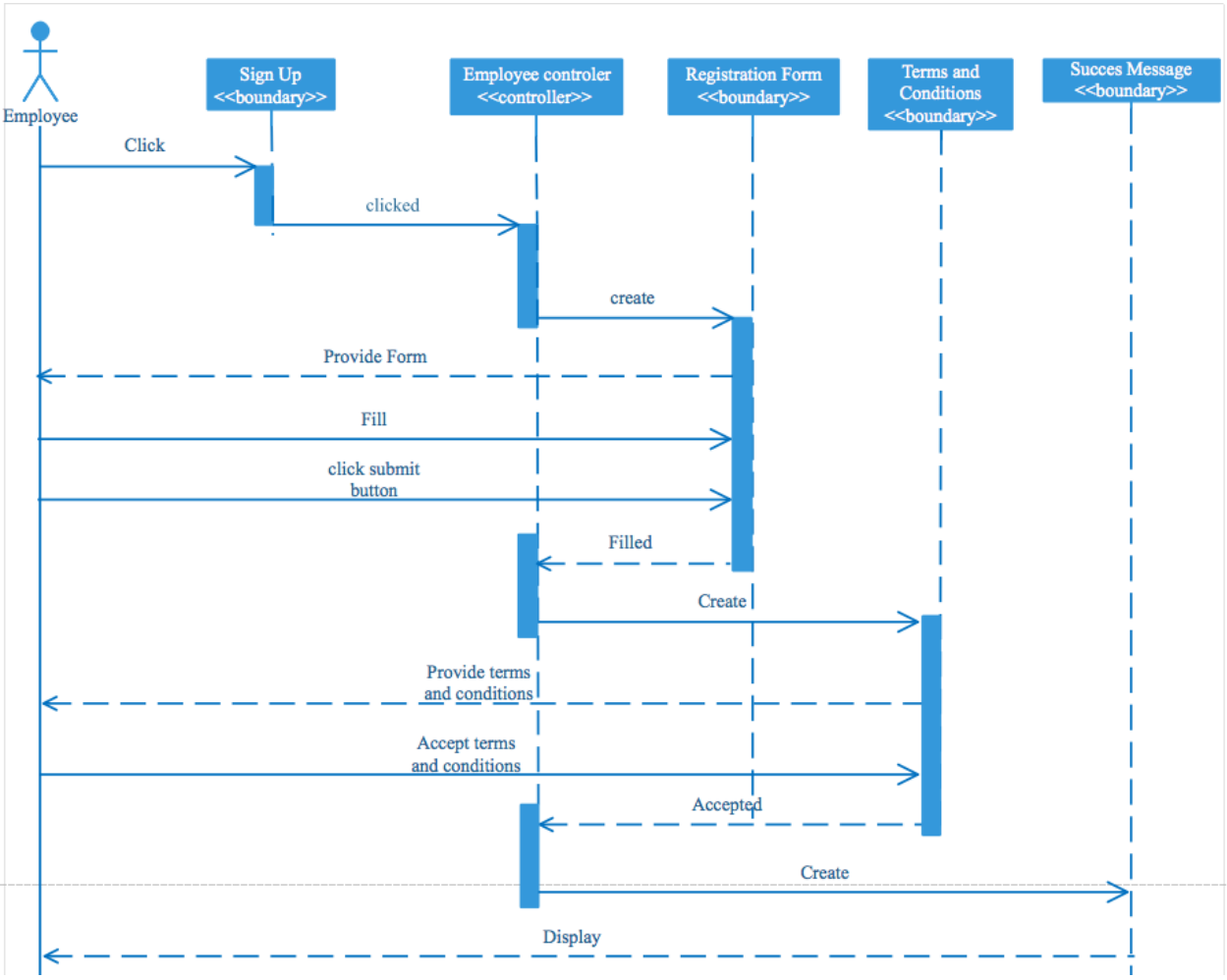

Figure 5 : register employee

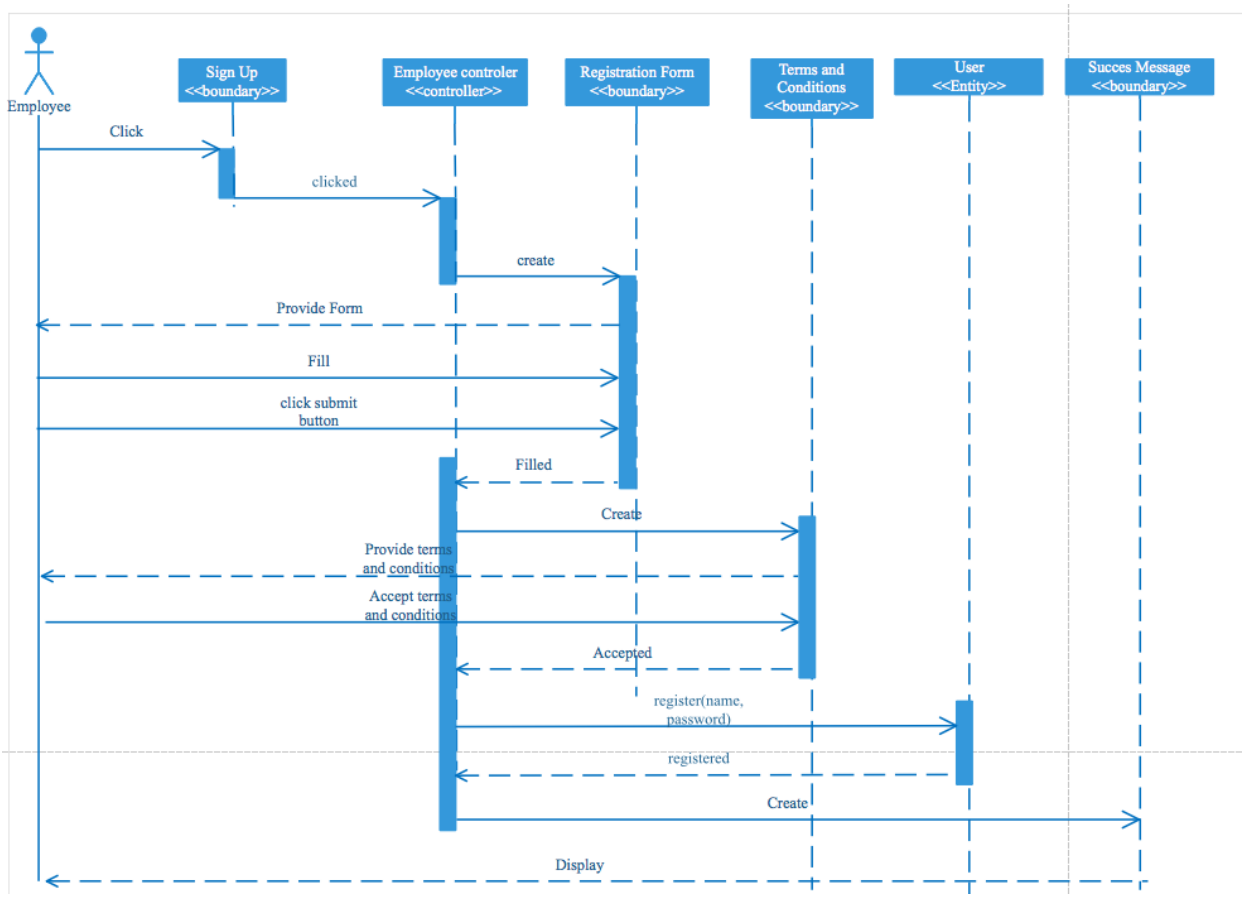

Figure 6 : employee signs up

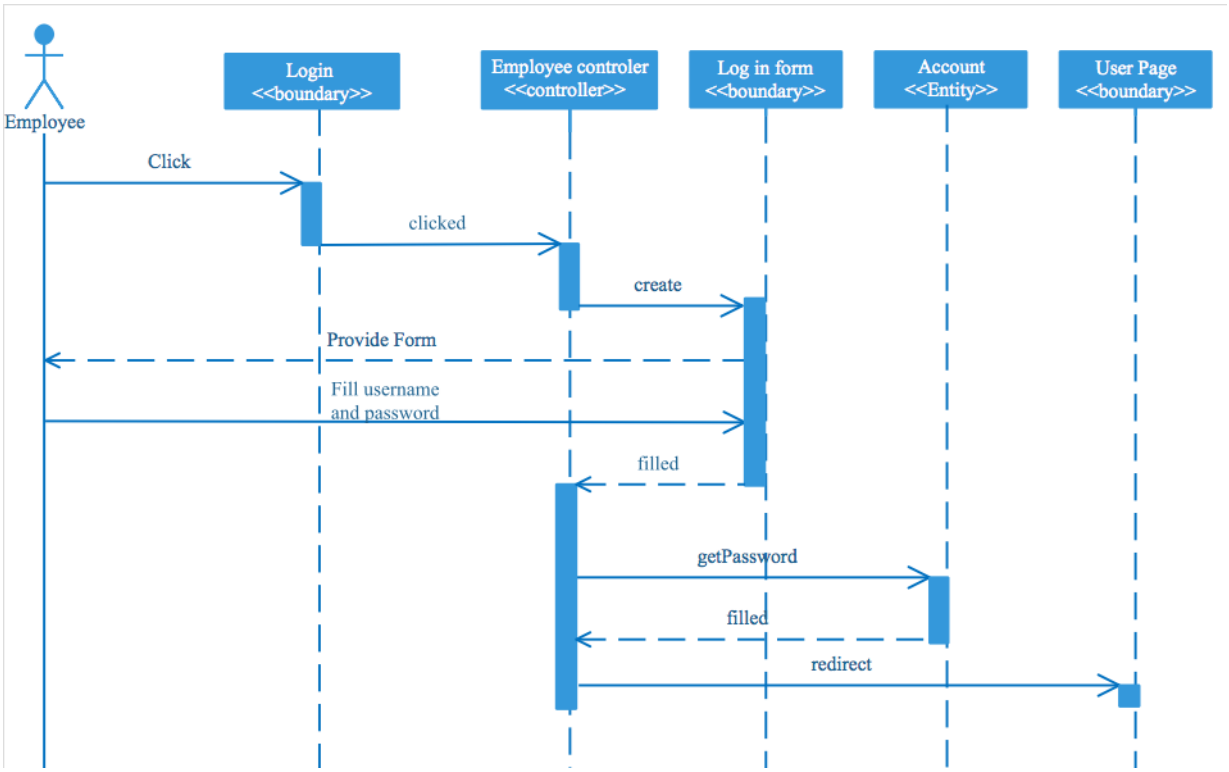

Figure 7 : employee signs in

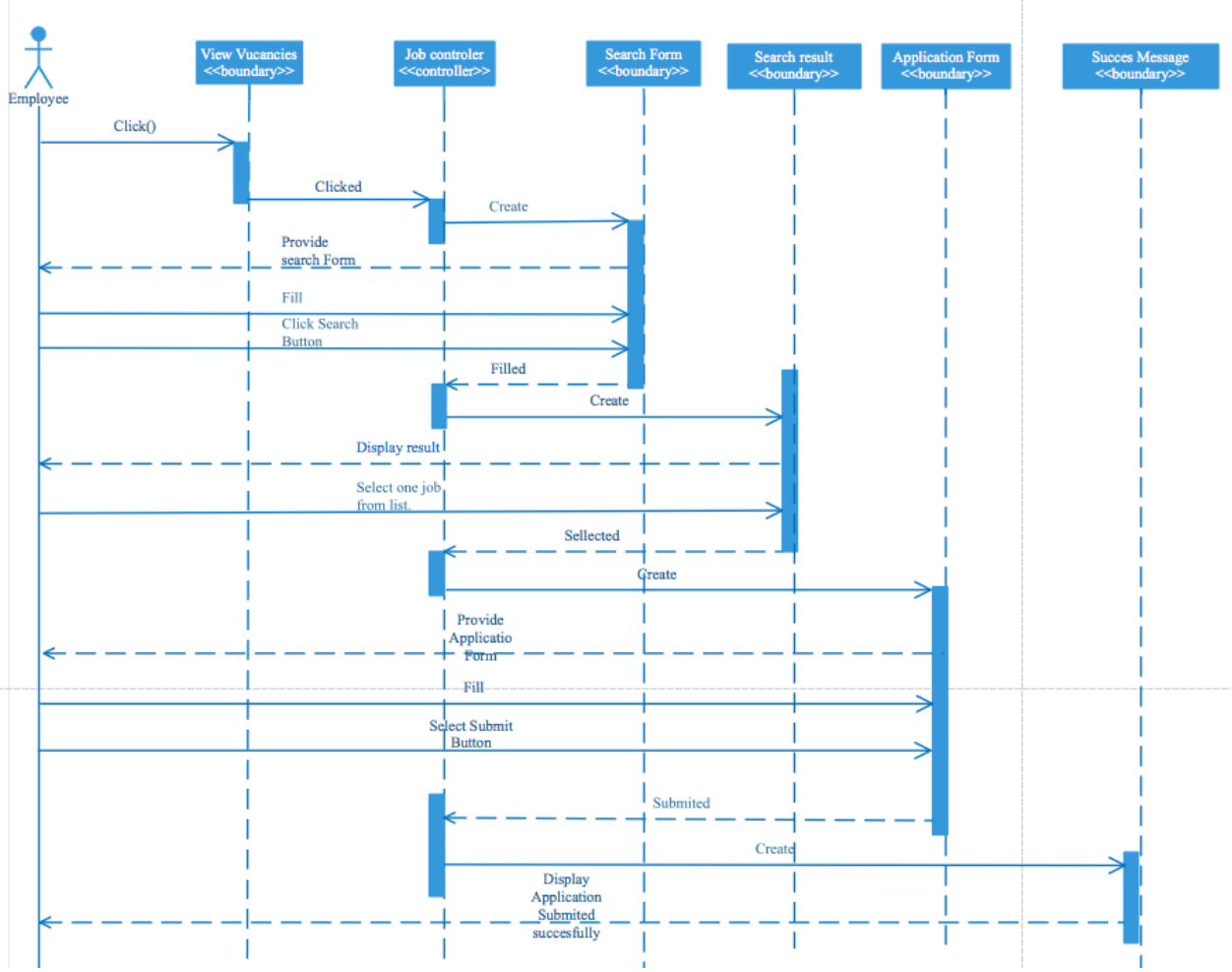

Figure 8 : apply for job

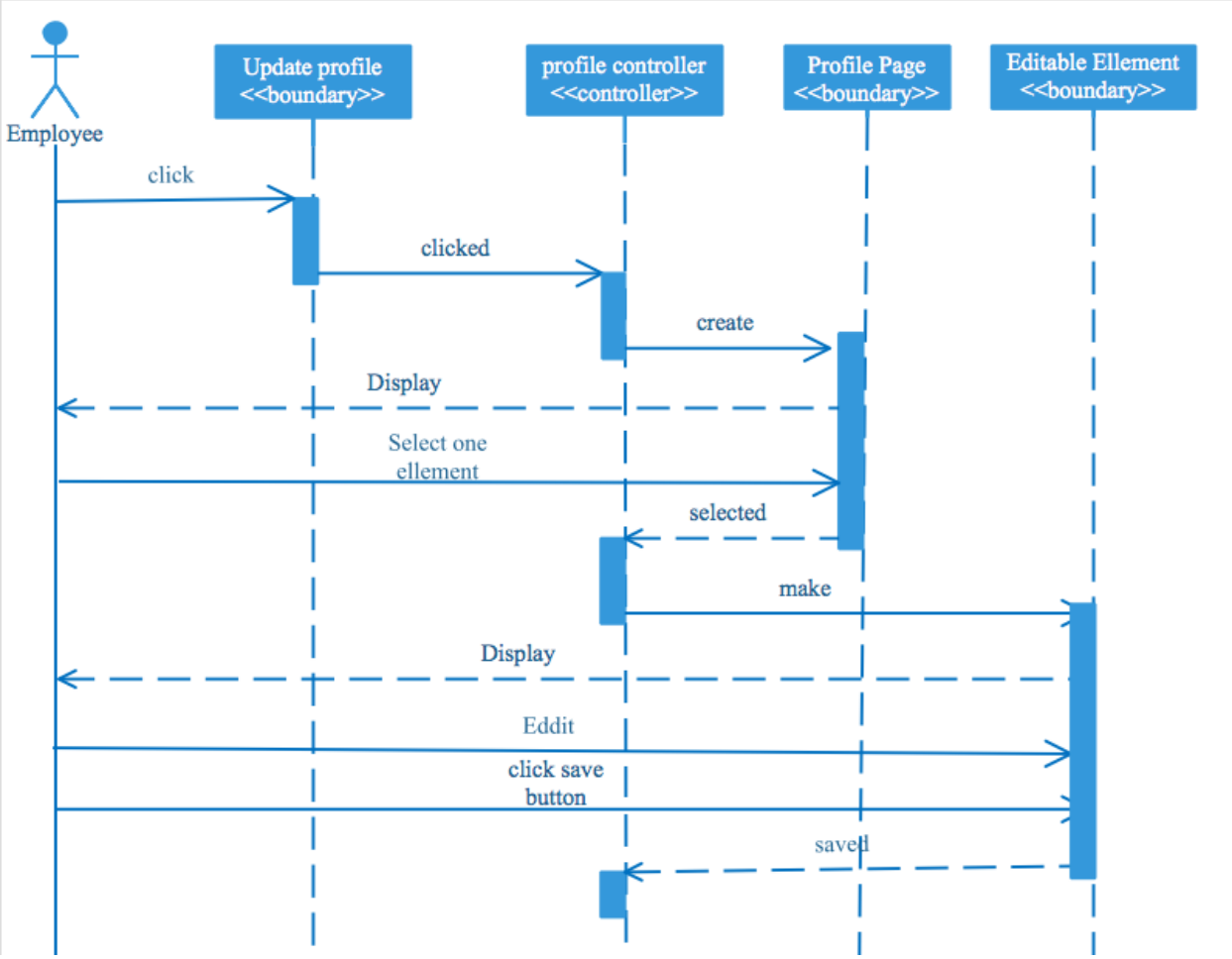

Figure 9 : employee updates profile

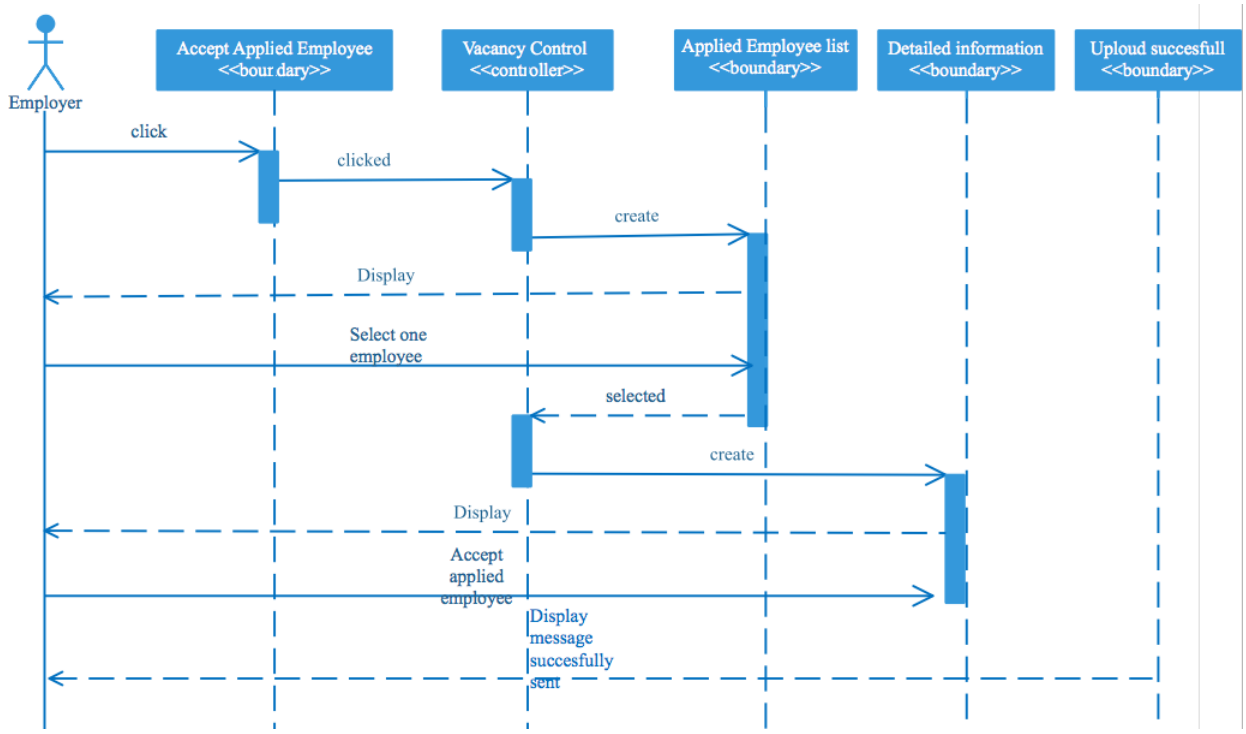

Figure 10 : accept application

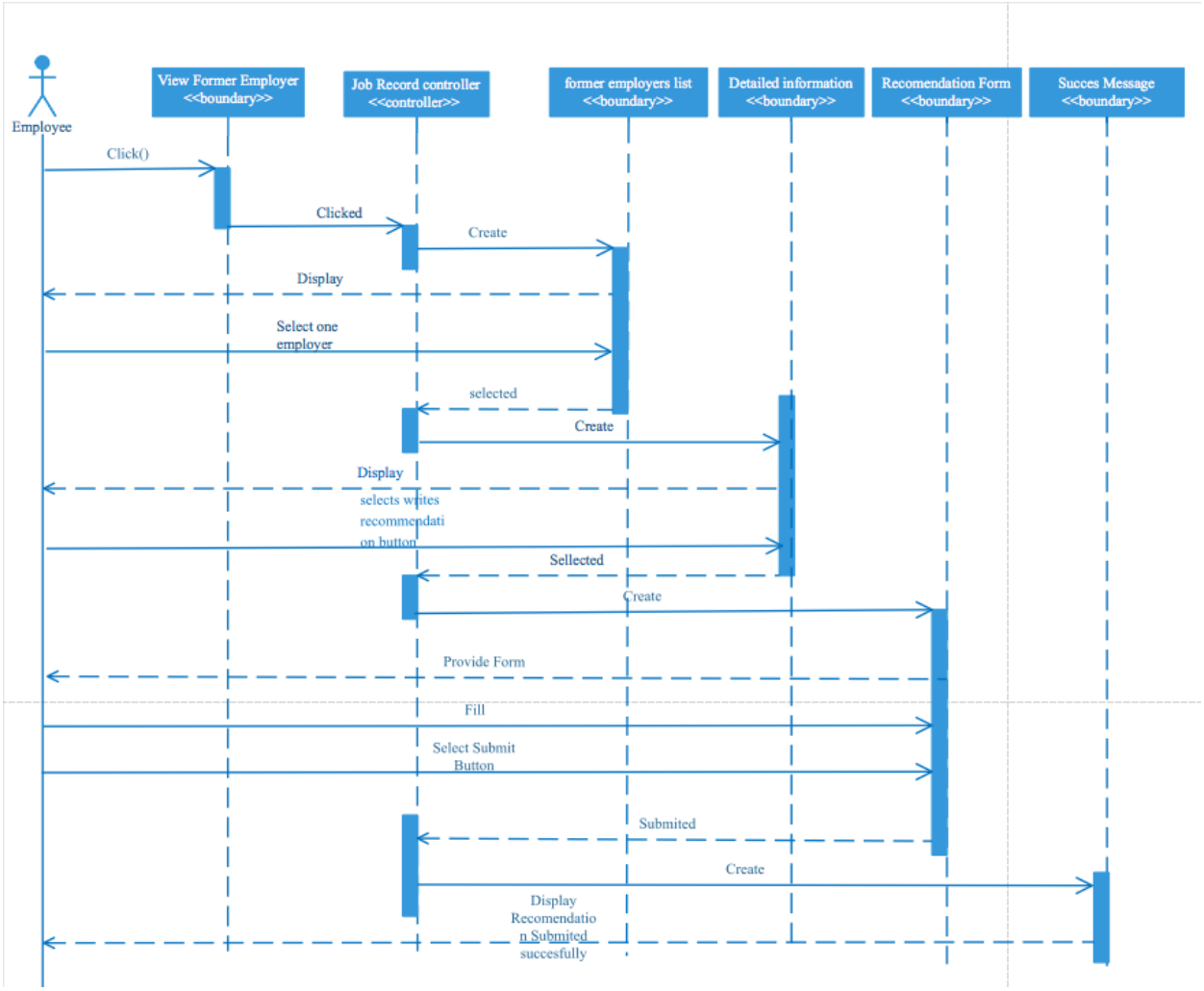

Figure 11 : employee writes recommendation

4. Detailed Design

Table 1User class

User
+Id: string +Name: string Password: string Email: string Phone number:Integer Country: String City: string Registration date: string
login() logout()

Table 2Attributes description for User class

Attribute	Type	Visibility	Invariant
User Id	Integer	Public	User Id<> NULL and must start with either “JS” or “EM”.
Name	String	Public	Name<> NULLand must contain only strings, and the number of characters must not exceed 30.
Password	String	Private	Password <> NULL and ✓ must be at least 8 characters ✓ can’t have above 25 characters ✓ must contain at least one symbol, uppercase character

			or space
Email	String	Public	Email <> NULL and ✓ Must contain @ ✓ Must contain. (dot) ✓ Position of @ >1 ✓ Position of (dot)>position of @ + 2 ✓ Position of (dot)+3<= total length of email address and the total character of the Email is at least 5 characters
Phone Number	Integer	Public	Phone Number<> NULL and must be 10 digits and must start by +251/09
Country	String	Public	Country <> NULL and must be one of pre-defined countries
City	String	Public	City <> NULL and must be one of pre-defined cities
Registration date	Date	Public	Registration date <> NULL and must be in dd-mm-yyyy format

Table 3Operation description for User class

Operation	Visibility	Return type	Pre-Condition	Post Condition
login	Public	void	User should be browsing the homepage.	User's account page should be opened.
logout	Public	void	User's account page should be opened.	User's account page should be closed.

Table 4Jobseeker class

User
Age: Integer

Sex:String

Table 5 Attributes description for Jobseeker class

Attribute	Type	Visibility	Invariant
Age	Integer	Public	Age <> NULL and must be 14 or above.
Sex	String	Public	Sex <> NULL and must be either “male” or “female”.

Table 6 Operation description for Jobseeker class

Operation	Visibility	Return type	Pre-Condition	Post Condition
login	Public	void	User should be browsing homepage.	User’s account page should be opened.
logout	Public	void	User’s account page should be opened.	User’s account page should be closed.

Table 7 Employer class

User
+Level: string
+Addvacancy () +Editvacancy () +View application() +Accept application ()

Table 8 Attributes description for Employer class

Attribute	Type	Visibility	Invariant
Level	String	Public	Level <> NULL and must be either “Individual” or “Company”.

Table 9 Operation description for Employer class

Operation	Visibility	Return type	Argument	Pre-Condition	Post Condition
Addvacancy	Public	void	Job	The employer must login in the system.	Vacancywill be posted.
Editvacancy	Public	void	none	Vacancy should exist.	Updated vacancy will exist.
ViewApplication	Public	void	Application	Application for a vacancy should exist	Application should be viewed.
AcceptApplication	Public	void	Application	Application for a vacancy should viewed	Application should be accepted.

Table 10 Attributes description for Account class

Attribute	Type	Visibility	Invariant
Name	String	Public	Name<> NULL and must contain only strings.
Password	String	Private	Password <> NULL and ✓ must be at least 8 characters ✓ can’t have above 25 characters ✓ must contain at least one symbol, uppercase character or space

Table 11 Operation description for Account class

Operation	Visibility	Return type	Pre-Condition	Post Condition
Create	Public	Void	User should access the job portal.	User's account will be created.
View	Public	Void	User must log in to the created account.	User will view his/her account.

Table 12 Attributes description for Profile class

Attribute	Type	Visibility	Invariant
Images	Supported Format (PNG,JPG…)	Public	NULL
Recommendation	String	Public	NULL
About	String	Public	About <> NULL and must contain strings and characters.

Table 13 Operation description for Profile class

Operation	Visibility	Return type	Pre-Condition	Post Condition
View profile	Public	void	The user must login in the system.	Profile is viewed.

Table 14 Attributes description for Company class

Attribute	Type	Visibility	Invariant
Name	String	Public	Name <>NULLand must contain strings and Characters.
Business stream	String	Public	Business stream <>NULL and must contain strings.

Table 15 Attributes description for Job class

Attribute	Type	Visibility	Invariant
Job type	String	Public	Job type<> NULL and must contain strings.
Created date	Date	Public	Created date<> NULL and must contain Integers and characters.
Job description	String	Public	Job description <> NULL and must contain strings.
Skill required	String	Public	Skill required <> NULL and must contain strings.

Table 16 Operation description for Job class

Operation	Visibility	Return type	Pre-Condition	Post Condition
Search Job	Public	Void	User should search for jobs.	Search results will be displayed.

Table 17 Attributes description for Recommendation class

Attribute	Type	Visibility	Invariant
Date	Date	Public	Date <> NULL,must be in dd-mm-yyyy format.
Written for	String	Public	Written for<> NULL and must contain strings.

Table 18 Operational description for Recommendation class

Operation	Visibility	Return type	Pre-Condition	Post Condition
Create	Public	Void	User should access the job portal.	User's account will be created.
View	Public	Void	User must log in to the created account.	User will view his/her account.

Table 19 Attributes description for vacancy class

Attribute	Type	Visibility	Invariant
Date uploaded	Date	Public	Date<> NULL, must be in dd-mm-yyyy format.
Time uploaded	Date	Public	Date<> NULL, must be in dd-mm-yyyy format.
Deadline	Date	Public	Date<> NULL, must be in dd-mm-yyyy format.
Location	String	Public	Location <> NULL and must contain strings.
Educational qualification	String	Public	Educational qualification <> NULL
Employer ID	String	Public	Id <> NULL and must start with either “JS” or “EM”.

Table 20 Operation description for vacancy class

Operation	Visibility	Return type	Pre-Condition	Post Condition
Add Vacancy	Public	void	The employer adds vacancy.	New vacancy will be posted.