**MINISTRY OF EDUCATION AND TRAINING**

**FPT UNIVERSITY**

Capstone Project Document

**Maid Services**

|  |  |
| --- | --- |
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| **Capstone Project code** | MS-Website |

- Ho Chi Minh City, December 2014-

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# Definitions, Acronyms, and Abbreviations

|  |  |  |
| --- | --- | --- |
| **No.** | **Abbreviation & Acronym** | **Definition** |
| 1 | MS | Maid Service |
| 2 | OS | Operation System |
| 3 | Admin | Administrator |
| 4 | HTTP | Hyper Text Transfer Protocol |

# Introduction

## Project Information

* **Project name:** Maid Services
* **Project Code:** MS-Website
* **Product Type:** Web-based Application
* **Start Date:** September 9, 2014
* **End Date:** December 20, 2014

## Introduction

The main goal of MS Website is to help users to easily find suitable person for taking care of household chores as well as help maids to quickly find a suitable job.

## Current Existence Method

Currently, most of job centers are supplying maid service with many functions such as posting maid’s information, maid searching by criteria (expected salary, age, experiences …) but the customers can’t post their private requests and give rating, comment about the maid that they have recruited. Moreover, maid’s information is not detailed and complete. The system can’t match and suggest the maid to the customer, negotiation and signing the contract are time-consuming.

## System Overview

The system has two main targets:

* **Customer:** busy with works and want to find people who can take care of houseworks for them. Customer can post a recruitment with demanded skills and the system will automatically match that recruitment with suitable job requests. Customer can choose one of them to apply.
* **Maid:** has experience in doing houseworks and want to find a job but doesn’t have knownledge about IT. They can come to talk directly with staff to post a job request or ask a person with knownledge about IT to become a mediator. The mediator can post new job request but still has to pay staff directly to active the posted job request.

## Role and Responsibility

|  |  |  |
| --- | --- | --- |
| **Role and Responsibilities** | **Full name** | **E-mail** |
| Instructor | Nguyễn Trọng Tài | taint@fpt.edu.vn |
| Leader | Bùi Tiến Tuân | tuanbtse60824@fpt.edu.vn |
| Member | Mạnh Quang Tuyến | tuyenmqse60890@fpt.edu.vn |
| Member | Trương Hải Đăng (drop out) | dangthse60841@fpt.edu.vn |
| Member | Nguyễn Tấn Công | congntse60920@fpt.edu.vn |

# Software Project Management Plan

## Problem Definition

### Name of this Capstone Project

* The system is for maid and the people who are searching for maid.
* The language is Vietnamese.
* The end product includes: the website and documents involved with the system.

### Problem Abstract

Nowadays, the demand of playing sports for relaxing after work, studying...more and more decrease especially playing badminton sports. Moreover, there are not many websites supporting for badminton players, badminton court owners and badminton trainers to rent courts, manage courts, manage badminton classes…

This website system is developed and focus on target users are badminton sport fans who want to rent badminton courts for playing; bosses of badminton courts who want to provide for sport fan renting court services; badminton trainers who want to apply teaching jobs; trainees who want to join to badminton course to improve their abilities

### Project Overview

#### The Current System

There are have many website about work such as http://timviec.com, timviecnhanh.com, vietnamworks.com …. But they have some problem:

* **Advantages:** Provider many information about works in Vietnam.
* **Disadvantages:**
  + There is so much information.
  + There is no centralized information about Maid.

#### The Proposed System

Our site focuses on those who are busy with their works so they need to find maids to help them with household chores and the maids who are searching for jobs. Maids can quickly find job for themselves and it also makes it easy for people who are in need of finding maids to choose and recruit. With small amount of money, the website can connect those two together. The maids are people who don’t have much knowledge about IT, so our purpose is to create a website with ease of use and simple.

There are three main users whom the website interacts with including:

* **Maid representation:** Because of the lack of knowledge in IT, they can ask someone has knowledge to become their representation and register for them. Manage requested job, Search jobs, Apply job, View maid statistic.
* **Customer:** Manage recruitment, View customer statistic, Comment, Search maids, Rating, Apply maid.
* **Staff:** Can help maid to register and post info in place of them. Manage post time, Confirm request, Manage fee.

#### Boundaries of the System

* The system is for maid and the people who are searching for maid.
* The language is Vietnamese.
* The end product includes: the website and documents involved with the system.

#### Development Environment

##### Hardware requirements

**For Server**

|  |  |  |
| --- | --- | --- |
| Windows | Minimum Requirements | Recommended |
| Internet Connection | 512Kbs | 1Mbs |
| Operating System | Window 7 | Window 8 |
| Computer Processor | Intel® Core 2 Duo | Intel® Core(TM) i5 CPU , M 460 @ 2.53GHz |
| Computer Memory | 2GB RAM | 3GB or more |

##### Software requirements

* Microsoft Windows 7: Operating System.
* SQL Server 2008 R2: used for managing the database for system.
* StarUML 5.0: designing models and diagrams tools.
* Visual Studio 2012: used to implement website and web service.
* Google Code & TortoiseSVN: used for source control.

## Project organization

### Software Process Model

With the schedule of weekly reports for every stage, the software will be developed by using waterfall model it is very simple and require minimal resource for implementation. With waterfall model, developing process will include six main phases:

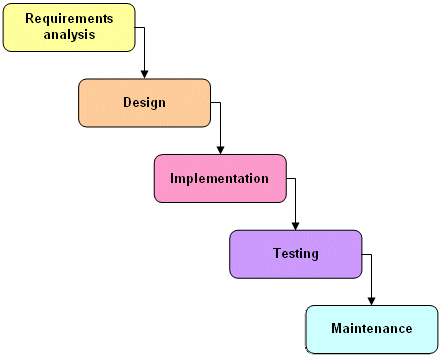


Figure 1: Waterfall model

* **Requirement analysis and software definition**: The first phase is also the most important phase of the process which may cause great effect to other phases. This phase includes gathering as much as possible requirements from customer, or other information source like World Wide Web, and producing a most detail and accurate software definition.
* **System design**: This phase is fundamental for implementation phase. Based on customer’s requirements to create logical modules, and definite their inter relations. Using algorithm and diagram to describe implementation of those modules.
* **Implementation**: This phase consists of actually constructing the product as per the design specification(s) developed in the previous step. Typically, this step is performed by a development team consisting of programmers, interface designers and other specialists, using tools such as compilers, debuggers, interpreters and media editors.
* Testing:
  + **System implementation and Unit testing**: Developing software modules follow detail designs, and doing unit testing for each module.
  + **Integration and System testing**: Testing output, performance in modules integrating process, and retests all functions of whole system.
  + **User acceptance testing**: A proper execution of all the preceding stages ensures an application as per the provided requirements and most importantly, it ensures a satisfied client.
* **System deployment and maintenance**: After testing completely, the software is handle over client, developing team will respond for maintenance of the system.

### Roles and responsibilities

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Full name** | **Role in Group** | **Responsibilities** |
| **1** | Nguyễn Trọng Tài | Project manager | * Specify user requirement * Control the development process * Give out technique and business analysis support |
| **2** | Bùi Tiến Tuân | Team Leader, BA, DEV, Tester | * Managing process * Assign task for team member * Designing database * Clarifying requirements * Prepare documents * GUI Design * Create test plan * Coding * Testing |
| **3** | Mạnh Quang Tuyến | Team Member, BA, DEV, Tester | * Designing database * Clarifying requirements * Prepare documents * GUI Design * Create test plan * Coding * Testing |
| **4** | Trương Hải Đăng | Team Member, BA, DEV, Tester | * Designing database * Clarifying requirements * Prepare documents * GUI Design * Create test plan * Coding * Testing |
| **5** | Nguyễn Tấn Công | Team Member, BA, DEV, Tester | * Designing database * Clarifying requirements * Prepare documents * GUI Design * Create test plan * Coding * Testing |

Table 1: Roles and Responsibility Details

### Tools and Techniques

#### For Development

* Front-end technologies: HTML5, CSS3, JavaScript, jQuery, AJAX.
* Back-end: ASP .NET MVC4, Entity Framework.
* Data Management System: SQL Server 2008 R2.
* IDE: Visual Studio 2012
* System design tool: StartUML
* IIS: web server

#### For Management

-Process and code tracking: Team Foundation Server.

-Tortoise SVN: Document version control and tracking.

## Project Management Plan

### Task

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **#** | **Task** | **Description** | **Output** | **Deliverables** | **Resource Needed** | **Dependencies and Constraints** | **Risk** |
| 1 | Creating Software Requirements Specification (SRS) | Creating SRS | SRS document | SRS document before 18/09/2014 | 4 people for 4 days |  | Lack of experience in getting requirement. |
| 2 | Designing Database | Creating conceptual, logical and physical database. | Database Design and Database script | Design Database before 25/09/2014 | 3 person for 3 days | Depends on the completion of SRS | May not cover all business rules, causing the database design to be inappropriate or must be changed by customers’ requirements. |
| 3 | Creating Software Design Description (SDD) | Design the system in an Object Oriendted Programming. | Architecture design, detailed design, diagrams and design specification | SDD before 30/09/2014 | 4 people for 4 days | Depends on the completion of SRS | Choosing inappropriate architecture and design patterns, causing the system hard to maintain, or wasting coding efforts. |
| 4 | Layout Designing | Create the main GUI for layout | HTML layout, Javascript and CSS files | Complete before 30/09/2013 | 2 person for 1 week |  | There is no professional designers in team. |
| 5 | Create Coding | Map the architecture design into source code, create the project solution files and common classes, and implement common functions. | .Net MVC4 project and solution file contain coding |  | 1 person for 3 days | Dependent on Architecture design and SRS |  |
| 6 | Coding | Implement the system based on the requirements. | Source code of the project, unit test reports | Executable programs and source code before 03/11/2014 | 4 people for 5 weeks | Depends on the completion of SRS, SDD, Database design, Coding framework | Unit test may not be performed thoroughly, it draws needing more efforts in system test phase. |
| 7 | Test Plan | Make a plan for testing | Test plan document | Test plan before 10/11/2014 |  |  |  |
| 8 | System Test | Perform system test for the system. | System test report | Software Test Documentation before 20/11/2014 | 3 people for 4 days | When Coding is finished | There is no professional testers in team. Developers are also do system testing, this may draws compromise. |
| 9 | User Guide | Create User manual document | Report 6 | Report 6 before 06/12/2014 | 3 people for 1 days |  | Unclear document may cause ambigious understanding. |
| 10 | Input Initial Data | Collect and input initial data for the system before release. | Initial data |  | 3 people for 3 days | When coding and system test are finished |  |
| 11 | Deployment | Deploy the system on server. | Running website with domain and hosting | Full Project | 2 people for 3 days | When Coding and system test are finished, initial data is inputted. | The owner host lacks of supporting in some components such as database engine. |

Table 2: Task

### Task Sheet: Assignment and Timetable

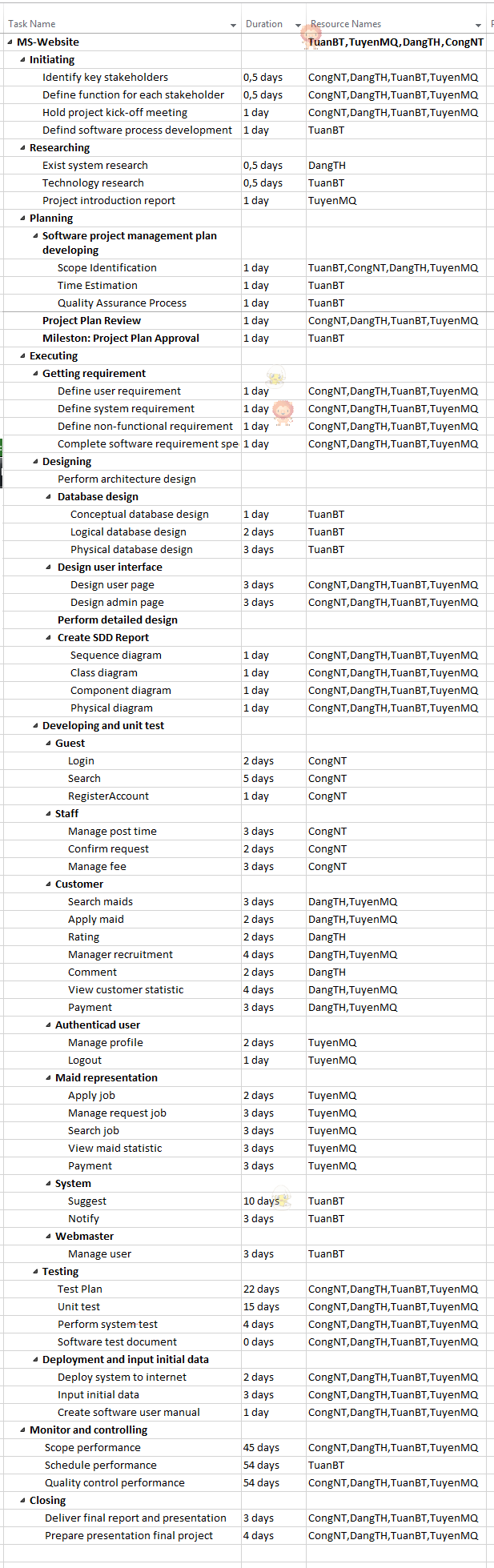


Figure 2: Task Sheet and Assignment

### All Meeting Minutes

Refer to Meeting Minutes folder.

## Coding Convention

C#: Using to develop MS-website.

Summary:

* Naming Convention.
* Indentation.
* Declaration.
* Code Examples.

All “Code Conventions for the C# Programming Language, by Microsoft

<http://msdn.microsoft.com/en-us/library/ff926074.aspx>

# Software Requirement Specification

## User Requirement Specification

### Guest requirement

To satisfy the demand of guest, system has these functions:

* **Register Account:** guest need to register to become member.
* **Login:** when guest have account they can login with username and password.
* **Search:** guest can search information about jobs, before they determine become a member.
* **View JobRequest:** view JobRequest details.
* **View Recruitment:** view Recruitment details.

### Authenticated User requirement

After logging in, user becomes authenticated user and has these functions:

* **View Profile:** user can view profile.
* **Log out:** user can log out .
* **View JobRequest:** view JobRequest details.
* **View Recruitment:** view Recruitment details.

**View Notifications:** view Notifications when system sends.

### Staff requirement

A person: to manage the maid’s request, fee and allow maid to post request.

* **Manage post time**: staff manage maid’s request post time.
* **View post time**: staff can allow customer and maid the time that maid’s request posted.
* **Manage fee**: staff can manage the customer’s fee, maid’s fee
* **Confirm request**: staff can allow the maid’s request to post to the website.
* **View Requests Statistic:** User can view all statistic of request in year.
* **View Income Statistic:** User can view all statistic of income in year.
* **Active Job Request:** Staff can choose of list job request not active, Staff choose one of them was paid money by maid.
* **Active Recruitment:** Staff can choose of list recruitment not active, staff choose one of them was paid money online by paypal from customer.
* **Approve Job Request:** staff to approve job request to public it on website
* **Manage Job Request:** staff view all jobrequests that is not active
* **Manage Recruitment:** staff view all recruitments that is not active
* **Manage Applied Job Request:** staff view all applied jobrequests
* **View Maid Manager Statistic:** staff to view personal statistic as maid
* **Add Maid:** User add maid for management
* **View Maid:** User to view a maid’s detail
* **Edit Maid:** Useredit a maid’s info
* **Public Job Request:** User to public a job request for customer to apply.
* **Hide Job Request:** User to hide a job request and can’t be applied by any customer.
* **Extend Job Request:** User to extend job request.
* **Edit Job Request:** User to edit job request.
* **Post Job Request:** User to post job request.

### Customer requirement

A person: They can hire maid and do all function by Customer roll.

* **Apply Job Request:** Customer use a them Recruitment have status “Waiting” to Apply a JobRequest have status “Waiting” too.
* **Comment Job Request:** When customer applied a JobRequest, they can comment for this JobRequest if Maid come back and tell to staff Approved this Job**.**
* **Rate Job Request:** When customer applied a JobRequest, they can rate for this JobRequest if Maid come back and tell to staff Approved this Job.
* **Edit Customer Profile:** customer to edit profile.
* **Extend Recruitment:** customer to extend recruitment.
* **Hide Recruitment:** Customer to hide a recruitment and can’t be seen by any one.
* **Public Recruitment:** Customer to public a job request for customer to apply.
* **Post Recruitment:** Customer to post job request
* **Edit Recruitment:** Customer to edit recruitment
* **Pay:** Customer will pay online by Paypal for them Recruitment
* **View Customer Statistic:** Customer to view personal statistic as customer.

### Maid mediator requirement

A person: This is a role mediator of maid. They help maid post job request and add Maid.

* **View Maid Manager Statistic**: User to view personal statistic as maid.
* **Add Maid:** User add maid for management
* **View Maid:** User to view a maid’s detail
* **Edit Maid:** Useredit a maid’s info
* **Public Job Request:** User to public a job request for customer to apply.
* **Hide Job Request:** User to hide a job request and can’t be applied by any customer.
* **Extend Job Request:** User to extend job request.
* **Edit Job Request:** User to edit job request.
* **Post Job Request:** User to post job request.

### Webmaster requirement

A person: This is admin of system. They can mange user, config and run algorithm.

* **Add Staff:** User to add maid for management.
* **Manage User:** user to view a maid’s detail
* **Ban Account:** User will ban account
* **Unban Account:** User will active account
* **View Requests Statistic:** View statistic of all request of MS-Website in year
* **View Income Statistic:** View statistic of all income of MS-Website in year
* **Manage Number of Kmean:** Change number K of Kmean algorithm. K same number of group.
* **Manage Number of Weeks:** Change maximum week when user post a JoRequest or Recruiment in to MS-Website.
* **Manage Job Request Price:** Change price when a new JobRequest post to MS-Website.
* **Manage Recruitment Price:** Change price when a new Recruitment post to MS-Website.

### System requirement

A person: this is a system, automatic run some function.

* **Suggests:** system automatically suggest JobRequest for customer when they post a recruitment on MS-Website
* **Send SMS:** Notify for Maid, Customer, Maid Mediator or Staff when Customer apply JobRequest of Maid
* **Send Notifications:** Notify for Maid, Customer, Maid Mediator or Staff when Customer apply JobRequest of Maid. Notify for all Staff when customer report about payment.

## System Requirement Specification

### External Interface Requirement

#### User Interface

* The general interface of website is simple and simplifies user interfaces.
* The design is simple and monochrome is more prefer.
* The layout of information in page is showing simple but full of functions.
* The error, warning and notification messages must be simple, neat, and easy to understand. Error warning does not discomfort to the user.
* The working layout of user is spacious.
* Member can contact with manager and admin easily.

#### Hardware Interface

There is no extra hardware interfaces are needed. The system will use the standard hardware and data communications resources of a standard computer.

#### Software Interface

Browser: Chrome, Firefox

#### Communication Protocol

* Thien Nam website uses HTTP/HTTPS protocol for communication with the web browser and the web server. In addition, TCP/IP network protocol for communication with HTTP protocol

### Functional Requirement

#### System Overview Use Case

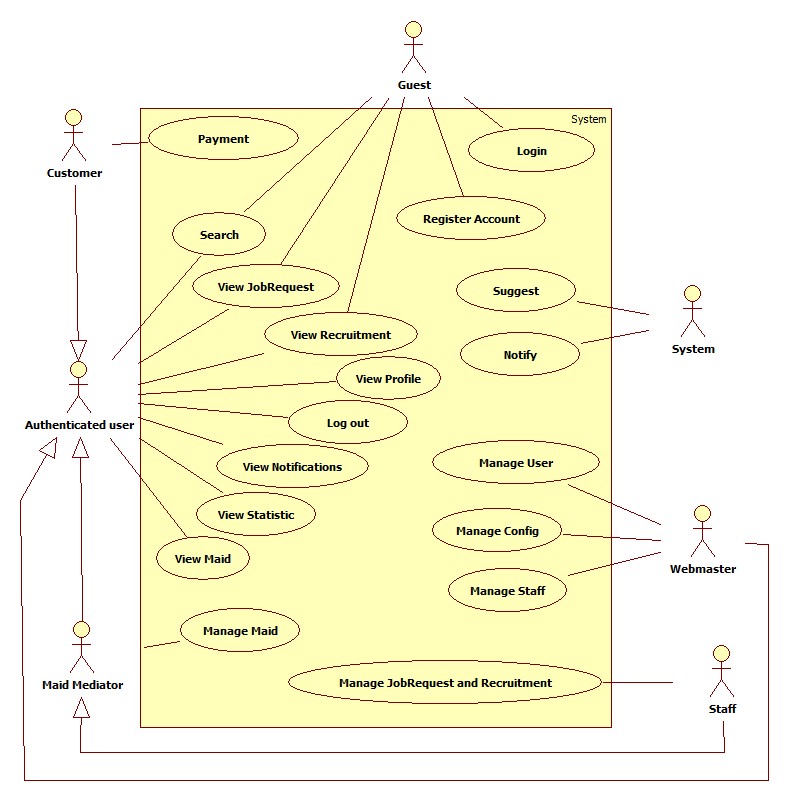


Figure 3: System Overview Use Case

#### List of Use Case

##### <Authenticated user > Search



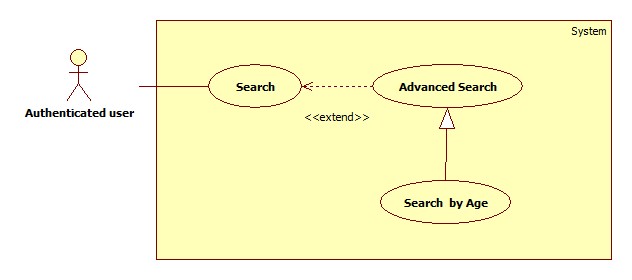
Figure 6: <Authenticated user > Search

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE SPECIFICATION** | | | | |
| **Use-case No.** | UC003 | **Use-case Version** | | 1.0 |
| **Use-case Name** | Search | | | |
| **Author** | CongNT | | | |
| **Date** | 21/09/2014 | **Priority** | High | |
| **Actor:** Guest, Customer, Maid Mediator, Staff, Webmaster.  **Summary:** This use case allow guest can search information on the website  **Goal:** Guest can search information by search job  **Trigger:** Fill in “Tìm kiếm” textbox, then click on “Tìm kiếm” button  **Pre-conditions:**   * Page is loaded successfully * The search page will shown   **Post conditions:**   * Success: Search successfully, the system will shown search result * Failure: N/A   **Main Success Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. Fill in “Tìm kiếm” text box 2. Click on “Tìm kiếm” button | 1. System redirect to search page for guest and show search results |   **Alternative Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | N/A | N/A |   **Exceptions:**   |  |  | | --- | --- | | Actor Action | System Response | | N/A | N/A |   **Relationships:**  **Business Rules:** All of role can search but search results are different in some roles:   * If user is a guest, search results are jobrequests and recruitments. * If user is a staff, customer or webmaster, search results are jobrequests and recruitments. * If user is a maid mediator, search results are jobrequests. | | | | |

##### C:\Users\USER\Desktop\AdvanceSearch.jpg< Authenticated user >Advance Search

Figure 7: < Authenticated user >Advance Search

###### <Authenticated user> Search by Age

Figure 8: <Authenticated user> Search by Age

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| **USE CASE SPECIFICATION** | | | | |
| **Use-case No.** | UC004 | **Use-case Version** | | 1.0 |
| **Use-case Name** | Search by age | | | |
| **Author** | CongNT | | | |
| **Date** | 21/09/2014 | **Priority** | High | |
| **Actor:** Guest, Customer, Maid Mediator, Staff, Webmaster.  **Summary:** This use case allow guest can search information by age  **Goal:** Guest can search information by search age  **Trigger:** Click on age radio button on website  **Pre-conditions:**   * Page is loaded successfully * The search page will shown   **Post conditions:**   * Success: Search successfully, the system will shown search result * Failure: N/A   **Main Success Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. Fill in “Tìm kiếm” text box 2. Click on “Tìm kiếm” button 3. Click on “25-30” or “30-35” or “35-40” link | 1. System redirect to search page for guest 2. Show the result suitable for each link |   **Alternative Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | N/A | N/A |   **Exceptions:**   |  |  | | --- | --- | | Actor Action | System Response | | N/A | N/A |   **Relationships:** Search by age is generated with AdvancedSearch and AdvancedSearch is extended to Search  **Business Rules:** All of role can search but search results are different in some roles:   * If user is a guest, search results are jobrequests and recruitments. * If user is a staff, customer or webmaster, search results are jobrequests and recruitments. * If user is a maid mediator, search results are jobrequests. | | | | |

###### C:\Users\USER\Desktop\SearchbySkill.jpg<Authenticated user> Search by Skill

Figure 9: <Authenticated user> Search by Skill

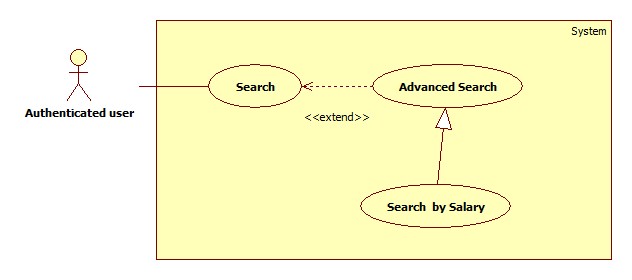
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| **USE CASE SPECIFICATION** | | | | |
| **Use-case No.** | UC005 | **Use-case Version** | | 1.0 |
| **Use-case Name** | Search by skill | | | |
| **Author** | CongNT | | | |
| **Date** | 21/09/2014 | **Priority** | High | |
| **Actor:** Guest, Customer, Maid Mediator, Staff, Webmaster.  **Summary:** This use case allow guest can search information by skill  **Goal:** Guest can search information by search skill  **Trigger:** Click on skill radio button on website  **Pre-conditions:**   * Page is loaded successfully * The search page will shown   **Post conditions:**   * Success: Search successfully, the system will shown search result * Failure: N/A   **Main Success Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. Fill in “Tìm kiếm” text box 2. Click on “Tìm kiếm” button 3. Click on skill radio button of skill | 1. System redirect to search page 2. Show the result suitable for each button |   **Alternative Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | N/A | N/A |   **Exceptions:**   |  |  | | --- | --- | | Actor Action | System Response | | N/A | N/A |   **Relationships:** Search by skill is generated with AdvancedSearch and AdvancedSearch is extended to Search  **Business Rules:** All of role can search but search results are different in some roles:   * If user is a guest, search results are jobrequests and recruitments. * If user is a staff or webmaster, search results are jobrequests and recruitments. * If user is a maid mediator, search results are recruitment. * If user is a customer, search results are jobrequests. | | | | |

###### C:\Users\USER\Desktop\SearchbyGender.jpg<Authenticated user> Search by Gender

Figure 10: <Authenticated user> Search by Gender

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| **USE CASE SPECIFICATION** | | | | |
| **Use-case No.** | UC006 | **Use-case Version** | | 1.0 |
| **Use-case Name** | Search by gender | | | |
| **Author** | CongNT | | | |
| **Date** | 21/09/2014 | **Priority** | High | |
| **Actor:** Guest, Customer, Maid Mediator, Staff, Webmaster.  **Summary:** This use case allow guest can search information by gender  **Goal:** Guest can search information by search name  **Trigger:** Click on gender radio button on website  **Pre-conditions:**   * Page is loaded successfully * The search page will shown   **Post conditions:**   * Success: Search successfully, the system will shown search result * Failure: N/A   **Main Success Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. Fill in “Tìm kiếm” text box 2. Click on “Tìm kiếm” button 3. Click on “Nam” or “Nữ” link | 1. System redirect to search page for guest 2. Show the result suitable for each link |   **Alternative Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | N/A | N/A |   **Exceptions:**   |  |  | | --- | --- | | Actor Action | System Response | | N/A | N/A |   **Relationships:** Search by gender is generated with AdvancedSearch and AdvancedSearch is extended to Search  **Business Rules:** All of role can search but search results are different in some roles:   * If user is a guest, search results are jobrequests and recruitments. * If user is a staff, customer or webmaster, search results are jobrequests and recruitments. * If user is a maid mediator, search results are jobrequests. | | | | |

###### <Authenticated user> Search by Salary

Figure 11: <Authenticated user> Search by Salary

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| **USE CASE SPECIFICATION** | | | | |
| **Use-case No.** | UC007 | **Use-case Version** | | 1.0 |
| **Use-case Name** | Search by salary | | | |
| **Author** | CongNT | | | |
| **Date** | 21/09/2014 | **Priority** | High | |
| **Actor:** Guest, Customer, Maid Mediator, Staff, Webmaster.  **Summary:** This use case allow guest can search information by salary  **Goal:** Guest can search information by search salary  **Trigger:** Click on salary radio button on website  **Pre-conditions:**   * Page is loaded successfully * The search page will shown   **Post conditions:**   * Success: Search successfully, the system will shown search result * Failure:   **Main Success Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. Fill in “Tìm kiếm” text box 2. Click on “Tìm kiếm” button 3. Click on “Dưới 3 triệu” or “3-5 triệu” or “trên 5 triệu” link | 1. System redirect to search page for guest 2. Show the result suitable for each link |   **Alternative Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | N/A | N/A |   **Exceptions:**   |  |  | | --- | --- | | Actor Action | System Response | | N/A | N/A |   **Relationships:** Search by salary is generated with AdvancedSearch and AdvancedSearch is extended to Search  **Business Rules:** All of role can search but search results are different in some roles:   * If user is a guest, search results are jobrequests and recruitments. * If user is a staff, customer or webmaster, search results are jobrequests and recruitments. * If user is a maid mediator, search results are jobrequests. | | | | |

###### C:\Users\USER\Desktop\SearchbyTime.jpg<Authenticated user> Search by Time

Figure 12: <Authenticated user> Search by Salary

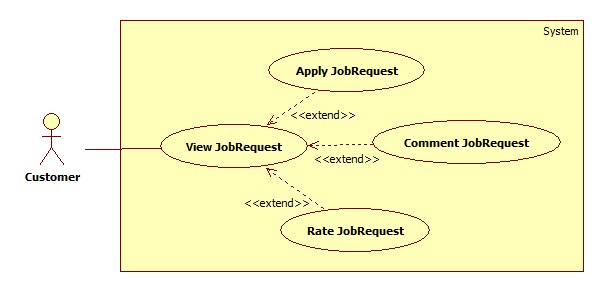
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| **USE CASE SPECIFICATION** | | | | |
| **Use-case No.** | UC008 | **Use-case Version** | | 1.0 |
| **Use-case Name** | Search by time | | | |
| **Author** | CongNT | | | |
| **Date** | 21/09/2014 | **Priority** | High | |
| **Actor:** Guest, Customer, Maid Mediator, Staff, Webmaster.  **Summary:** This use case allow guest can search information by time  **Goal:** Guest can search information by search time  **Trigger:** Click on time radio button on website  **Pre-conditions:**   * Page is loaded successfully * The search page will shown   **Post conditions:**   * Success: Search successfully, the system will shown search result * Failure:   **Main Success Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. Fill in “Tìm kiếm” text box 2. Click on “Tìm kiếm” button 3. Click on “Cách đây 1 ngày” or “Cách đây 3 ngày” or “Cách đây 5 ngày” or “Cách đây 7 ngày” or “Cách đây 14 ngày” or “Cách đây 30 ngày” link | 1. System redirect to search page for guest 2. Show the result suitable for each link |   **Alternative Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | N/A | N/A |   **Exceptions:**   |  |  | | --- | --- | | Actor Action | System Response | | N/A | N/A |   **Relationships:** Search by time is generated with AdvancedSearch and AdvancedSearch is extended to Search  **Business Rules:** All of role can search but search results are different in some roles:   * If user is a guest, search results are jobrequests and recruitments. * If user is a staff, customer or webmaster, search results are jobrequests and recruitments. * If user is a maid mediator, search results are jobrequests. | | | | |

##### <System> Suggest JobRequest

Figure 26: <System> Suggest JobRequest 

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| **USE CASE SPECIFICATION** | | | | |
| **Use-case No.** | UC021 | **Use-case Version** | | 1.0 |
| **Use-case Name** | Suggest JobRequest | | | |
| **Author** | TuanBT | | | |
| **Date** | 24/09/2014 | **Priority** | High | |
| **Actor:** System  **Summary:** system automatically suggest JobRequest for customer when they post a recruitment on MS-Website.  **Goal:**  The use case will help MS-Website suggest JobRequest for customer when they post a recruitment.  **Trigger:**   * Click [Đăng yêu cầu tuyển việc] button. * Fill all data. * Click [Đăng yêu cầu] button.   **Pre-conditions:**   * Post an invalid recruitment.   **Post conditions:**   * Success: Suggested JobRequests list will appear. * Failure: Nothing is displayed at suggesting field.   **Main Success Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. User click on the [Đăng yêu cầu tuyển việc] button. | 1. Show suggested JobRequests list.   [Exception 1] |   **Alternative Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | N/A | N/A |   **Exceptions:**   |  |  | | --- | --- | | Actor Ation | System Response | | 1. System fail to load data | 1. Show suggested JobRequests list |   **Relationships:** N/A  **Business Rules:**  When customer posts a Recruitment, the system will use Kmean Algorithms to put this Recruitment in a group. The system will show up to 10 JobRequests with status “Waiting” and isActive is True in the same group. The JobRequests list will be arranged in order of descending by distance from the center point of that group. | | | | |

##### <Customer> View JobRequest

Figure 29: <Customer> View JobRequest 

###### <Customer> Apply JobRequest

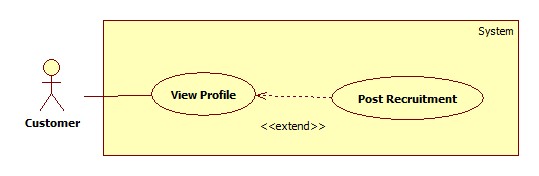
Figure 30: <Customer> Apply JobRequest 

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| **USE CASE SPECIFICATION** | | | | |
| **Use-case No.** | UC024 | **Use-case Version** | | 1.0 |
| **Use-case Name** | Apply JobRequest | | | |
| **Author** | TuanBT | | | |
| **Date** | 24/09/2014 | **Priority** | High | |
| **Actor:** Customer  **Summary:** Customer use a them Recruitment have status “Waiting” to Apply a JobRequest have status “Waiting” too.  **Goal:**  Apply JobRequest.  **Trigger:** Click button “Thuê"  **Pre-conditions:**   * User must login with Customer role   **Post conditions:**   * Success: Reload page. Name of Customer show at status line. * Failure: Show error “Thuê thất bại”   **Main Success Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. Customer click a JobRequest have status “Waiting”, then click “Thuê” button.  3. Choose a Recruitment from list Radio button. Then click “Đồng ý” button | 2. Show modal “Xin chọn một đơn tuyển việc”.  4. Show status “Đã được thuê”.  [Exception1] |   **Alternative Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | |  |  |   **Exceptions:**   |  |  | | --- | --- | | Actor Action | System Response | | [Exception 1]  1. Customer click “Chấp nhận” from modal. | 2. Show error “Công việc đã được thuê bởi khách hàng khác” |   **Relationships:** Apply JobRequest is extend of View JobRequest  **Business Rules:**  JobRequest must have status “Waiting”. Have two cases when applying JobRequest: Choose a JobRequest from suggestion of system in Recruitment detail, choose JobRequest from Index or Search. In first case, system automatic choose current Recruitment to apply suggested JobRequest. The second case, customer have to choose one of Recruitments List, if they don’t have any Recruitment, they must post a recruitment.  Sometime this JobRequest is applied by another customer or expired by that time. Customer can not apply JobRequest and receive an error. | | | | |

##### <Customer> View Profile

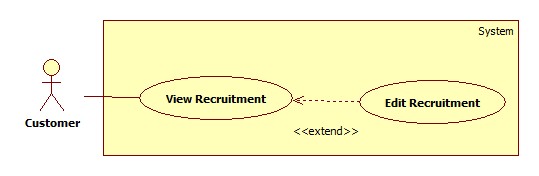
Figure 33: <Customer> View Profile

###### <Customer> Post Recruitment

Figure 38: <Customer> Post Recruitment 

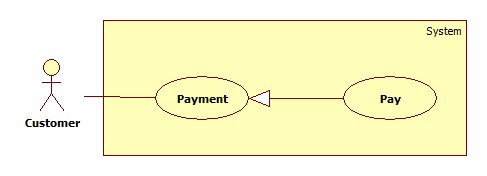
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| --- | --- | --- | --- | --- |
| **USE CASE SPECIFICATION** | | | | |
| **Use-case No.** | UC031 | **Use-case Version** | | 1.0 |
| **Use-case Name** | Post Recruitment | | | |
| **Author** | TuanBT | | | |
| **Date** | 24/09/2014 | **Priority** | High | |
| **Actor:** Customer  **Summary:** This use case allow customer to post recruitment  **Goal:** Customer can post recruitment  **Trigger:** User clicks “Đăng yêu cầu tuyển việc” link in personal profile page  **Pre-conditions:**   * Page is loaded successfully * User login as customer successful   **Post conditions:**   * Success: Post recruitment successfully, new recruitment and skill reference are added to database * Failure: Show error message   **Main Success Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. Login as a customer 2. Click the name link 3. Click “Đăng yêu cầu tuyển việc” link 4. Fill all the fields 5. Click “Đăng yêu cầu” button | 1. System redirects to homepage 2. System redirects to personal profile page 3. System redirect post jobrequest page with following fields  * Tiêu đề [Title: dropdownlist] * Các kỹ năng [SkillRefId: textbox] * Thời hạn đăng [PostTime: textbox] * “Đăng yêu cầu” button   [Exception 1]   1. System redirects to new recruitment’s detail page |   **Alternative Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | N/A | N/A |   **Exceptions:**   |  |  | | --- | --- | | Actor Action | System Response | | [Exception 1]   1. “Tiêu đề” is empty 2. “Các kỹ năng” is empty | 1. Show message “Vui lòng nhập tiêu đề” 2. Show message “Vui lòng chọn kĩ năng” |   **Relationships:** Is an extension of View Profile  **Business Rules:** This use caseis only available for Customer. User clicks on “Đăng yêu cầu tuyển việc” link to go to request adding page which displays all required fields for a recruitment to be created. With “Thời hạn đăng”, customer can only choose max number week of system and each week customer will be subtract a money from system. | | | | |

###### <Customer> Edit Recruitment

Figure 39: <Customer> Edit Recruitment

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| **USE CASE SPECIFICATION** | | | | |
| **Use-case No.** | UC032 | **Use-case Version** | | 1.0 |
| **Use-case Name** | Edit Recruitment | | | |
| **Author** | TuanBT | | | |
| **Date** | 24/09/2014 | **Priority** | High | |
| **Actor:** Customer  **Summary:** This use case allow customer to edit recruitment  **Goal:** Customer can edit recruiment  **Trigger:** User click “Sửa thông tin tuyển người giúp việc” link in recruitment detail page  **Pre-conditions:**   * Page is loaded successfully * User login as customer successful   **Post conditions:**   * Success: Edit recruitment successfully, job request’s detail and skill reference’s detail are updated in database * Failure: Show error message   **Main Success Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. Login as a customer  3. Click the name link  5. Click a job request link in “Chưa kích hoạt” tab  7. Click “Sửa thông tin tuyển người giúp việc” link  9. Fill all the fields  11. Click “Sửa yêu cầu” button | 2. System redirects to homepage  4. System redirects to personal profile page  6. System redirects to job request detail page  8. System redirects to job request editing page displaying following fields with info of the job request accordingly:   * Tiêu đề [Title: dropdownlist] * Các kỹ năng [SkillRefId: textbox] * “Sửa yêu cầu” button   [Exception 1]  10. System redirects to edited job request’s detail page |   **Alternative Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | N/A | N/A |   **Exceptions:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. Recruitment is active  [Exception 1]  3. “Tiêu đề” is empty  5. “Các kỹ năng” is empty | 2. Show alert message “Yêu cầu đã hết hạn cho sửa”  4. Show message “Vui lòng nhập tiêu đề”  6. Show message “Vui lòng chọn kĩ năng” |   **Relationships:** Is an extension of View Recruitment  **Business Rules:** This use caseis only available for customer. In “Chưa kích hoạt” tab click a recruitment link to go to job request detail page. Click “Sửa thông tin tuyển người giúp việc” link to go to recruitment editing page. User edit the info then click “Sửa yêu cầu” button to complete the editing process. Only inactive recruitment have this function, so if the user click “Sửa thông tin tuyển người giúp việc” link of active recruitment, the alert message “Yêu cầu đã hết hạn cho sửa” will be displayed. | | | | |

##### <Customer> Pay

Figure 40: <Customer> Pay

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| **USE CASE SPECIFICATION** | | | | |
| **Use-case No.** | UC033 | **Use-case Version** | | 1.0 |
| **Use-case Name** | Pay | | | |
| **Author** | TuanBT | | | |
| **Date** | 24/09/2014 | **Priority** | High | |
| **Actor:** Customer  **Summary:** Customer will pay online by Paypal for their recruitment.  **Goal:**  Pay online by Paypal.  **Trigger:** Post success a recruitment.  **Pre-conditions:**   * User must login with customer role * Paypal button will be shown   **Post conditions:**   * Success: Status of recruitment change to Watting mean “Đang chờ người làm”. * Failure: Button Paypal not hide.   **Main Success Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. Click Paypal button.  3. Do pay money. | 2. System redirect to Paypal Page.  4. Button Paypal hide, status of Recruitment change to “Đang chờ người làm”.  [Exception 1] |   **Alternative Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | [Alternative 1]  1. Customer click a Recruitment form “Hết hạn” tab in Profile page. Then Click “Gia hạn” button.  3. Click Paypal button.  5. Do pay money.  [Alternative 2]  1. Customer click title a Recruitment from “Hết hạn” tab in Profile page.  3. Click “Gia hạn” button.  5. Do pay money. | 2. System show “Gia hạn đơn tuyển việc” modal.  4. System redirect to Paypal page.  6. Button Paypal hide, status of Recruitment change to “Đang chờ người làm”.  [Exception 1]  2. System redirect to “Tin tìm người giúp việc” page.  4. System redirect to Paypal page.  6. Button Paypal hide, status of Recruitment change to “Đang chờ người làm”.  [Exception 1] |   **Exceptions:**   |  |  | | --- | --- | | Actor Action | System Response | | [Exception 1]  1. Paypal page not return MS-Website. | 2. Paypal button not Hide. |   **Relationships:** Pay is generalization Payment  **Business Rules:** Recruitment must have paypal account to pay. If the payment process is not successful because whatever resons is, Customer can click “Ấn vào đây” in “Nếu bạn đã thanh toán?” Box in “Tin tìm người giúp việc” page, to contact Staff. After that, Staff must go to website to check if that Recruitment is paid or not. If it is paid, Staff goes to management page to active this Recruitment. | | | | |

##### <Staff, MaidMediator> Post JobRequest

Figure 51: <Staff, MaidMediator> Post JobRequest

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| **USE CASE SPECIFICATION** | | | | |
| **Use-case No.** | UC043 | **Use-case Version** | | 1.0 |
| **Use-case Name** | Post JobRequest | | | |
| **Author** | TuyenMQ | | | |
| **Date** | 21/09/2014 | **Priority** | High | |
| **Actor:** Staff, Maid Mediator  **Summary:** This use case allow staff or maid mediator to post job request  **Goal:** Staff or maid mediator can post job request  **Trigger:** User clicks “Đăng yêu cầu tìm việc” link in personal profile page  **Pre-conditions:**   * Page is loaded successfully * User login as staff or maid mediator successful   **Post conditions:**   * Success: Post job request successfully, new job request and skill reference are added to database * Failure: Show error message   **Main Success Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. Login as a staff or maid mediator 2. Click the name link 3. Click “Đăng yêu cầu công việc” link 4. Fill all the fields 5. Click “Đăng yêu cầu” button | 1. System redirects to homepage 2. System redirects to personal profile page 3. System redirect post jobrequest page with following fields:  * Đăng cho [MaidName: textbox] * Tiêu đề [Title: dropdownlist] * Các kỹ năng [SkillRefId: textbox] * Thời hạn đăng [PostTime: textbox] * “Đăng yêu cầu” button   [Exception 1]   1. System redirects to new job request’s detail page |   **Alternative Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | N/A | N/A |   **Exceptions:**   |  |  | | --- | --- | | Actor Action | System Response | | [Exception 1]   1. “Đăng cho” is empty 2. “Tiêu đề” is empty 3. “Các kỹ năng” is empty | 1. Show message “Vui lòng chọn người giúp việc” 2. Show message “Vui lòng nhập tiêu đề” 3. Show message “Vui lòng chọn kĩ năng” |   **Relationships:** Is an extension of View Profile  **Business Rules:** This use caseis only available for maid mediator and staff, so user must log in as one of these two roles. After logging in, user clicks the name link to go to personal profile page. User clicks on “Đăng yêu cầu công việc” link to go to request adding page which displays all required fields for a job request to be created. There are 3 mandatory fields: “Đăng cho” (User must choose a maid from the managed maids list to post this job request for that maid), “Tiêu đề”, “Các kĩ năng” (User must choose at least a skill from the skills list). After completing all the fields, user can click “Đăng yêu cầu” button to complete posting a new job request. New job request is added to JobRequest table and new skill reference is added to SkillReference table in database. The system redirects to new added job request’s detail page. | | | | |

##### <Staff> Manage JobRequest and Recruitment

Figure 52: <Staff> Manage JobRequest and Recruitment 

###### <Staff> Active JobRequest

Figure 53: <Staff> Active JobRequest 

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| **USE CASE SPECIFICATION** | | | | |
| **Use-case No.** | UC044 | **Use-case Version** | | 1.0 |
| **Use-case Name** | Active JobRequest | | | |
| **Author** | CongNT | | | |
| **Date** | 21/09/2014 | **Priority** | High | |
| **Actor:** Staff  **Summary:** This use case allow staff to active job request to public it on website  **Goal:** Staff can allow job request to public on website  **Trigger:** User choose a job request then click “Chấp nhận” button  **Pre-conditions:**   * Page is loaded successfully * User login as staff successful   **Post conditions:**   * Success: Login successfully, the job request will be allowed to public on website * Failure:   **Main Success Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. Login as a staff 2. Choose a job request, click “Kích hoạt” button 3. Click “Chấp nhận” button. | 1. System redirect to list of job request 2. System show a “Xác nhận kích hoạt” pop up. 3. Change IsActive(false) to IsActive(true) and save change to database |   **Alternative Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | N/A | N/A |   **Exceptions:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. System fail to load data | 1. Show message “Hệ thống đang bảo trì” |   **Relationships:** Active JobRequest is extended to ManageJobRequest and Manage JobRequest is generated to Manage JobRequest and Recruitment.  **Business Rules:** User login as a staff. | | | | |

###### <Staff> Active Recruitment

Figure 54: <Staff> Active Recruitment

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| **USE CASE SPECIFICATION** | | | | |
| **Use-case No.** | UC045 | **Use-case Version** | | 1.0 |
| **Use-case Name** | Active Recruitment | | | |
| **Author** | CongNT | | | |
| **Date** | 21/09/2014 | **Priority** | High | |
| **Actor:** Staff  **Summary:** This use case allow staff to active job request to public it on website  **Goal:** Staff can allow job request to public on website  **Trigger:** User choose a recruitment then click “Chấp nhận” button  **Pre-conditions:**   * Page is loaded successfully * User login as staff successful   **Post conditions:**   * Success: Login successfully, the job request will be allowed to public on website * Failure:   **Main Success Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. Login as a staff 2. Click “Xác nhận hoàn tất công việc” link 3. Choose a recruitment, click “Hoàn tất” button 4. Click “Chấp nhận” button. | 1. System redirect to list of job request 2. System redirect to list of applied job requests 3. System show a “Xác nhận kích hoạt” pop up. 4. Change IsActive(false) to IsActive(true) and save change to database |   **Alternative Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | N/A | N/A |   **Exceptions:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. System fail to load data | 1. Show message “Hệ thống đang bảo trì” |   **Relationships:** Active Recruitment is extended to Manage Recruitment and Manage Recruitment is generated to Manage JobRequest and Recruitment.  **Business Rules:** User login as a staff and the website load all | | | | |

### Non-functional Requirement

#### Usability

##### Graphic User Interface

* All the text, label and image in user page should be in Vietnamese.
* All the text, label and image in admin page should be Vietnamese.

##### Usability

* Website admin, supervisor and roundman only need more than one hour to train.

##### Installation

* The system must be easy to deploy. Customer can deploy successfully and learn to configure, maintain the system within one day of training.
* The attached manual guide must be clear. User can read and do themselves without developer’s help.

#### Reliability

* There is no requirement for system maintenance task from the user.
* Mean Time Between Failures (MTBF): more than 6 months.
* Accuracy: 100%.
* Maximum Bugs and Defect Rate: 0.3 bugs per thousand lines of code (0.3bugs/KLOC).
* Critical bugs:
* Loss of data: not any

#### Availability

* The server shall be working 24 hours per day and 7 days per week.

#### Security

* *All sensitive* information (password, etc.) must be hashed when storing in database and during transmission over networks using MD5 hash.
* Validate input data in SQL query before execute to avoid SQL Injection, XSS
* The role of user and member is clearly.

#### Maintainability

* All code shall fully document. All program files shall include comments concerning authorship and date of last change.
* The code shall be modular to permit future modifications.

#### Portability

* N/A

#### Performance

* Large tables and indexes must be partitioned data into smaller, more manageable sections by using partition in SQL Server 2008 R2

## Entity Relationship Diagram

### Diagram

Figure 64: Entity Relationship Diagram

# Software Design Description

## Design Overview

* This document describes the technical and UI design of the MS Wesite. It includes the architectural design and the detailed design of common functions and business functions. It also includes the design of database model.
* The architectural design describes the overall architecture of the system, and the architecture of each main component and subsystem. It will describe the patterns being used, the role of each component and the role of the system in the working environment.
* The detailed design describes static and dynamic structure for each component and function. It includes class diagrams, class explanations, and sequence diagrams of the main use cases. **UML 2.0**.
* The database design describes the relationship between entities, and details of each entity.
* The user interface design describes the layout of the system, and some design for the screens.

## System Architectural Design

In MVC pattern, the functions of model, view, and controller are defined as in following figure.

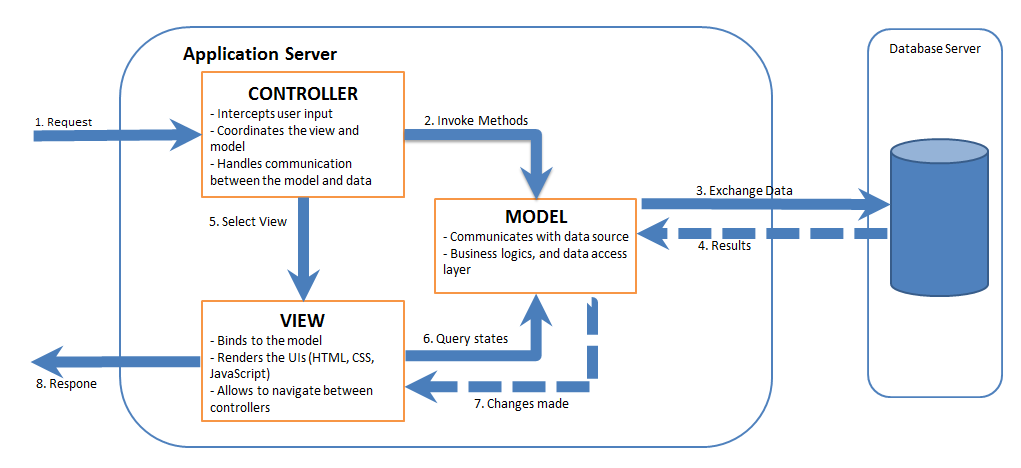


Figure 65: MVC Pattern

## Component Diagram

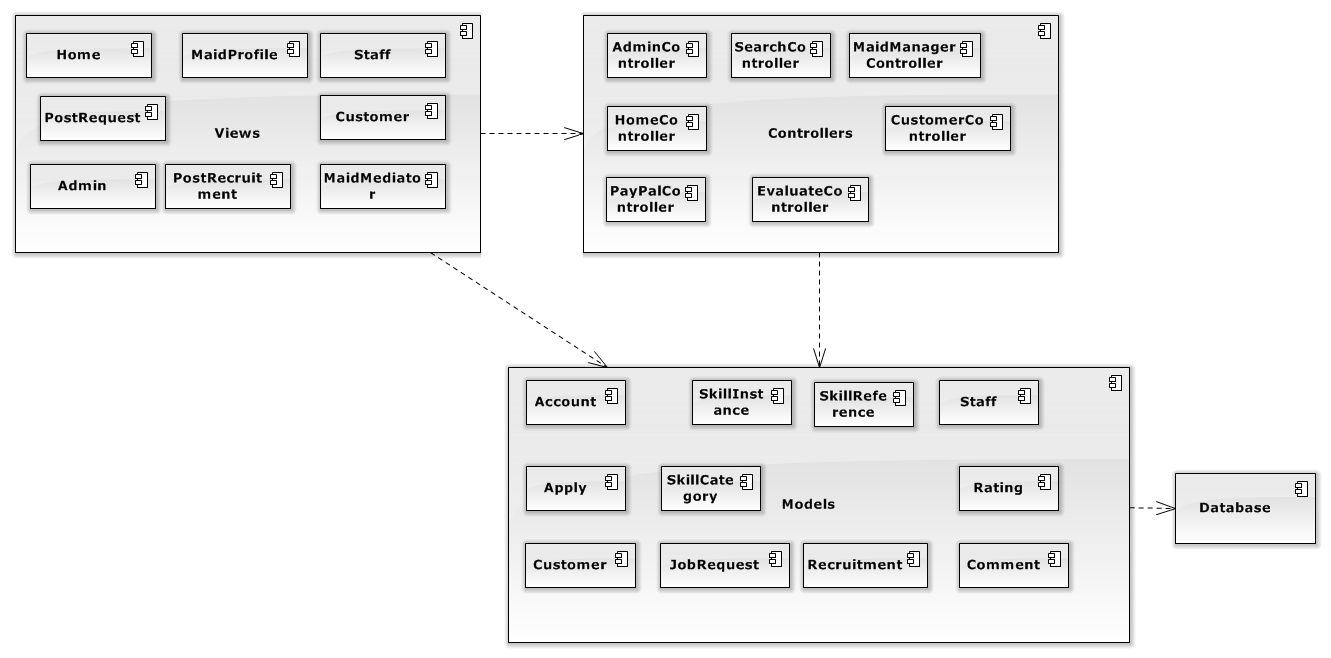


Figure 66: Component Diagram

## Detailed Description of Components

### Class Diagram

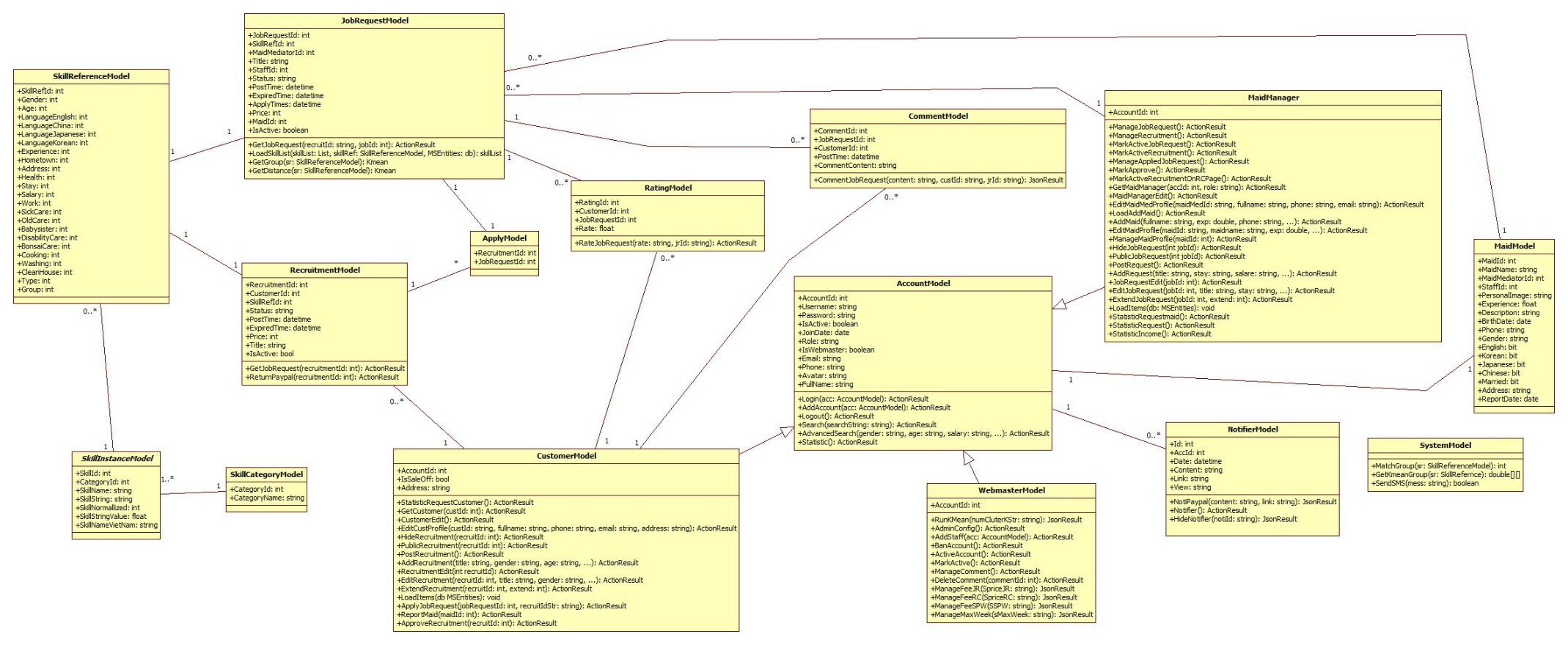


Figure 67: Class Diagram

### Sequence Diagram

#### All User Sequence Diagram

##### <All User> View Job Request

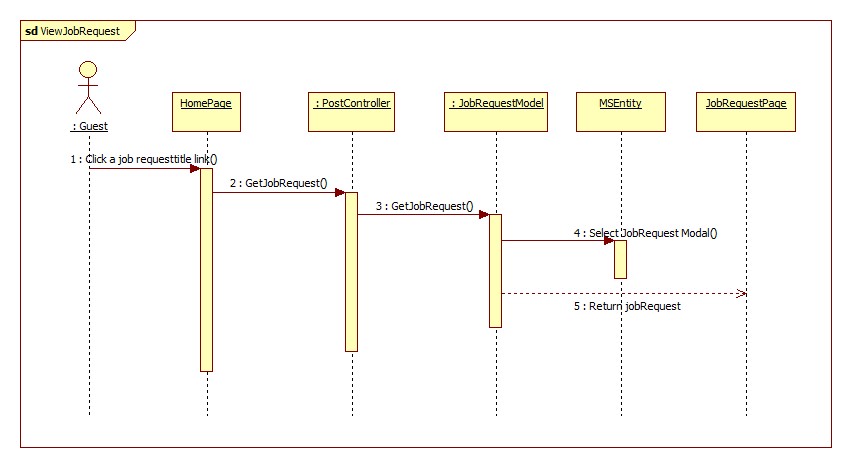


Figure 70: <All User> View Job Request

##### <All User> View Recruitment

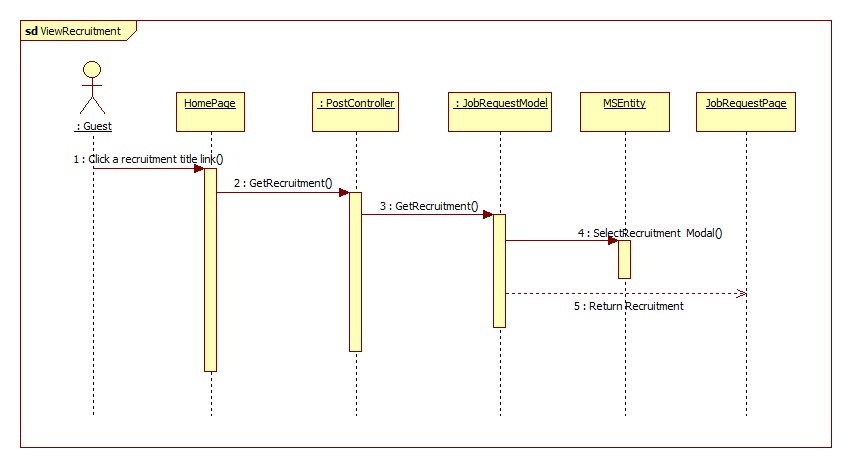


Figure 71: <All User> View Recruitment

##### <All User> Search

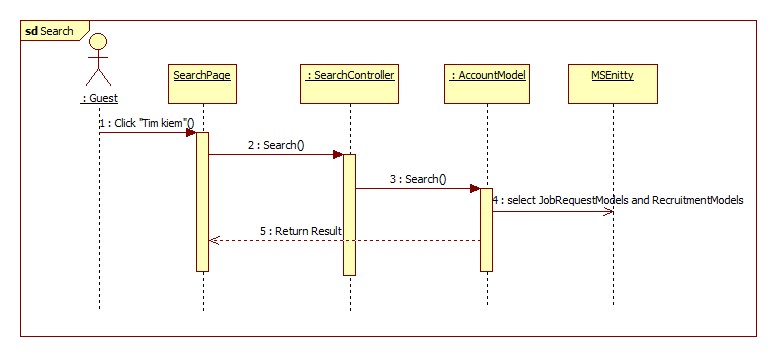


Figure 72: <All User> Search

#### Authenticated user Sequence Diagram

##### <Authenticated user> View Customer

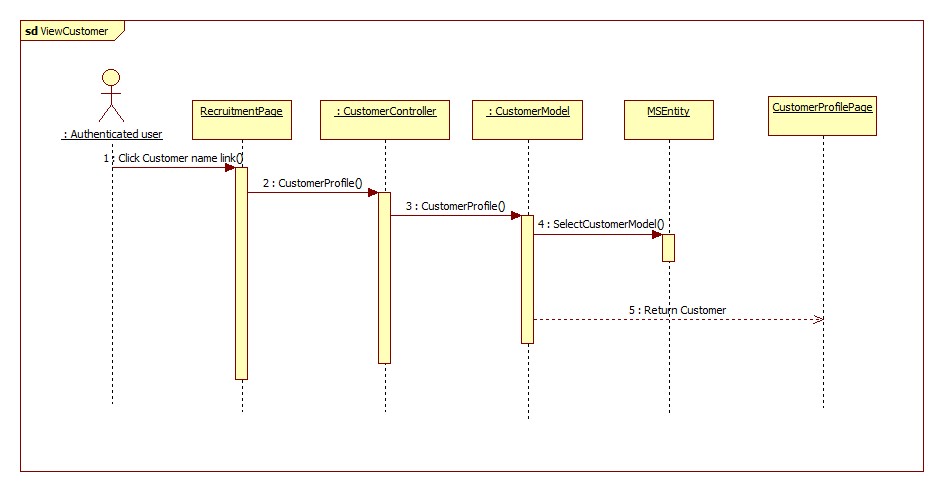


Figure 73: <Authenticated user> View Customer

##### <Authenticated user> View Maid

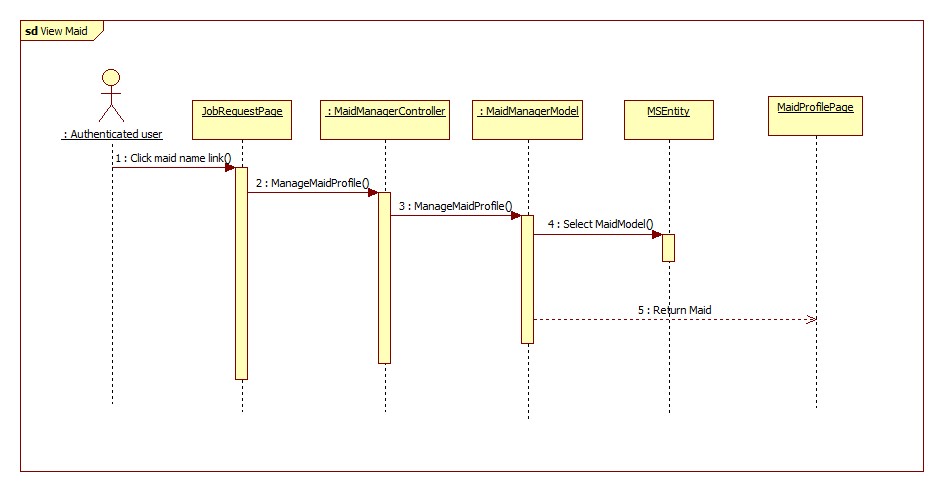


Figure 74: <Authenticated user> View Maid

#### Customer Sequence Diagram

##### <Customer> Apply Job Request

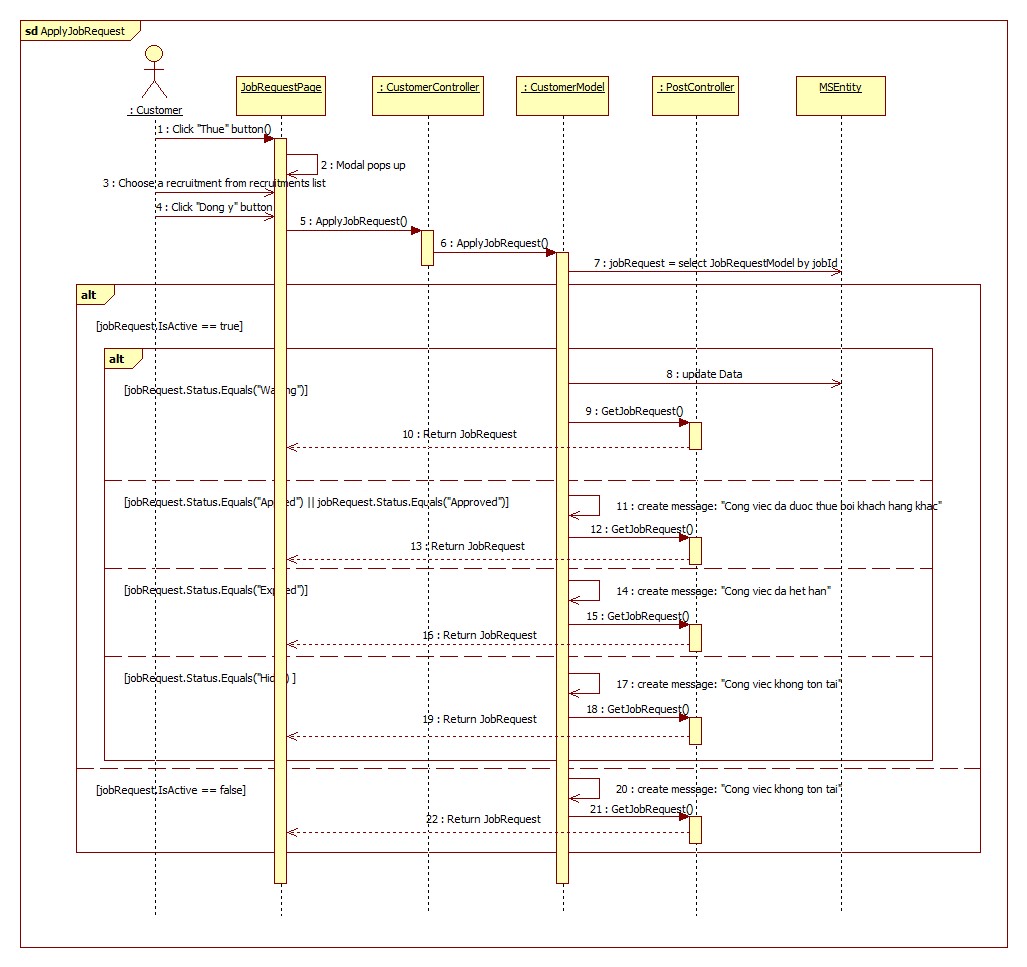


Figure 75: <Customer> Apply Job Request

##### <Customer> Post Recruitment

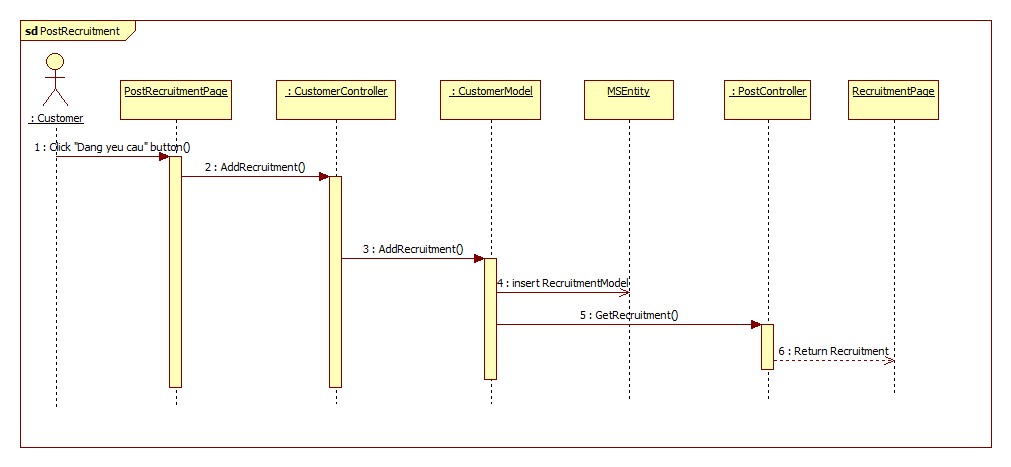


Figure 80: <Customer> Post Recruitment

##### <Customer> Report Maid

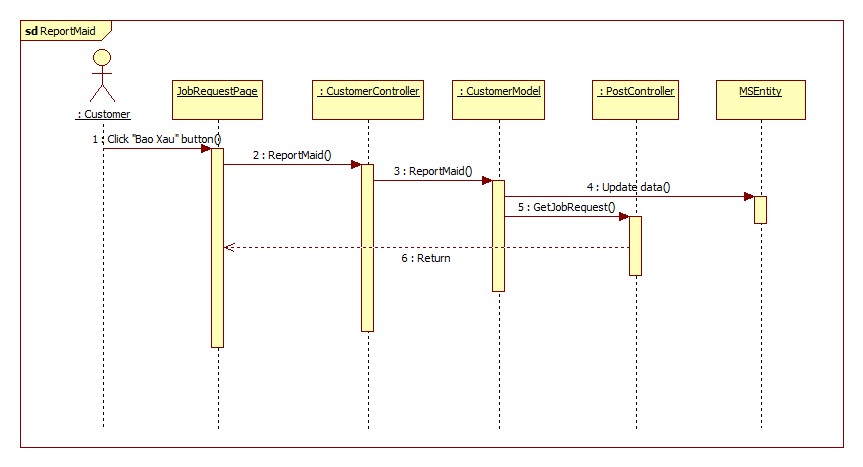


Figure 82: <Customer> Rate Job Request

##### <Customer> Approve Recruitment

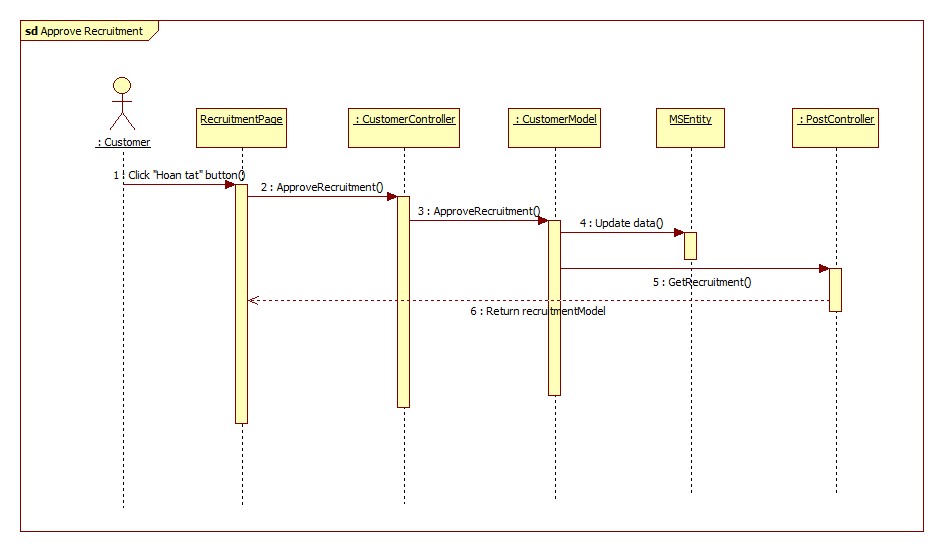


Figure 82: <Customer> Rate Job Request

#### Staff Sequence Diagram

##### <Staff> Activate Job Request

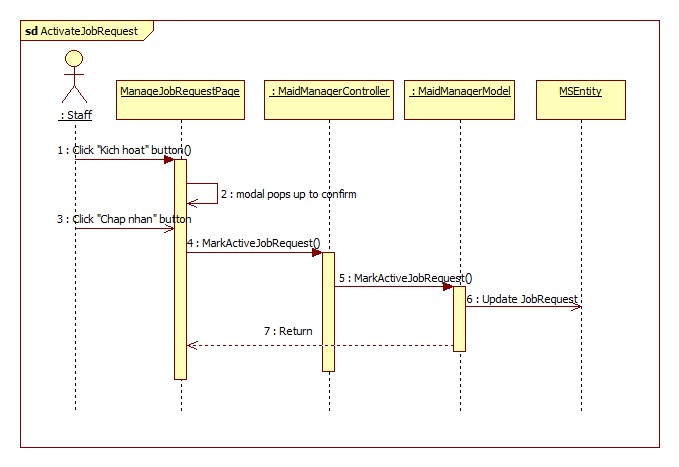


Figure 83: <Staff> Activate Job Request

##### <Staff> Activate Recruitment

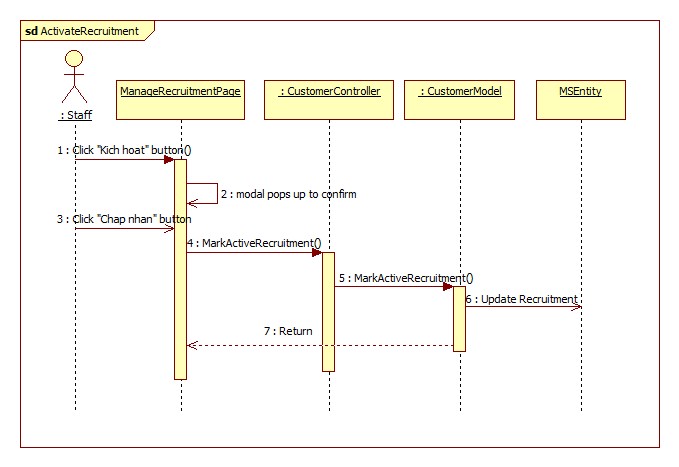


Figure 84: <Staff> Activate Recruitment

##### <Staff> Mark Approved Job Request

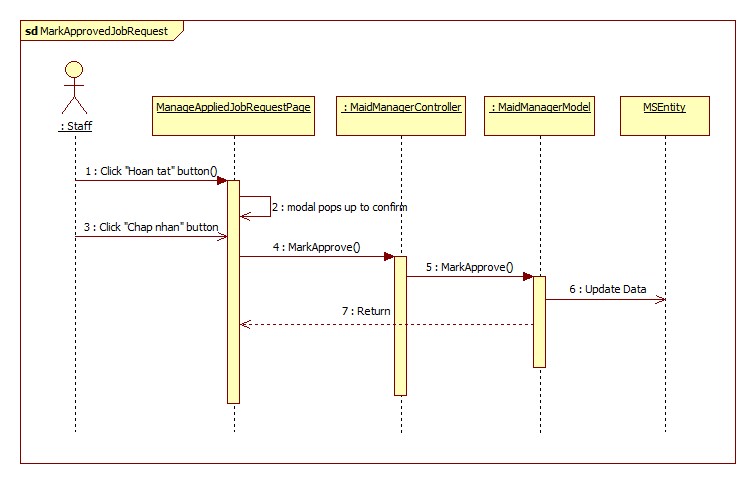


Figure 85: <Staff> Mark Approved Job Request

#### Staff, Maid Mediator Sequence Diagram

##### <Staff, Maid Mediator> Post Job Request

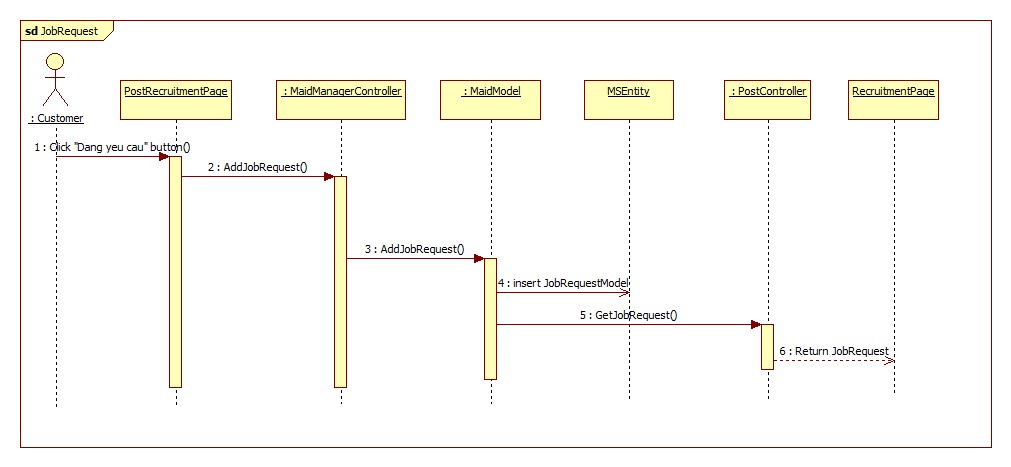


Figure 91: <Staff, Maid Mediator> Post Job Request

##### <Staff, Maid Mediator> Public Job Request

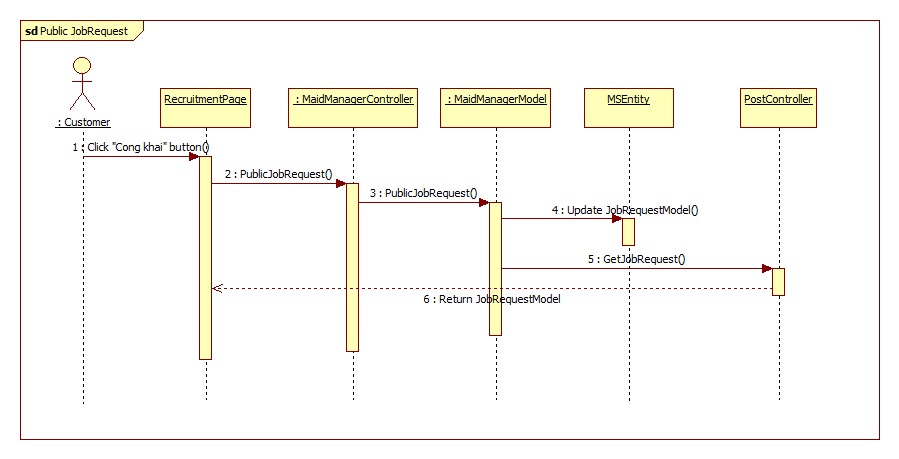


Figure 92: <Staff, Maid Mediator> Public Job Request

## Database Design

### Physical Database Design

Figure 109: Physcial Database Diagram

## Algorithms

### Overview

* k-means clustering is a method of vector quantization, originally from signal processing, that is popular for cluster analysis in data mining. k-means clustering aims to partition n observations into k clusters in which each observation belongs to the cluster with the nearest mean, serving as a prototype of the cluster. This results in a partitioning of the data space into Voronoi cells.
* The problem is computationally difficult (NP-hard); however, there are efficient heuristic algorithms that are commonly employed and converge quickly to a local optimum. These are usually similar to the expectation-maximization algorithm for mixtures of Gaussian distributions via an iterative refinement approach employed by both algorithms. Additionally, they both use cluster centers to model the data; however, k-means clustering tends to find clusters of comparable spatial extent, while the expectation-maximization mechanism allows clusters to have different shapes.
* This is automatically function, help system classify each job request and recruitment from maid and customer. Function give all request become n-group. From there, system can be suggest for user about: Job requests same RecruitmentApply.

#### K-Mean

* System feel need create new group for Job request and recruitment. Because each group should have maximum 10 element.
* When web master click run classify, all job request and recruitment has been calculate by algorithm, and make new group.
* New group based on similar of value from column Normalize of data.
* A file contain k mean, with k is number of group. This file will be save on server of website.
* After run algorithm, in database, all SkillReferent job request and recruitment is “Watting” status will be divided into k group.

#### KNN

* User login with customer role.
* They post a recruitment or job request on website.
* System automatic analysis and choose group for this recruitment or job request.
* From there, system can suggest for customer all job request same group with this recruitment.

### Detail

#### K-Mean

* Normalize value. This step help return value same distant.
* Random group for value.
* Choose a number k. In MS-Website, system suggest each group at job request and recruitment should have 10 element. Therefore, if job request have 100 rows we should choose k equal 10. Choose random k mean.
* Calculate the distance between the objects (objects) to K center (usually Euclidean distance).
* Group objects to the nearest group.
* Define the new mean for the group.
* Repeat until no change in any group of objects.
* Write mean to file and save this file in server.

#### KNN

* With input value, system calculate distance from this to k mean of mean file on sever.
* Find minimum distance from this point to means. This value will belong minimum mean group.

Start

Number of cluster K

Centroid

Distance object to centroids

Grouping based on minimum distance

No object move group?

End