



**MIDDLE EAST TECHNICAL UNIVERSITY**

**ENGINEERING FACULTY**

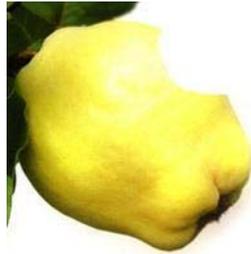
**DEPARTMENT OF COMPUTER ENGINEERING**

**FINAL DESIGN REPORT**

**SUBJECT: ONLINECV**

**ASSISTANT: ALI ORKAN BAYER**

**“İŞKOLIK” *BY AIVA***



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# **1. INTRODUCTION**

In preparation of this report our main goal is to explain the design of our project “Iskolik” as clearly as possible. This report is conceived in the way lit by the requirement analysis report initial design report written priorly. In our design report the scope of the project, functional and nonfunctional requirements, survey about the technologies, use case diagrams, activity diagrams and ER diagram had been mentioned. Addition to the stuff we had prepared before, class diagrams, sequence diagrams and modular specifications will be revealed. The detailed design of our system will be presented in the final design report.

## **1.1 Project Scope and Definition**

In this project we aim to build “a gateway portal for HR companies & institutions to provide service to job seekers and employers”. In other words we want to develop a web portal to be the single entry point to both job seekers and employers.

Our Web portal will be above all the job-seeking web sites and the job seeker won't be obliged to submit his/her CV to all these web sites. When he/she creates a CV in our web portal, it will be sent to all the job-seeking web sites and also he/she will be able to see all the job announcements from all of the job-seeking web sites. Also our portal will be very helpful to the employers because he/she will be able to see appropriate job-seekers from all over the job-seeking web sites and also he/she will be able to create a job announcement when he pay a certain amount of money. It is obvious that by means of the services that our system will provide both job-seekers and HR institutions will be relieved.

Our system will be in contact with some job-seeking websites which we agreed. Users in our web portal will not need to enter all of the job-seeking websites on the Internet, our system will have the capability to do it for them. Consequently, our system will pretend the job-seekers and employers from wasting their time on the

web to seek for job, job-seeker or submit CV, job announcement etc. Our system will keep all of the users in our system in contact with many job-seeking websites.

## **1.2Project Scope**

Our system will have many capabilities for job-seeker, employer, operator and administrator. Here are general features that will take place in our portal.

- All of the users will be obliged to register firstly to our system. Our system will send an activation mail to the e-mail address of user. If the user is to activate his/her account, a profile as job-seeker or employer will be initiated in our system.
- All of the users will be obliged to login to our system to use the web-portal. When he/she enters the correct login data (username and password) to the website then he/she will be directed to his/her home page. All the information regarded to his/her profile will be displayed in this home page.
- If the user has the job-seeker profile in our system, the functionalities provided for that user will be as follows: Firstly, he/she will be able to create or update a CV then submit it to our system and the other job-seeking websites which supply services to us. Secondly, he/she will be able to search job opportunities, all of the relevant job opportunities from our system and the other job-seeking websites, which supply services to us, will be displayed. Finally he/she will be able see some job opportunities in his/her home page regarding to his/her sector, city etc. This notification system is supplied by our web portal if the user wants.
- If the user has the employer profile in our system, the functionalities provided for that user will be able to user will be as follows: Firstly, he/she will be able to form or update job announcement. After he/she pay a certain amount of money, our system will submit it to one or many of other job-seeking (chosen by the employer) websites which supply services to us. Secondly, he/she will be able to search for the job-seekers, all of the relevant job-seekers' CVs

information from our system and the other job-seeking websites, which supply services to us, will be displayed. Finally he/she will be able see some job-seekers CVs in his/her home page regarding to job announcements submitted by him/her. This notification system is supplied by our web portal if the user wants.

- If the user has the administrator profile in our system, the functionalities provided for that user will be as follows: Firstly, he/she will be able to manage the users among the system. Administrator can warn some users if the user submits an inappropriate CV or job announcement, remove some users from the system. Secondly he/she will be able to remove some inappropriate job announcements from the system.
- There will be one more profile in our system which is operator. If the user has the operator profile in our system, the functionalities provided for that user will be as follows: The operator will be in charge of the money transactions and changing the payment status of the job announcement if necessary.
- All the users will be able to see the statistical data which has been collected. The statistical data will include the distribution of users among the industries, what percentages of employers have been able to find the employees they had been looking for and the number of employees who have been able to find the perfect job they had been looking for in the specified periods.
- Another important issue in our system is money. Firstly, when employer submits job announcement, 30 percent of money will be our profit and 70 percent will be sent to the external web site chosen by the employer. Secondly, when job-seeker submits CV, no money will be demanded. Finally, aiming to motivate the users to give feedback about the profit announcements we will apply a discount of 5 percent for the following announcements they will post.

## 2. SYSTEM MODULES

### 2.1 Overview

Our system consists of seven modules, namely Database, Operator, External System, Authentication, Job-seeker, Employer and Administrator. During division of our system into modules our main goal was encapsulation i.e. creation of modules that would have least connection with other modules and which would handle most operations within. We decided to make separation by logical functionalities that are required from our system like operator admin and external systems. Two modules database and external system do interfacing to database and external system, so that each of other modules do not need to handle interfacing with those separately, we call these *interfacing modules*.

Authentication provides routines for registration and logging in of existing users. Once logged in user's operations are handled by corresponding module. Other modules correspond to different user profiles: job-seeker, administrator, operator and employer.

### 2.2 Job Seeker Module

Job-seeker module handles all operations job-seeker might request. These operations are handled either directly or indirectly by calling methods of interfacing modules. Classes with relations among them are shown in corresponding class diagram in class diagrams section. CVInfo class contains all data CV contains; CVManagement handles validation submission and displaying operations of CV. For submission it calls corresponding external system and database module routines. Job-seeker class encapsulates runtime information relevant to the job-seeker. SearchJobWS is essentially web-service which implements job-seeking functionality. The feedback received from external systems is send as input to ProcessJobSearchFeedBackWS which sorts feedback. After sorting the feedback is presented to job-seeker. Notification submodule consists of two webservices NotifyWS and ProcessWS, NotifyWS is triggered by login in of job-seeker, inside it makes use of ProcessWS for determining whether to notify given job-seekers about new postings.

## 2.3 Employer Module

Employer module handles all operations employer might request. These operations are handled either directly or indirectly (by calling methods of interfacing modules). Classes along with relations among them are shown in corresponding class diagram in class diagrams section. AnnouncementInfo class contains all data announcement contains. AnnouncementManagement handles validation, posting, updating and displaying operations of Announcement. For posting it calls corresponding external system and database module routines. Employer class encapsulates runtime information relevant to the job-seeker. SearchEmployeeWS is a web-service which implements employee-seeking functionality. The feedback received from external systems is send as input to ProcessEmployeeSearchFeedBackWS which sorts feedback. After sorting the feedback is presented to job-seeker. Notification sub-module consists of two web-services NotifyWS and ProcessWS, NotifyWS is triggered by login in of employer, inside it makes use of ProcessWS for determining whether to notify given employee about postings. AcknowledgeOfPayment as its name implies handles the issue of acknowledging employee of payment associated with posting of an announcement.

## 2.4 Administrator Module

Administrator module handles all operations of administrator. Classes along with relations among them are shown in corresponding class diagram in class diagrams section.

- AddUser() - manual adding of a new user.
- ActivateUser() – activating user
- DeactivateUser() – deactivating user
- DeleteUser() – removal of user
- FetchAnnouncement() – fetching list of announcements
- FetchCV() fetching CVs of users
- DeleteAnnouncement() – removal of announcement
- CheckJobAnnouncement() – checking of job-announcement
- ChangeJobAnnouncementStatus() – change status of an announcement

- FetchUserActivities() – bring activities list of a user
- SendMessageToUser() – send email to user

## **2.5 Operator Module**

Operator module handles all operations operator might request are handled either directly or indirectly (by calling methods of interfacing modules). Classes along with relations among them are shown in corresponding class diagram in class diagrams section. The basic operations are:

- FetchTransactions() – fetch transactions list
- ApproveTransactions() – approve a transaction

## **2.6 External system interaction module**

External System serves as a single interface to external systems, so that other modules do not keep information of how this interfacing is made. It handles issues of connecting to and messaging with external systems. Its web-services make use of external-systems' web-services provided to our system. External systems are required to provide all web-services corresponding to web-services in this module.

- SubmitAnnouncementWS() – posts announcements to given external systems
- SubmitCVWS() – submits CV to external systems
- SearchJobAnnouncementWS() – searches external systems for announcements, with given parameters.
- SearchEmployeeWS() – searches for employees in external systems with parameters supplied to it.
- UpdateAnnouncementWS() – updates announcements in external systems it was posted on.
- UpdateCVWS() – updates CV on external systems it was submitted to.

## **2.7 Database Module**

Database Manager Module provides a single interface to database, so that other modules do not keep handle database related operations directly, but instead call routines of

database manager. It handles issues of connecting to and querying and modifying contents database,

- AddNewUser() – record newly registered user information.
- CheckLoginData() – checks if the login data is valid
- AddAnnouncement() – saves announcement
- AddCV() – saves CV
- UpdateCV() – updates CV
- UpdateAnnouncement() – updates announcement
- ChangeUserStatus() – records user status modification
- AddTransaction() – add new transaction information to database
- RemoveTransaction() – erase transaction from database(usually automatic on accomplished transactions)
- ValidateWS() – checks whether authentication info of a particular user in particular external system exists.
- CheckJobAnnouncements() – checks job announcement
- ChangeJobAnnouncementStatus() – records change of status of a given announcement.
- DeleteAnnouncement() – remove given announcement from database
- FetchUserActions() – fetches list of actions performed by given user, which are recorded during call of AddCV() AddAnnouncement() etc.
- AddUserMessage() – adds a message to messagelist of particular user.
- UpdateUserInfo() – update user information
- RelevantUsers() – fetches list of users relevant to a particular user. Used in notification system, for instance, for getting list of employees to be notified by CV submission of a given job-seeker.
- AddEmployerNotification() – add a notification to a given employer
- AddJobSeekerNotification() – add a notification to a given job-seeker
- FetchTransactions()- fetches list of transactions
- ApproveTransaction()- approve given transaction

## **2.8 Authentication Module**

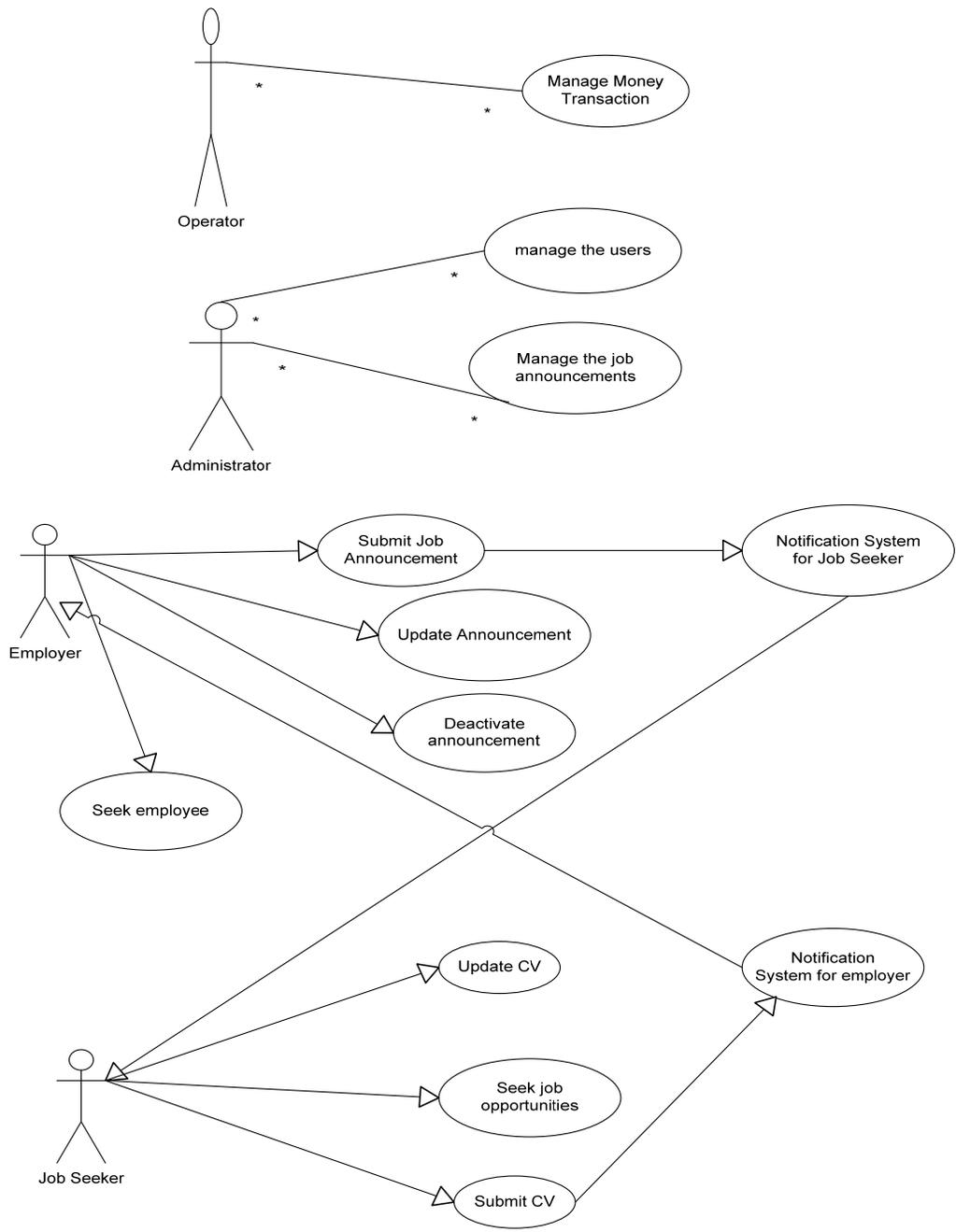
Authentication module handles authentication operations, which are classified as logging and registering to the system. All operations are handled either directly or indirectly (by calling methods of interfacing modules). Classes along with relations among them are shown in corresponding class diagram in class diagrams section.

- Login() – for logging to the system, user is then redirected to corresponding page corresponding to his profile type.
- Register() – for registration of users, applies to job-seekers and employees only. Administrators and operators are logged into the system through Login() WS, but are registered manually.

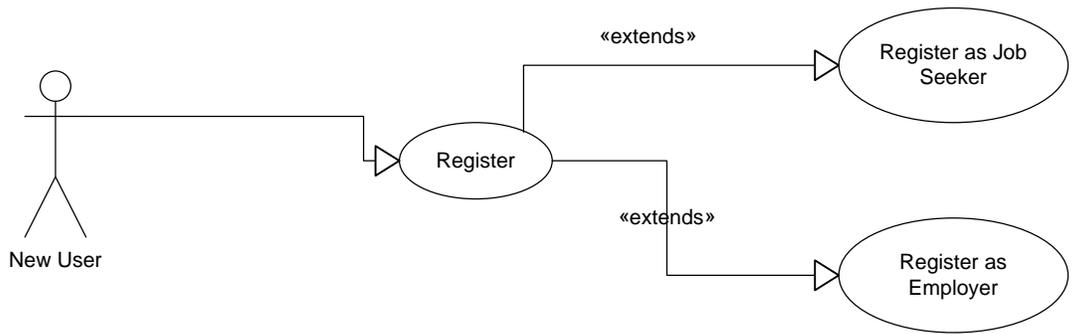
## **3. BEHAVIORAL MODELING**

### **3.1 Use Case Diagrams**

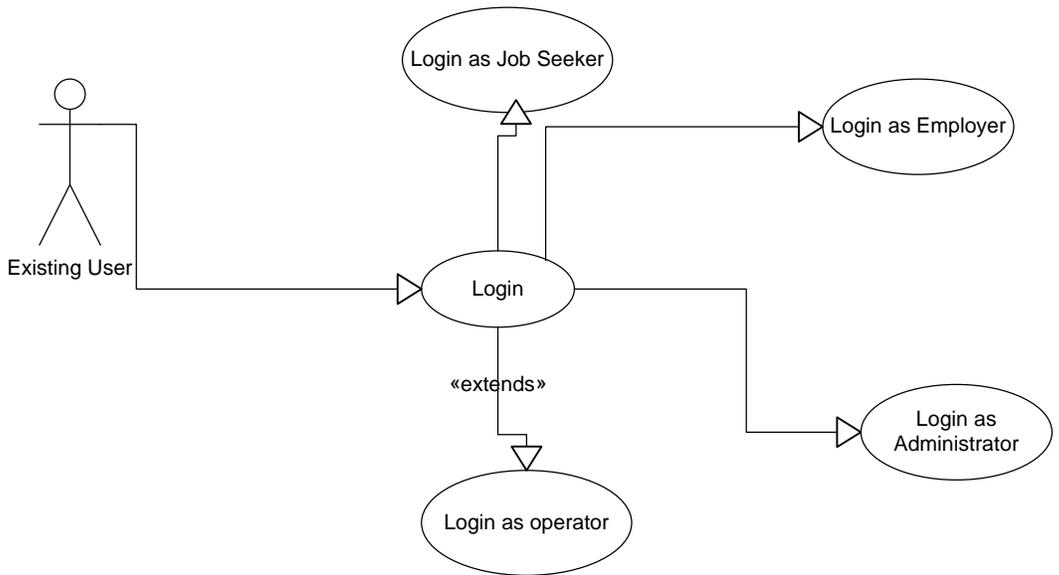
General Use Case Diagram



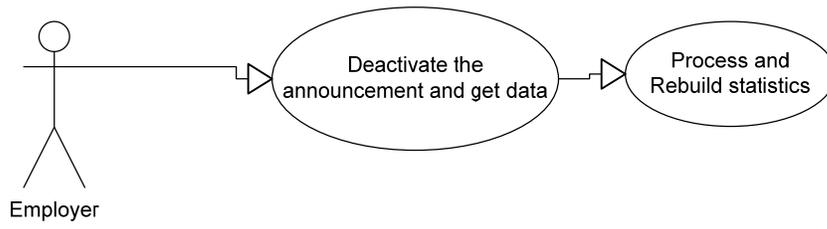
Use Case Diagram for Registration



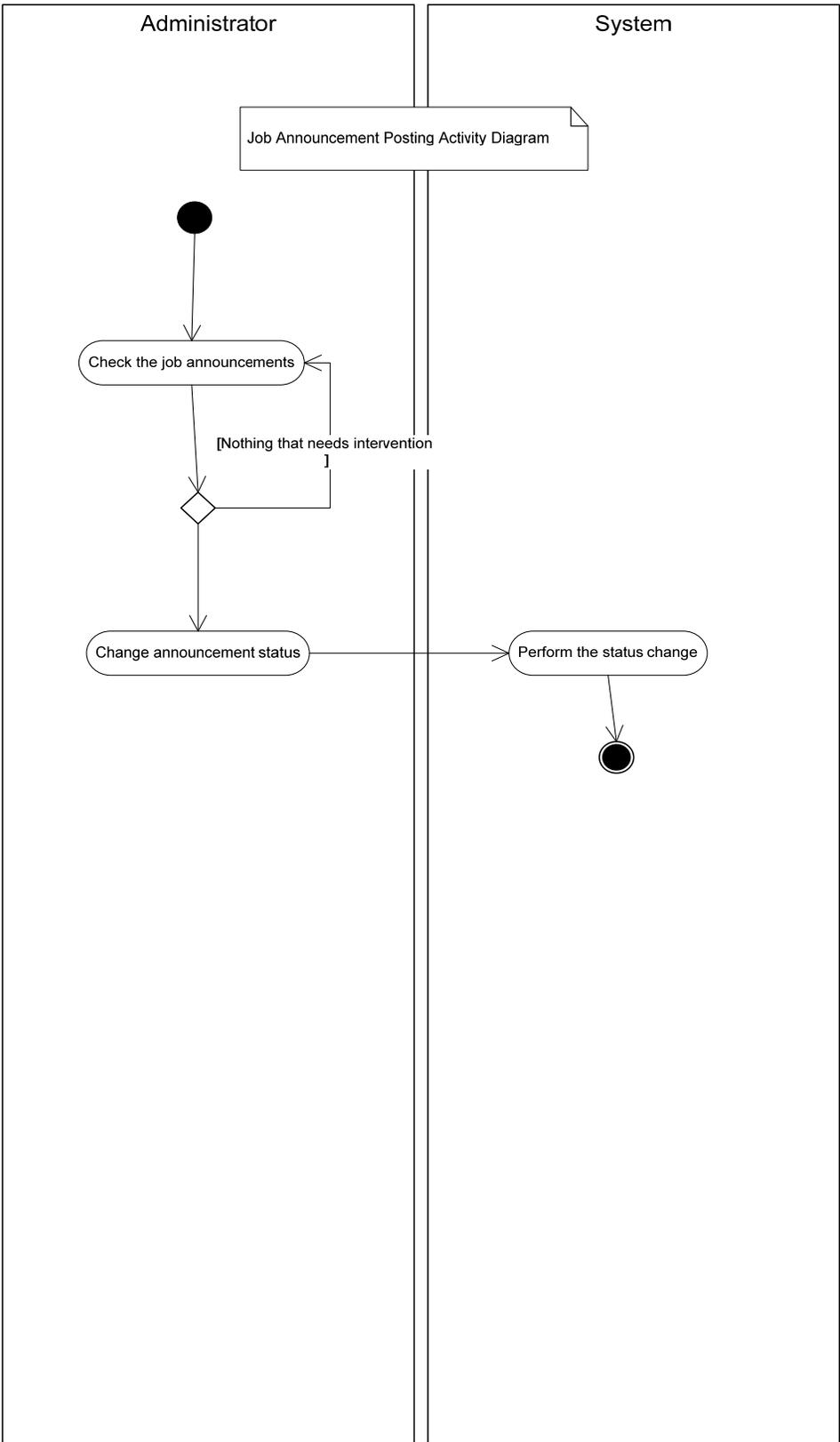
Use Case Diagram for Login

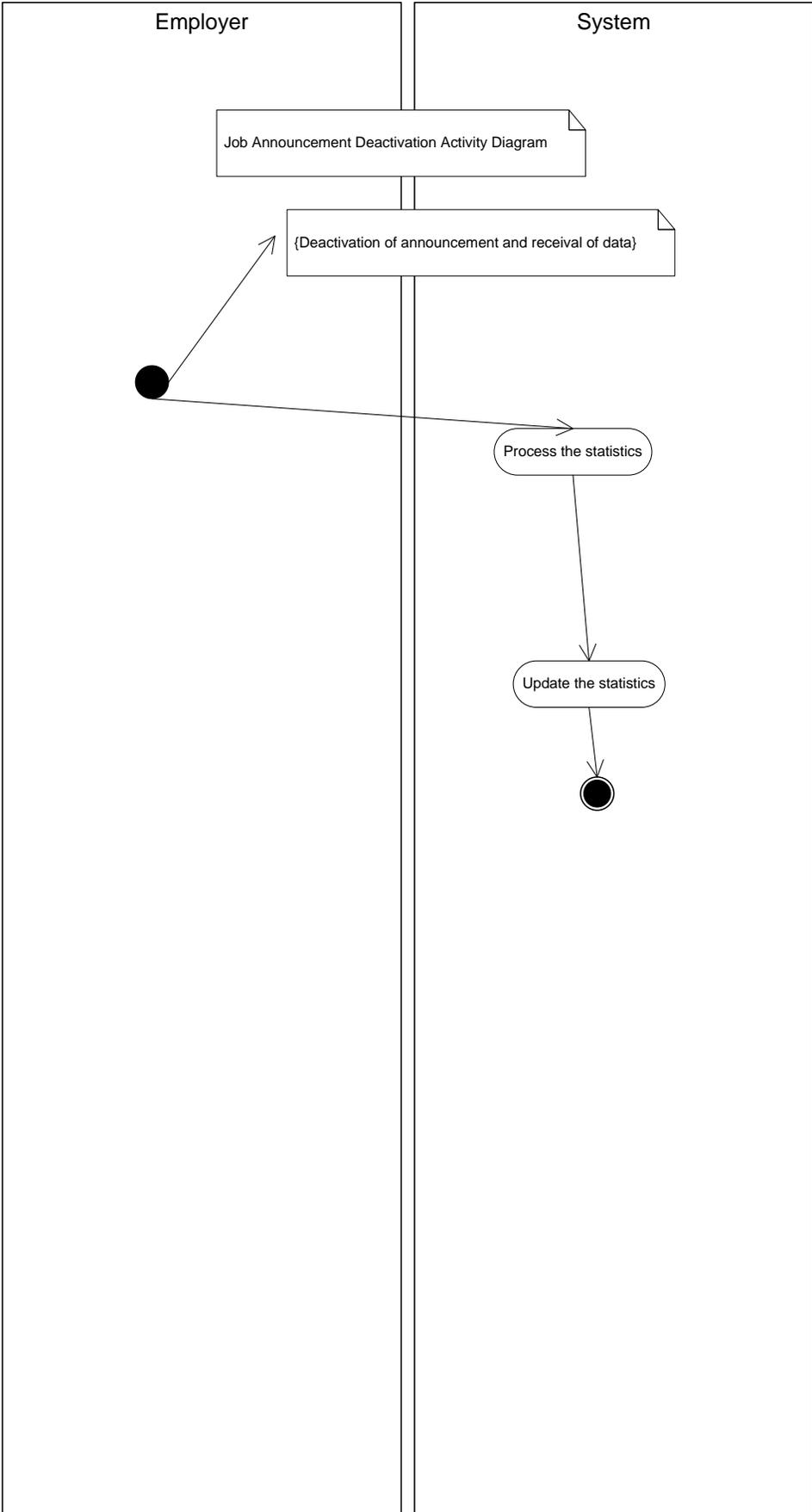


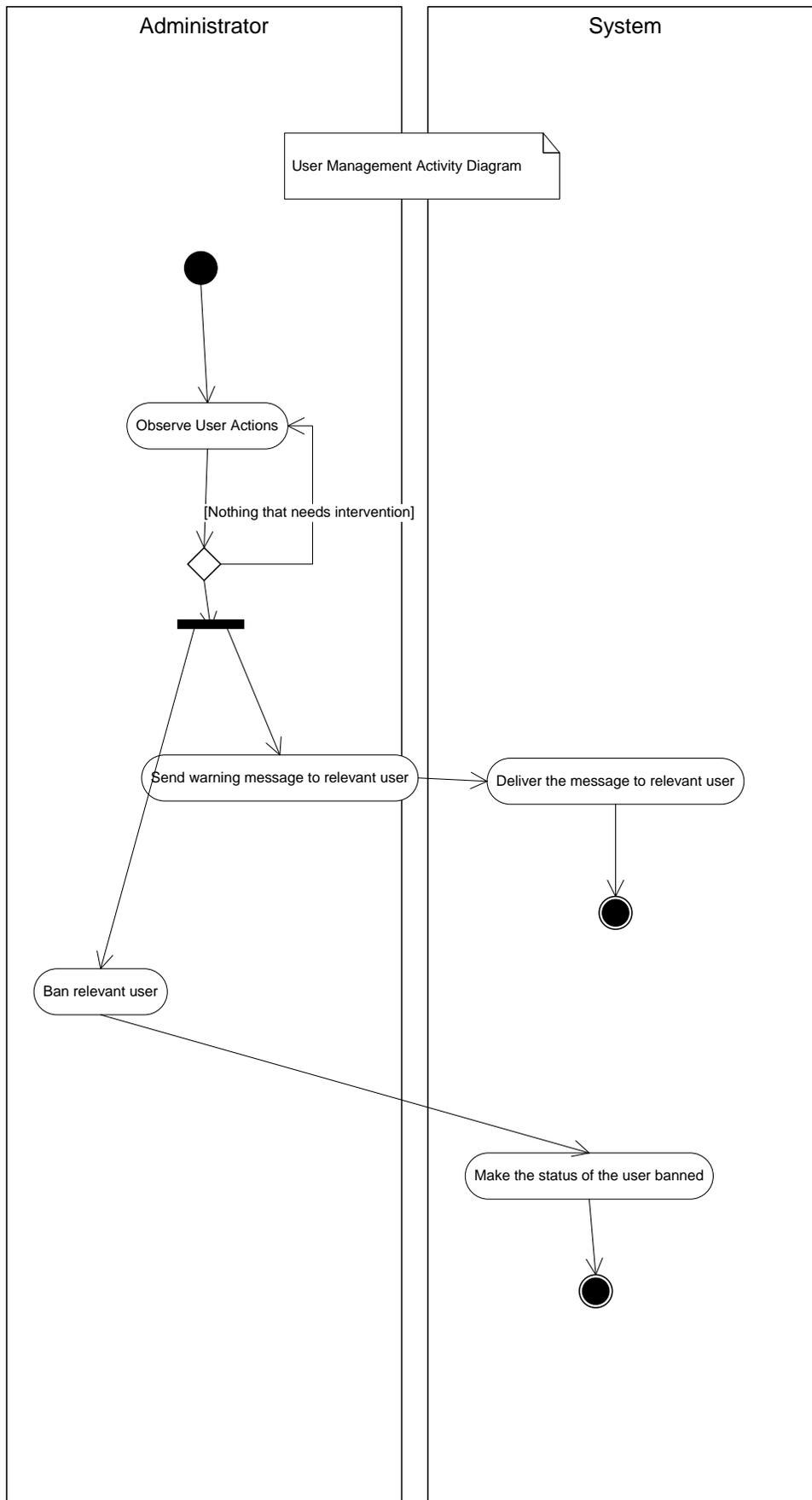
Use Case diagram for formation of statistical data

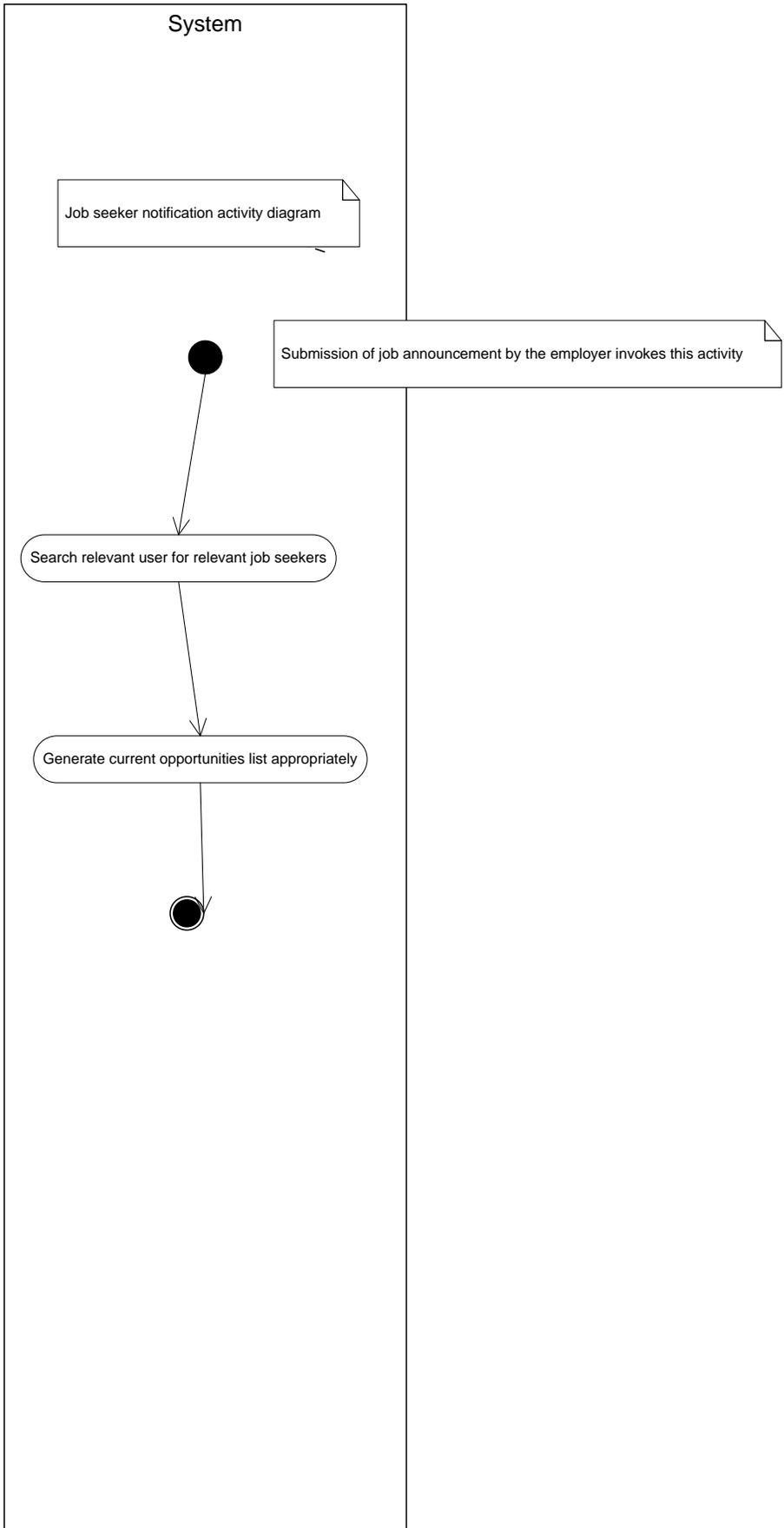


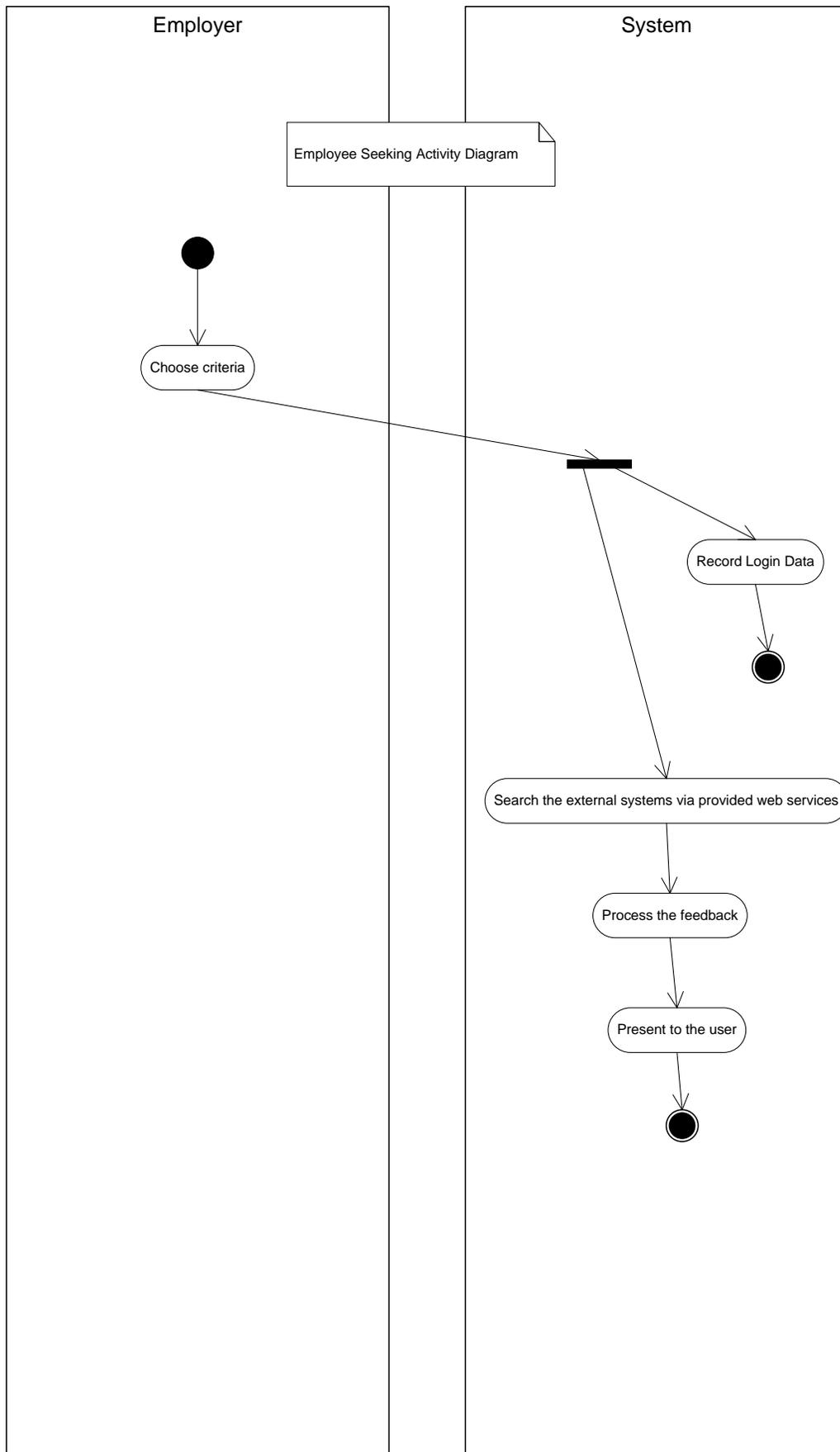
### 3.2 Use Case Scenarios

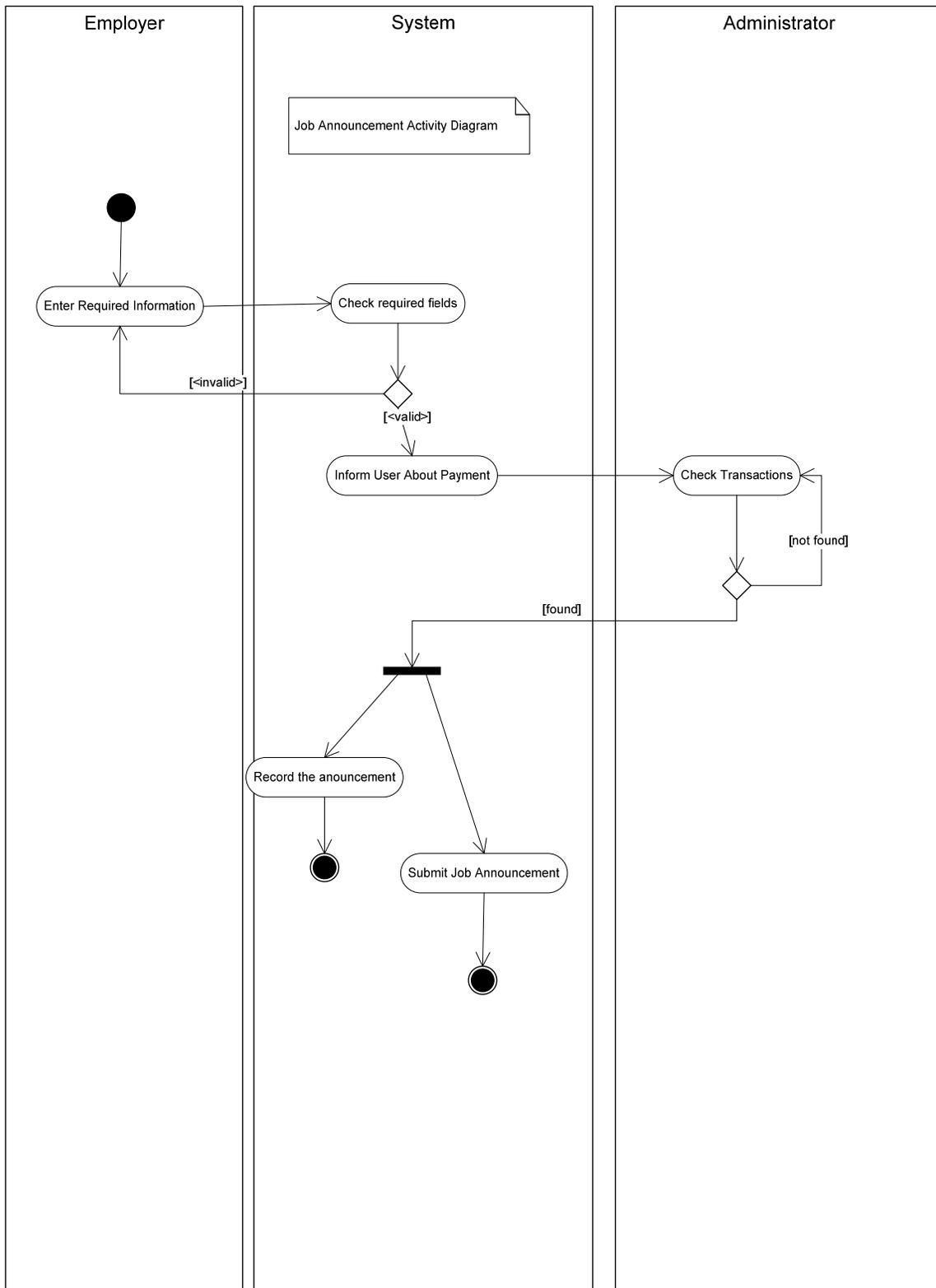




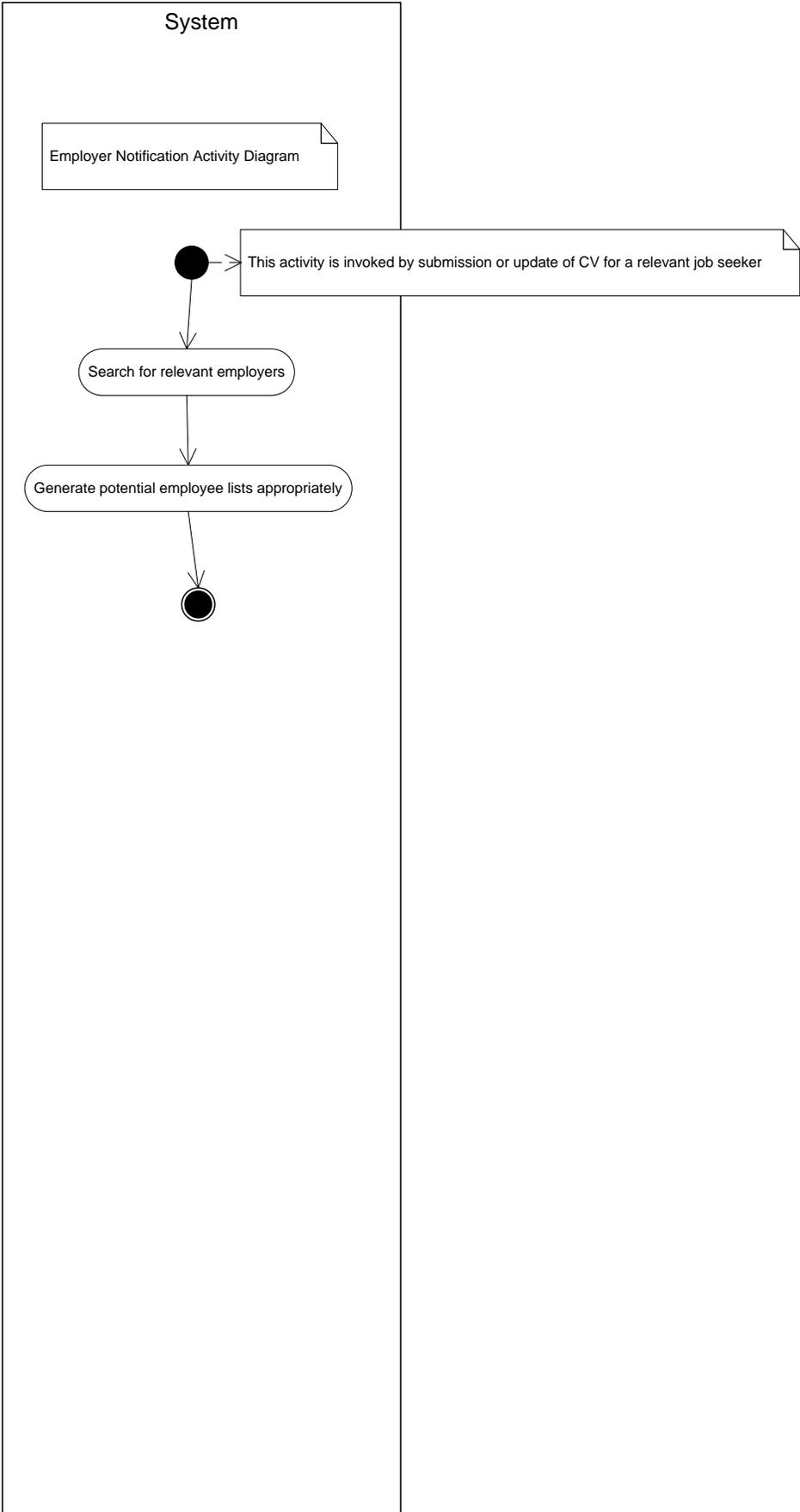


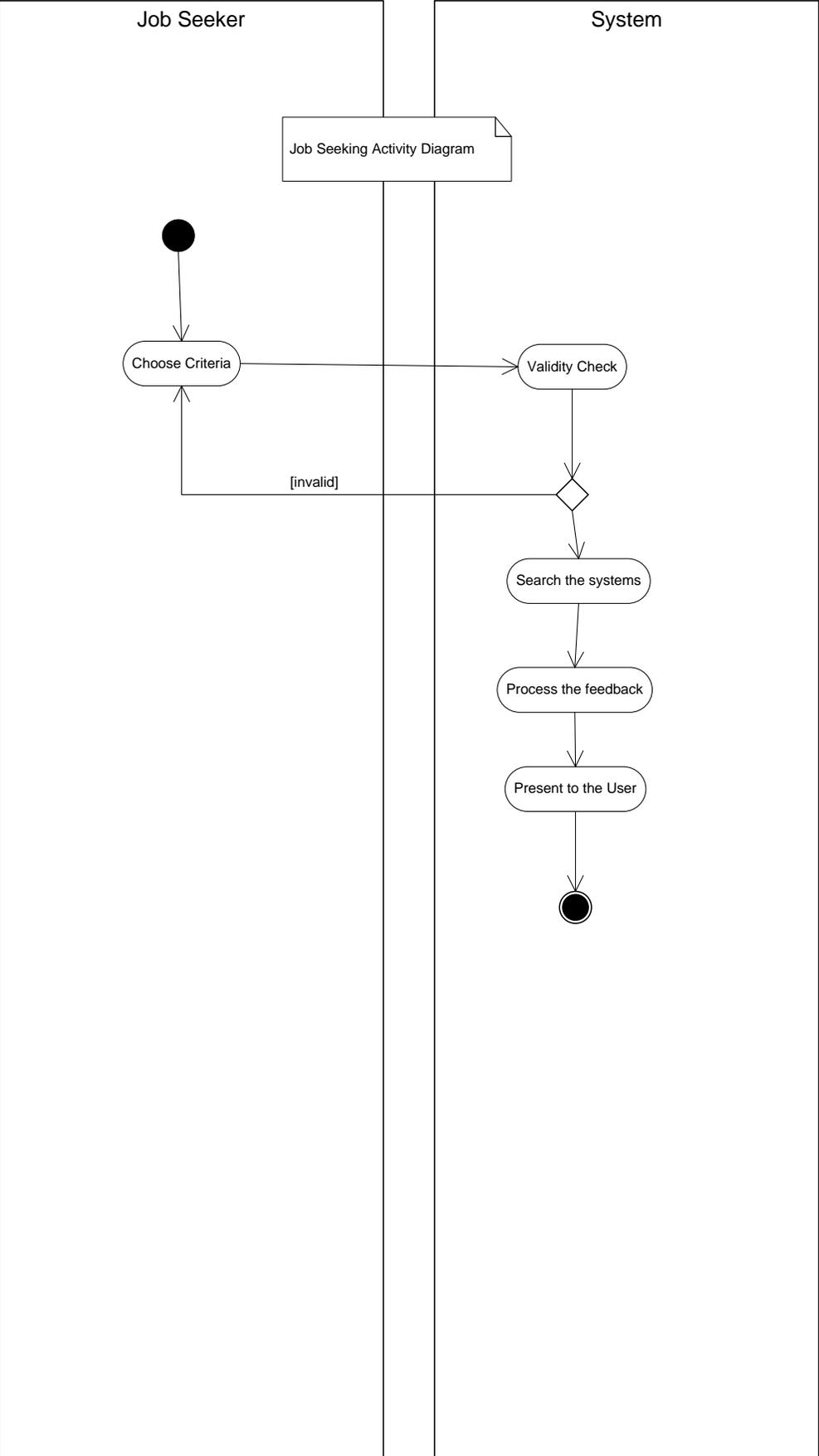


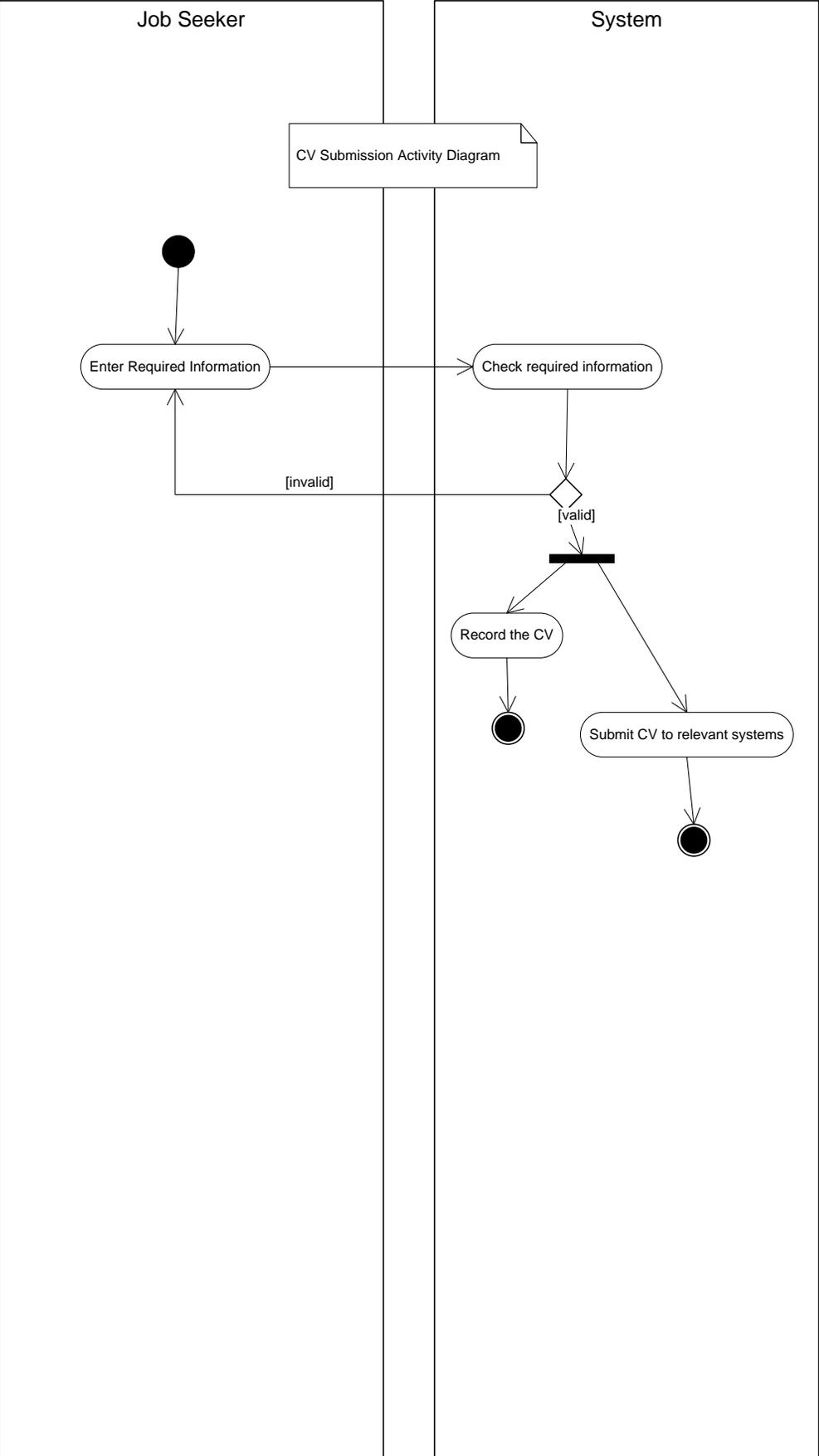


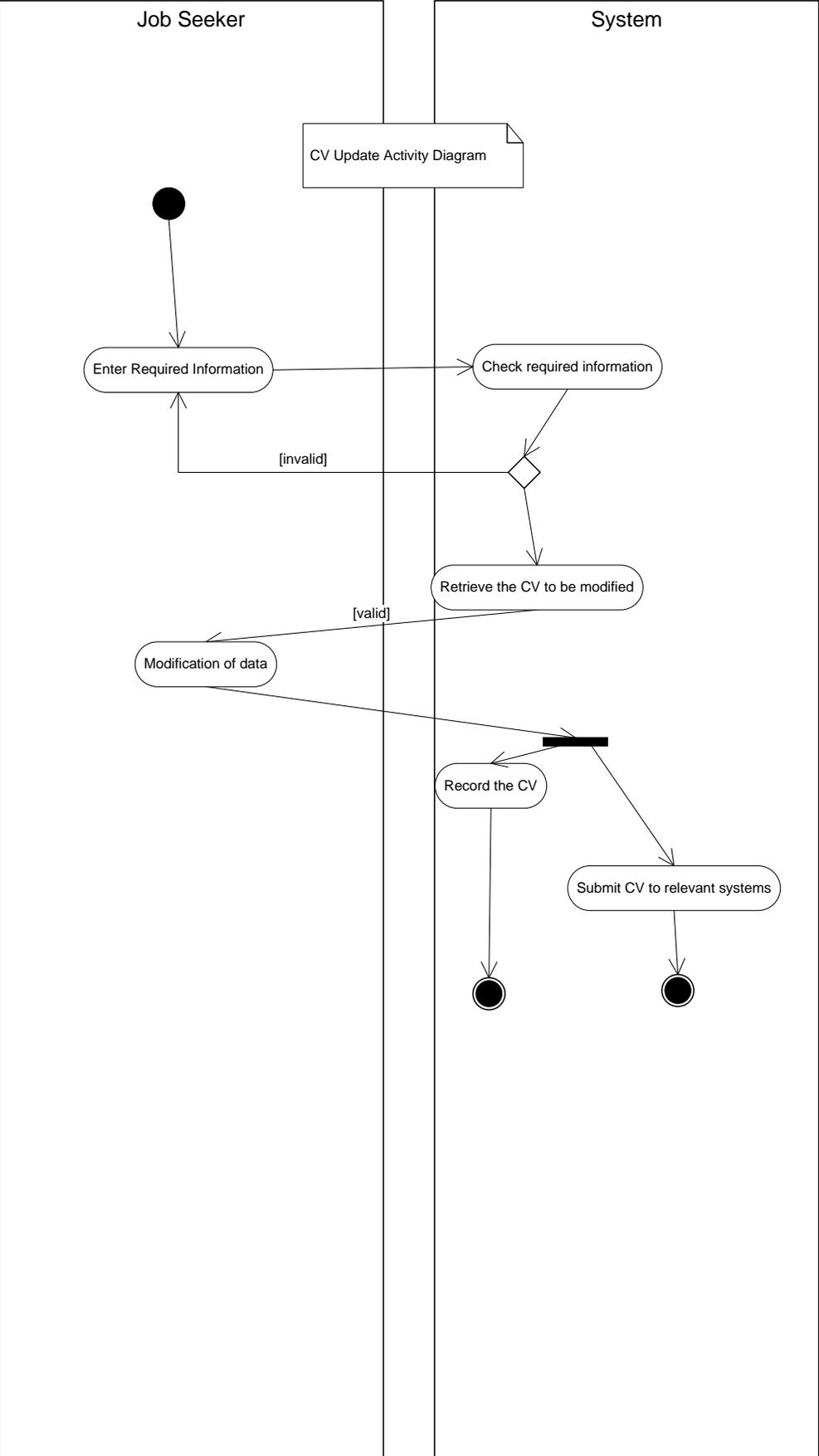


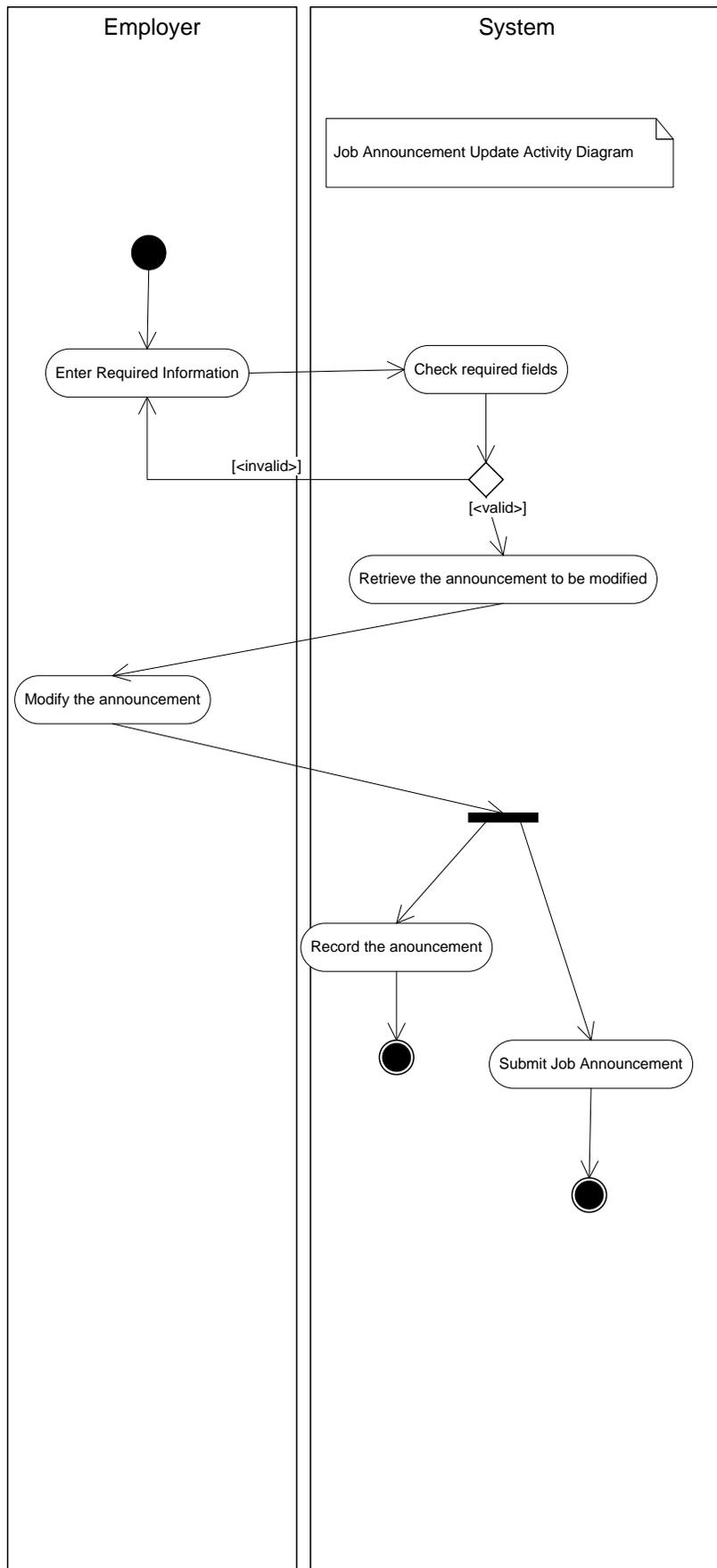
**Job Announcement Activity Diagram**

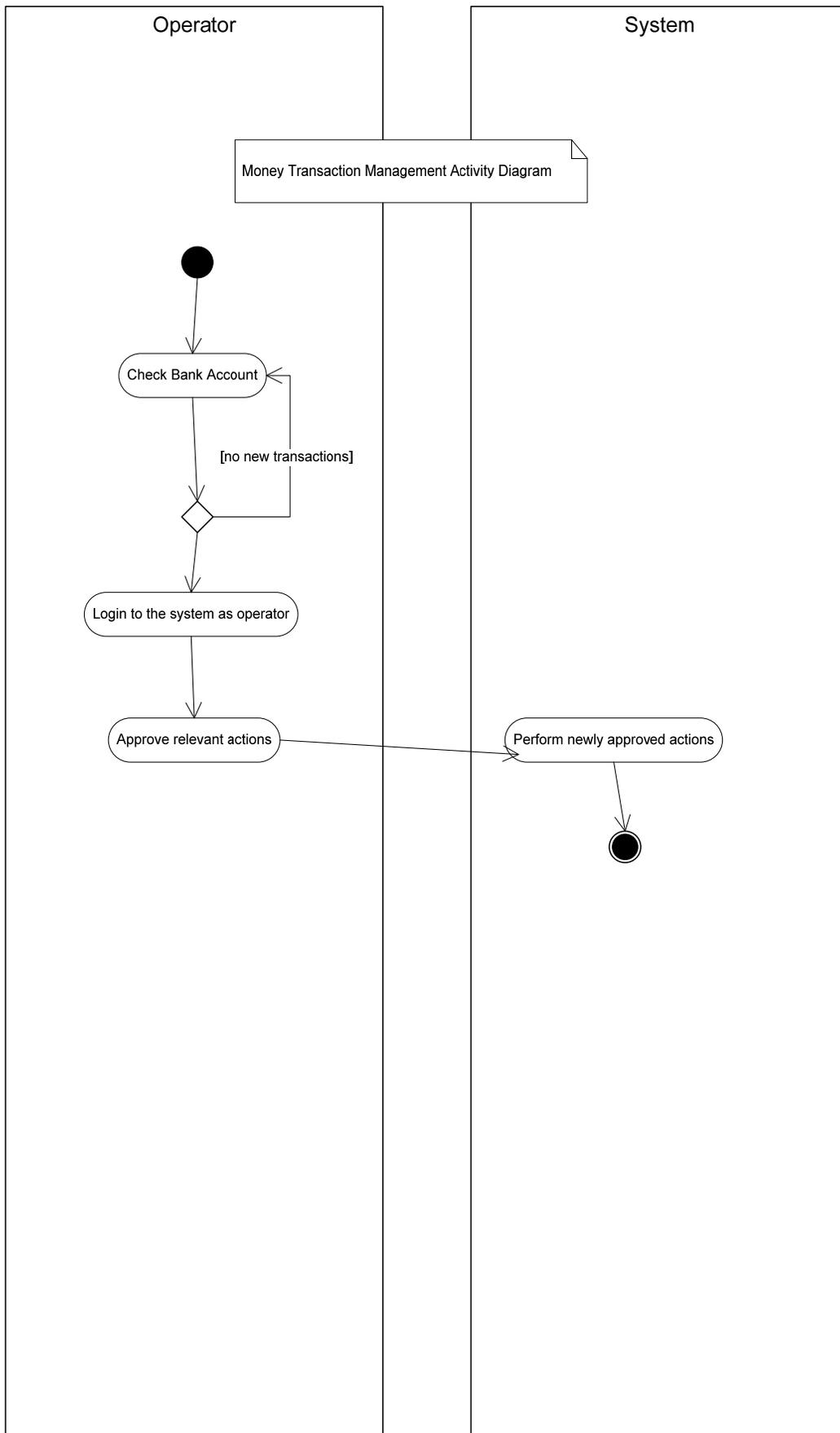


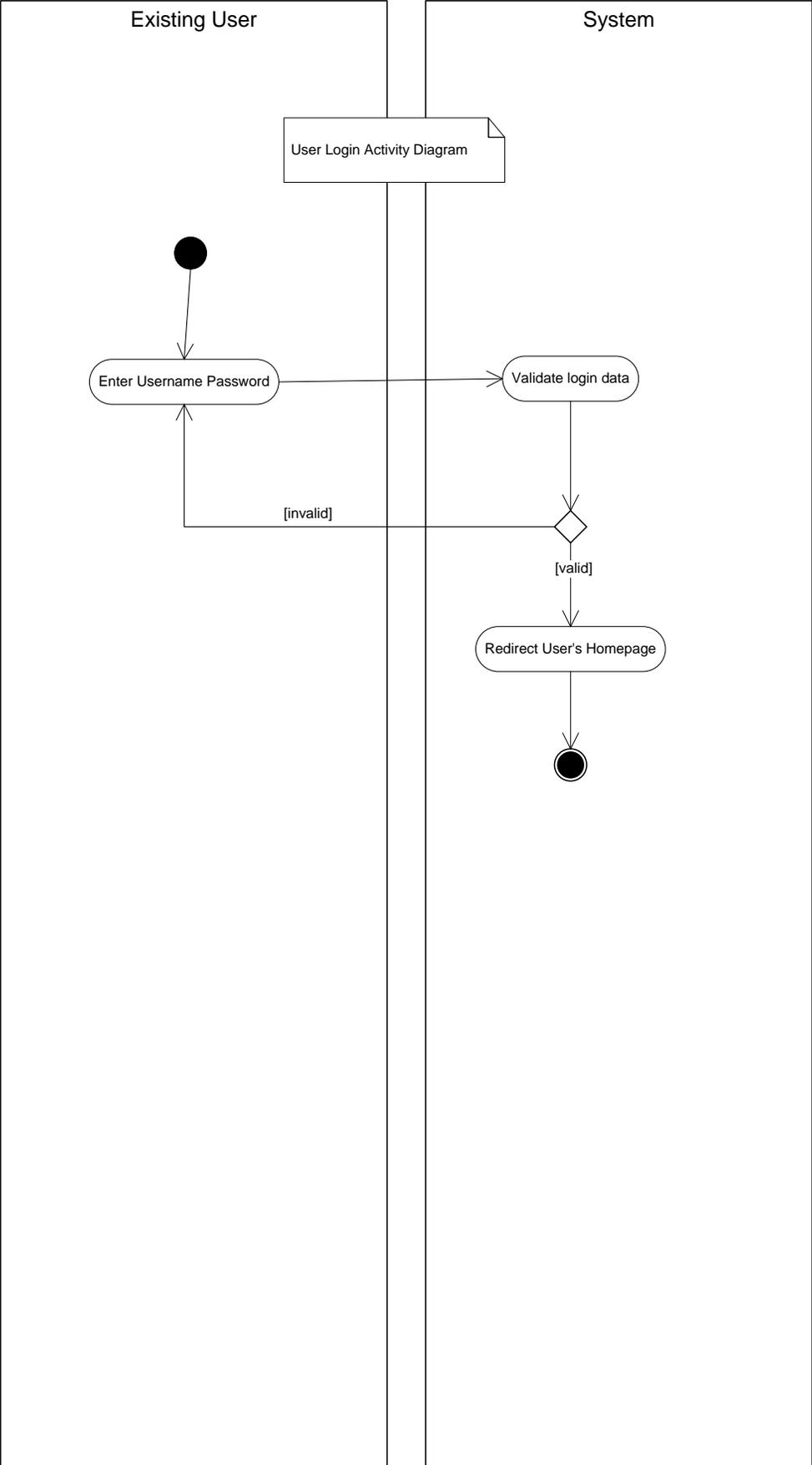


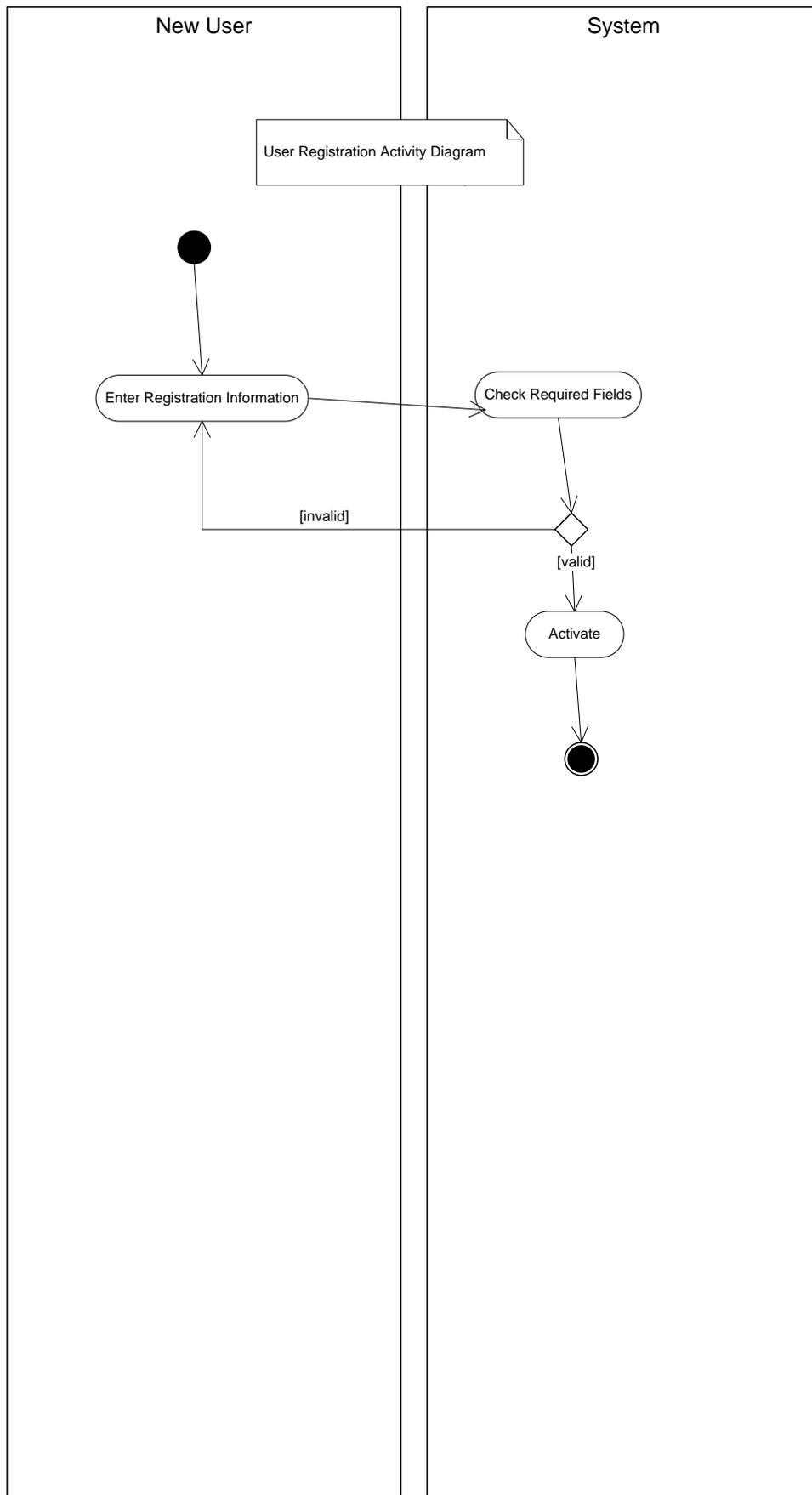






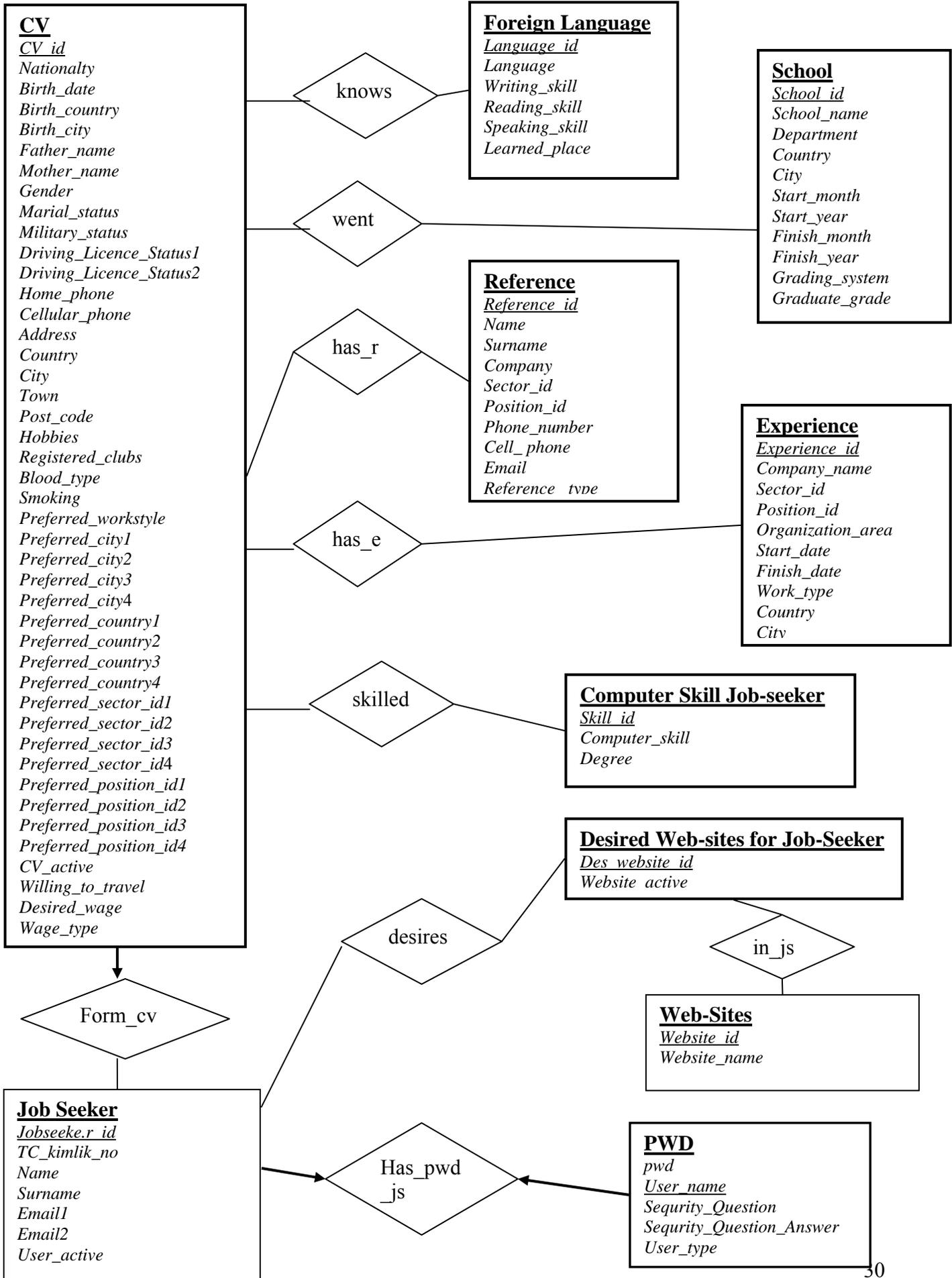


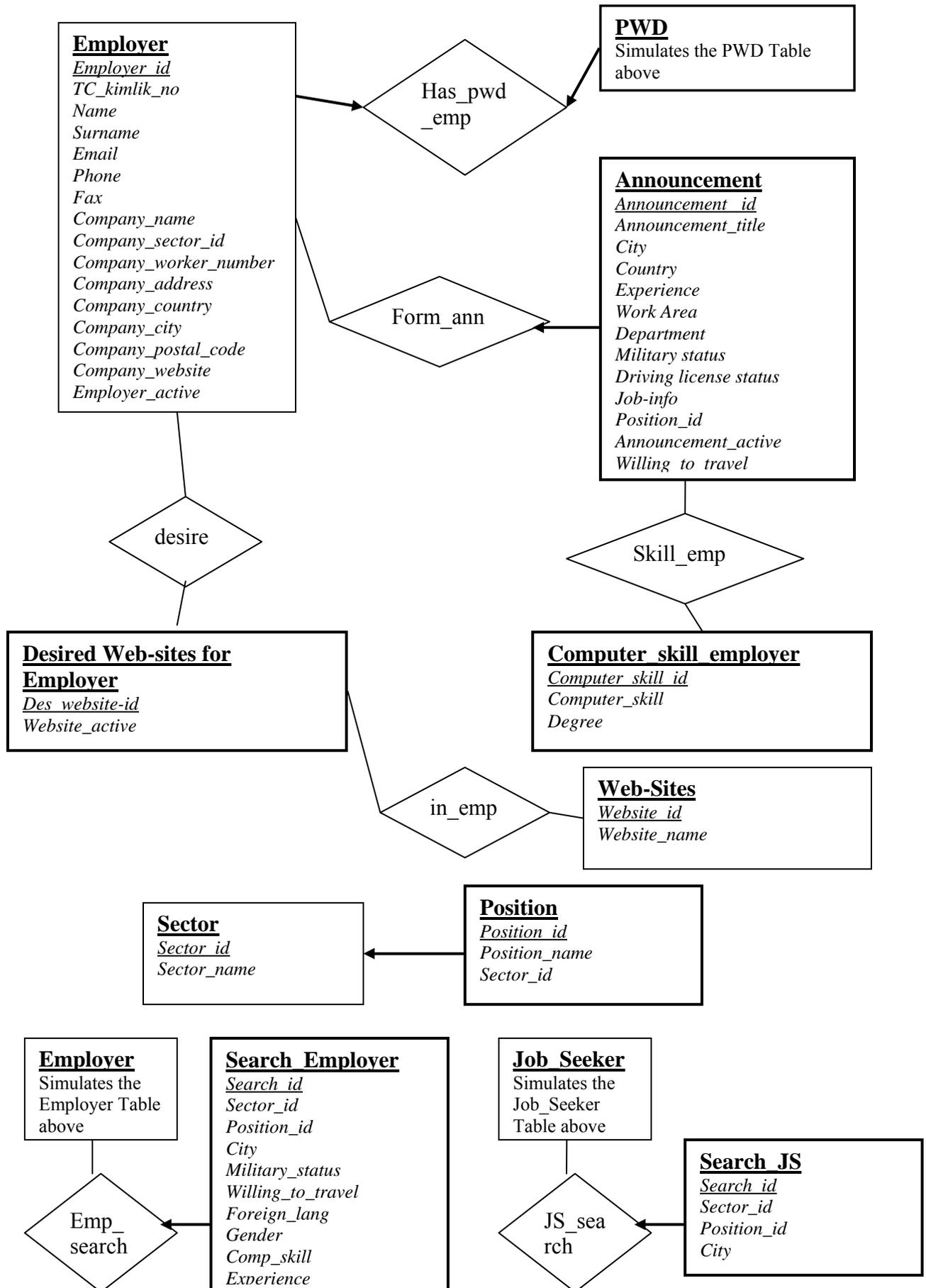




## **4. DATA MODELLING**

### **4.1 Entity-Relationship Diagrams**





## 4.2 Data Descriptions

<b>Name</b>	Job Seeker
<b>Where/How Used</b>	Registration page CV viewing page Profil Page
<b>Description</b>	<p>This table will hold personal information of users that registered for job-seeking.</p> <p><b><u>Primary Key:</u></b> Jobseeker_id</p> <p><b><u>Field Names:</u></b></p> <p><u>Jobseeker_id</u> (Long Integer – Auto Incremented)  <u>TC_kimlik_no</u> (VarChar(11)) NOT NULL, UNIQUE  <u>Name</u> (VarChar(20)) NOT NULL  <u>Surname</u> (VarChar(20)) NOT NULL  <u>Email1/Email2</u> (VarChar(50)) NOT NULL  <u>User_active</u> (Integer) NOT NULL: Show whether user is activated by admin or not</p>

<b>Name</b>	PWD
<b>Where/How Used</b>	Registration page Login
<b>Description</b>	<p>This table will hold personal information of users that must be kept more sequire.</p> <p><b><u>Primary Key:</u></b> User_name</p> <p><b><u>Field Names:</u></b></p> <p><u>User_name</u> (VarChar(10)): username selected by user  <u>pwd</u> (VarChar(10)) NOT NULL: password selected by user  <u>Security_Question</u> (VarChar(60)) NOT NULL</p>

	<i>Security_Question_Answer</i> (VarChar(60)) NOT NULL <i>User_type</i> (VarChar(10)) NOT NULL: employer,job-seeker,admin or operator
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<b><i>Name</i></b>	CV
<b><i>Where/How Used</i></b>	CV viewing page CV form page
<b><i>Description</i></b>	<p>This table will hold all information of a CV that filled by a job-seeker</p> <p><b><u>Primary Key:</u></b> CV_id</p> <p><b><u>Foreign Key:</u></b>  Preferred_sector_id1(reference:Sector),  Preferred_sector_id2(reference:Sector),  Preferred_sector_id3(reference:Sector),  Preferred_sector_id4(reference:Sector),  Preferred_position_id1(reference:Position),  Preferred_position_id2(reference:Position),  Preferred_position_id3(reference:Position),  Preferred_position_id4(reference:Position)</p> <p><b><u>Field Names:</u></b>  <u>CV_id</u> (Long Integer – Auto Incremented)  <i>Nationalty</i> (VarChar(20)) NOT NULL  <i>Birth_date</i> (Date) NOT NULL  <i>Birth_country</i> (VarChar(20)) NOT NULL  <i>Birth_city</i> (VarChar(20)) NOT NULL  <i>Father_name</i> (VarChar(20))  <i>Mother_name</i> (VarChar(20))  <i>Gender</i> (VarChar(1)) NOT NULL  <i>Marial_status</i> (VarChar(10)) NOT NULL  <i>Military_status</i> (VarChar(10)) NOT NULL</p>

	<p><i>Driving_Licence_Status1/2</i> (VarChar(10))</p> <p><i>Home_phone</i> (VarChar(15)) NOT NULL</p> <p><i>Cellular_phone</i> (VarChar(15)) NOT NULL</p> <p><i>Address</i> (VarChar(100)) NOT NULL</p> <p><i>Country</i> (VarChar(20)) NOT NULL: Country name where user reside</p> <p><i>City</i> (VarChar(20)) NOT NULL: City name where user reside</p> <p><i>Town</i> (VarChar(30)): Town name where user reside</p> <p><i>Post_code</i> (VarChar(10))</p> <p><i>Hobbies</i> (Text): Hobbies of user</p> <p><i>Registered_clubs</i> (Text): Social clubs which user is member of</p> <p><i>Blood_type</i> (VarChar(10))</p> <p><i>Smoking</i> (VarChar(10)) NOT NULL: State whether user smokes or not</p> <p><i>Preferred_workstyle</i> (VarChar(10)) NOT NULL: Work style (part-time,full-time,etc.)</p> <p><i>Preferred_city</i> (VarChar(20)): City where user prefers to work</p> <p><i>Preferred_country</i> (VarChar(20)): Country where user prefers to work</p> <p><i>Preferred_sector_id</i> (Long Integer): Sector id from Sector table. It determines in which sector user prefers to work</p> <p><i>Preferred_position_id</i> (Long Integer): Position id from Position table. It determines which job position the job-seeker prefers (manager,engineer,etc.)</p> <p><i>CV_active</i> (Integer) NOT NULL: State whether CV can be viewed by employers or not</p> <p><i>Willing_to_travel</i> (Booelan): State whether job-seeker wants to travel or not.</p> <p><i>Desired_wage</i> (Integer): Wage amount that job-seeker desires.</p>
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	<i>Wage_type</i> (VarChar(10)): type of wage (monthly,weekly, annual..)
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<b><i>Name</i></b>	School
<b><i>Where/How Used</i></b>	CV viewing page CV form page
<b><i>Description</i></b>	<p>This table will hold education information of Job-Seekers, table filled when forming CV</p> <p><b><u>Primary Key:</u></b> School_id</p> <p><b><u>Field Names:</u></b></p> <p><i>School_id</i> (Long Integer – Auto Incremented)</p> <p><i>School name</i> (VarChar(30)) NOT NULL</p> <p><i>Department</i> (VarChar(30))</p> <p><i>Country</i> (VarChar(20)) NOT NULL: Country where school is located</p> <p><i>City</i> (VarChar(20)) NOT NULL: City where school is located</p> <p><i>Start_month</i> (VarChar(15)): Start month of school</p> <p><i>Start_year</i> (Integer) NOT NULL: Start year of school</p> <p><i>Finish_month</i> (VarChar(15)): Finish month of school</p> <p><i>Finish_year</i> (Integer) NOT NULL: Finish year of school</p> <p><i>Grading_system</i> (Integer) NOT NULL: Gradng system used in that school (5,4,10,etc.)</p> <p><i>Graduate_grade</i> (Float Number) NOT NULL</p>

<b><i>Name</i></b>	Computer_Skill_jobseeker
<b><i>Where/How Used</i></b>	CV form page CV viewing page
<b><i>Description</i></b>	<p>This table holds computer skill information of job-seeker in CV</p> <p><b><u>Primary Key:</u></b> Skill_id</p>

	<p><b><u>Field Names:</u></b></p> <p><u>Skill_id</u> (Long Integer – Auto Incremented)</p> <p><u>Computer_skill</u> (VarChar(30)) NOT NULL: Skill name</p> <p><u>Degree</u> (Integer) NOT NULL: Knowledge level of skills</p>
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<b><i>Name</i></b>	Experience
<b><i>Where/How Used</i></b>	CV form page CV viewing page
<b><i>Description</i></b>	<p>This table holds work experiences information of job-seekers which are filled while CV forming</p> <p><b><u>Primary Key:</u></b> Experience_id</p> <p><b><u>Foreign Key:</u></b></p> <p>Sector_id(reference:Sector)</p> <p>Position_id(reference:Position)</p> <p><b><u>Field Names:</u></b></p> <p><u>Experience_id</u> (Long Integer – Auto Incremented)</p> <p><u>Company_name</u> (VarChar(30)) NOT NULL</p> <p><u>Sector_id</u> (Long Integer) NOT NULL: Sector id from Sectors table. It determines at which sector the related experience is.</p> <p><u>Position_id</u> (Long Integer) NOT NULL: Position id from Position table to show preferred position.</p> <p><u>Organization_area</u> (VarChar(30))</p> <p><u>Start_date</u> (Date) NOT NULL</p> <p><u>Finish_date</u> (Date) NOT NULL</p> <p><u>Work_type</u> (VarChar(30)) NOT NULL: Work type (part-time,full-time,etc.)</p> <p><u>Country</u> (VarChar(20)) NOT NULL: Work place of work-experience (country)</p>

	<i>City</i> (VarChar(20)) NOT NULL: Work place of work-experience (city)
--	--

<b><i>Name</i></b>	Reference
<b><i>Where/How Used</i></b>	CV form page CV viewing page
<b><i>Description</i></b>	<p>This table includes reference information of job-seekers in CV</p> <p><b><u>Primary Key:</u></b> Reference_id</p> <p><b><u>Foreign Key:</u></b></p> <p>Sector_id(reference:Sector) Position_id(reference:Position)</p> <p><b><u>Field Names:</u></b></p> <p><b><u>Reference_id</u></b> (Long Integer – Auto Incremented)</p> <p><b><i>Name</i></b> (VarChar(30)) NOT NULL: Name of reference</p> <p><b><i>Surname</i></b> (VarChar(30)) NOT NULL: Surname of reference</p> <p><b><i>Company</i></b> (VarChar(30)): Company in which related reference work</p> <p><b><i>Sector_id</i></b> (Long Integer): Sector id from Sector table. It determines the sector at which related reference work</p> <p><b><i>Position_id</i></b> (Long Integer): Position id from Positions table. It determines the position of reference person in his/her company</p> <p><b><i>Phone number</i></b> (VarChar(15)) NOT NULL: Phone number of reference person</p> <p><b><i>Cell phone</i></b> (VarChar(15)) NOT NULL: Cellular phone number of reference person</p> <p><b><i>Email</i></b> (VarChar(50)) NOT NULL: E-mail address of reference person</p> <p><b><i>Reference type</i></b> (VarChar(15)) NOT NULL: Professional, personal, etc.</p>

<b>Name</b>	Foreign language
<b>Where/How Used</b>	CV form page CV viewing page
<b>Description</b>	<p>Holds information about foreign language skills of job-seeker which is filled in CV form page</p> <p><b><u>Primary Key:</u></b> Language_id</p> <p><b><u>Field Names:</u></b></p> <p><u>Language_id</u> (Long Integer – Auto Incremented)</p> <p><u>Language</u> (VarChar(20)) NOT NULL: Language name</p> <p><u>Writing skill</u> (Integer) NOT NULL: Knowledge level of writing skills (1 to 10)</p> <p><u>Reading skill</u> (Integer) NOT NULL: Knowledge level of reading skills (1 to 10)</p> <p><u>Speaking skill</u> (Integer) NOT NULL: Knowledge level of speaking skills (1 to 10)</p> <p><u>Learned place</u> (VarChar(30)) NOT NULL: Place where related language learned</p>

<b>Name</b>	Desired web-sites for job-seeker
<b>Where/How Used</b>	CV form page CV viewing page
<b>Description</b>	<p>Job seekers will select web-sites that their CV will be sent and this table holds selected web-sites' information.</p> <p><b><u>Primary Key:</u></b> Des_website_id</p> <p><b><u>Field Names:</u></b></p> <p><u>Des_website_id</u> (Long Integer – Auto Incremented)</p> <p><u>Website_Active</u> (Integer) NOT NULL: It determines whether this web-site is activated or deactivated to send CV by administrator or</p>

	user.
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<b>Name</b>	Web-sites
<b>Where/How Used</b>	CV form page CV viewing page Announcement form page Announcement viewing page (It is necessary for “Desired Web-sites for Job-seekers” and “Desired Web-sites for Employer” Table)
<b>Description</b>	This table includes all external web-sites’ information.  <b><u>Primary Key:</u></b> Website_id  <b><u>Field Names:</u></b> <u>Website_id</u> (Integer – Auto Incremented) <u>Website_Name</u> (VarChar(50)) NOT NULL,UNIQUE: Link of the related web-site

<b>Name</b>	Employer
<b>Where/How Used</b>	Registration page Job Announcement Listing page Job Announcement viewing page Job Announcement form page
<b>Description</b>	This table will hold company and related person information of users that registered as Employer  <b><u>Primary Key:</u></b> Employer_id <b><u>Foreign Key:</u></b> Company_sector_id(reference:Sector)  <b><u>Field Names:</u></b> <u>Employer_id</u> (Long Integer – Auto Incremented)

	<p><i>Employer_active</i> (Integer) NOT NULL: It shows whether registration of this employer is approved or not.</p> <p><i>TC_kimlik_no</i> (VarChar(11)) NOT NULL,UNIQUE</p> <p><i>Name</i> (VarChar(20)) NOT NULL: Name of employer</p> <p><i>Surname</i> (VarChar(20)) NOT NULL: Surname of employer</p> <p><i>Email</i> (VarChar(30)) NOT NULL: E-mail address of employer</p> <p><i>Phone</i> (VarChar(15)) NOT NULL: Phone number of employer</p> <p><i>Fax</i> (VarChar(15)): Fax number of employer</p> <p><i>Company_name</i> (VarChar(30)) NOT NULL</p> <p><i>Company_sector_id</i> (VarChar(30)) NOT NULL: Sector id from sector table. It determines the sector at which the related company works.</p> <p><i>Company_worker_number</i> (Integer)</p> <p><i>Company_address</i> ((VarChar(100)))</p> <p><i>Company_country</i> (VarChar(20)) NOT NULL: Country where the company is located</p> <p><i>Company_city</i> (VarChar(20)) NOT NULL: City where company is located</p> <p><i>Company_postal_code</i> (VarChar(10))</p> <p><i>Company_website</i> (VarChar(50))</p>
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<b><i>Name</i></b>	Announcement
<b><i>Where/How Used</i></b>	Job Announcement listing page Job Announcement viewing page Job Announcement form page
<b><i>Description</i></b>	This table hold announcement information of employers  <p><b><u>Primary Key:</u></b> Announcement_id</p> <p><b><u>Foreign Key:</u></b> Position_id(reference:Position)</p> <p><b><u>Field Names:</u></b></p>

	<p><i>Announcement_id</i> (Long Integer – Auto Incremented)</p> <p><i>Announcement_active</i> (Integer) NOT NULL: It shows whether that announcement can be viewed in announcement searches. It will change by preference of employer.</p> <p><i>Announcement_title</i> (VarChar(20))</p> <p><i>City</i> (VarChar(20)) NOT NULL: Working Place (City)</p> <p><i>Country</i> (VarChar(20)) NOT NULL: Working Place (Country)</p> <p><i>Experience</i> (Text): Experiences required from applicants</p> <p><i>Work_area</i> (VarChar(20)) NOT NULL: Work area in which the company works</p> <p><i>Department</i> (VarChar(20))</p> <p><i>Military_status</i> (VarChar(10))</p> <p><i>Driving_license_status</i> (VarChar(10))</p> <p><i>Job-info</i> (Text): Detailed information of job</p> <p><i>Position_id</i> (Long Integer) NOT NULL: Position id from Position table. It determines the position of work.</p> <p><i>Willing_to_travel</i> (Boolean): Describes whether employer wants the job-seeker to travel.</p>
--	---

<b>Name</b>	Computer_skill_employer
<b>Where/How Used</b>	Job announcement form page Job announcement viewing page
<b>Description</b>	<p>This table holds wanted computer skills by employer in an announcement.</p> <p><b><u>Primary Key:</u></b> Computer_skill_id</p> <p><b><u>Field Names:</u></b></p> <p><i>Computer_skill_id</i> (Long Integer – Auto Incremented)</p> <p><i>Computer_skill</i> (VarChar(30)) NOT NULL: Name of computer skill</p> <p><i>Degree</i> (Integer) NOT NULL: Knowledge level of computer skill</p>

<b>Name</b>	Desired web-sites for Employer
<b>Where/How Used</b>	Job announcement form page Job announcement viewing page
<b>Description</b>	<p>This table holds selected web-sites by employer to send his/her announcement, this table is important for payment of selected web-sites.</p> <p><b><u>Primary Key:</u></b> Des_website_id</p> <p><b><u>Field Names:</u></b>  <u>Des_website_id</u> (Long Integer – Auto Incremented)  Website_active (Integer) NOT NULL: it shows whether employer pay for the announcement cost of related web-site</p>

<b>Name</b>	Sector
<b>Where/How Used</b>	CV form page CV viewing page Job Announcement form page Job Announcement viewing page (It is necessary for CV, Experience, Reference, Employer and Announcement tables)
<b>Description</b>	<p>This table includes all necessary sectors' list.</p> <p><b><u>Primary Key:</u></b> Sector_id</p> <p><b><u>Field Names:</u></b>  <u>Sector_id</u> (Long Integer – Auto Incremented)  Sector_Name (VarChar(50)) NOT NULL,UNIQUE: Name of sector</p>

<b>Name</b>	Position
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<b>Where/How Used</b>	<p>CV form page</p> <p>CV viewing page</p> <p>Job Announcement form page</p> <p>Job Announcement viewing page</p> <p>(It is necessary for CV, Experience, Reference, Employer and Announcement tables)</p>
<b>Description</b>	<p>This table includes all necessary positions' list.</p> <p><b><u>Primary Key:</u></b> Position_id</p> <p><b><u>Foreign Key:</u></b> Sector_id(reference:Sector)</p> <p><b><u>Field Names:</u></b></p> <p><u>Position_id</u> (Long Integer – Auto Incremented)</p> <p><u>Position_Name</u> (VarChar(50)) NOT NULL,UNIQUE: Name of related Position</p> <p><u>Sector_id</u> (Long Integer – Auto Incremented): Some Sectors has private positions, so recording all positions for every Sector will be beneficial.</p>

<b>Name</b>	Knows
<b>Where/How Used</b>	<p>CV Form page</p> <p>CV viewing page</p>
<b>Description</b>	<p>This table is a relation table that connects CV and Foreign Language tables.</p> <p><b><u>Primary Key:</u></b> CV_id, Language_id</p> <p><b><u>Foreign Key:</u></b> CV_id, Language_id</p> <p><b><u>Field Names:</u></b></p> <p><u>CV_id</u> (Long Integer – Auto Incremented)</p> <p><u>Language_id</u> (Long Integer – Auto Incremented)</p>

<b>Name</b>	Has_pwd_js
<b>Where/How Used</b>	Registration page Login
<b>Description</b>	<p>This table is a relation table that connects Job_seeker and PWD tables.</p> <p><b><u>Primary Key:</u></b> Jobseeker_id, User_name  <b><u>Foreign Key:</u></b> Jobseeker_id, User_name</p> <p><b><u>Field Names:</u></b>  <u>Jobseeker_id</u> (Long Integer – Auto Incremented)  <u>User_name</u> (VarChar(20))</p>

<b>Name</b>	Went
<b>Where/How Used</b>	CV form page CV viewing page
<b>Description</b>	<p>This table is a relation table that connects CV and School tables.</p> <p><b><u>Primary Key:</u></b> CV_id, School_id  <b><u>Foreign Key:</u></b> CV_id, School_id</p> <p><b><u>Field Names:</u></b>  <u>CV_id</u> (Long Integer – Auto Incremented)  <u>School_id</u> (Long Integer – Auto Incremented)</p>

<b>Name</b>	has_r
<b>Where/How Used</b>	CV form page CV viewing page
<b>Description</b>	<p>This table is a relation table that connects CV and Reference tables.</p> <p><b><u>Primary Key:</u></b> CV_id, Reference_id</p>

	<p><b><u>Foreign Key:</u></b> CV_id, Reference_id</p> <p><b><u>Field Names:</u></b></p> <p><u>CV_id</u> (Long Integer – Auto Incremented)</p> <p><u>Reference_id</u> (Long Integer – Auto Incremented)</p>
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<b>Name</b>	has_e
<b>Where/How Used</b>	Registration page CV viewing page
<b>Description</b>	<p>This table is a relation table that connects CV and Experience tables.</p> <p><b><u>Primary Key:</u></b> CV_id, Experience_id</p> <p><b><u>Foreign Key:</u></b> CV_id, Experience_id</p> <p><b><u>Field Names:</u></b></p> <p><u>CV_id</u> (Long Integer – Auto Incremented)</p> <p><u>Experience_id</u> (Long Integer – Auto Incremented)</p>

<b>Name</b>	Skilled
<b>Where/How Used</b>	CV form page CV viewing page
<b>Description</b>	<p>This table is a relation table that connects CV and Computer Skill Job-seeker tables.</p> <p><b><u>Primary Key:</u></b> CV_id, Skill_id</p> <p><b><u>Foreign Key:</u></b> CV_id, Skill_id</p> <p><b><u>Field Names:</u></b></p> <p><u>CV_id</u> (Long Integer – Auto Incremented)</p> <p><u>Skill_id</u> (Long Integer – Auto Incremented)</p>

<b>Name</b>	Desires
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<b>Where/How Used</b>	Registration page CV form page CV viewing page
<b>Description</b>	This table is a relation table that connects Job Seeker and Desired Web-sites for Job-Seeker tables.  <b><u>Primary Key:</u></b> Jobseeker_id, Des_website_id <b><u>Foreign Key:</u></b> Jobseeker_id, Des_website_id  <b><u>Field Names:</u></b> <b><u>Jobseeker_id</u></b> (Long Integer – Auto Incremented) <b><u>Des_website_id</u></b> (Long Integer – Auto Incremented)

<b>Name</b>	in_js
<b>Where/How Used</b>	Registration page CV viewing page
<b>Description</b>	This table is a relation table that connects Web-Sites and Desired Web-sites for Job-Seeker tables.  <b><u>Primary Key:</u></b> Website_id, Des_website_id <b><u>Foreign Key:</u></b> Website_id, Des_website_id  <b><u>Field Names:</u></b> <b><u>Website_id</u></b> (Long Integer – Auto Incremented) <b><u>Des_website_id</u></b> (Long Integer – Auto Incremented)

<b>Name</b>	Form_cv
<b>Where/How Used</b>	CV form page CV viewing page
<b>Description</b>	This table is a relation table that connects Job Seeker and CV tables.

	<p><b><u>Primary Key:</u></b> CV_id</p> <p><b><u>Foreign Key:</u></b> Jobseeker_id, CV_id</p> <p><b><u>Field Names:</u></b></p> <p>Jobseeker_id (Long Integer – Auto Incremented) NOT NULL</p> <p>CV_id (Long Integer – Auto Incremented)</p>
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<b><i>Name</i></b>	Form_ann
<b><i>Where/How Used</i></b>	Job announcement form page Job announcement viewing page
<b><i>Description</i></b>	<p>This table is a relation table that connects Employer and Announcement tables.</p> <p><b><u>Primary Key:</u></b> Announcement_id</p> <p><b><u>Foreign Key:</u></b> Employer_id, Announcement_id</p> <p><b><u>Field Names:</u></b></p> <p>Employer_id (Long Integer – Auto Incremented) NOT NULL</p> <p>Announcement_id (Long Integer – Auto Incremented)</p>

<b><i>Name</i></b>	Has_pwd_emp
<b><i>Where/How Used</i></b>	Registration page Login
<b><i>Description</i></b>	<p>This table is a relation table that connects Employer and PWD tables.desire</p> <p><b><u>Primary Key:</u></b> Employer_id, User_name</p> <p><b><u>Foreign Key:</u></b> Employer_id, User_name</p> <p><b><u>Field Names:</u></b></p> <p>Employer_id (Long Integer – Auto Incremented)</p> <p>User_name (VarChar(20))</p>

<b>Name</b>	Desire
<b>Where/How Used</b>	Job announcement form page Job announcement viewing page
<b>Description</b>	<p>This table is a relation table that connects Employer and Desired Web-sites for Employers tables.</p> <p><b><u>Primary Key:</u></b> Employer_id, Des_website_id <b><u>Foreign Key:</u></b> Employer_id, Des_website_id</p> <p><b><u>Field Names:</u></b> <b><u>Employer_id</u></b> (Long Integer – Auto Incremented) <b><u>Des_website_id</u></b> (Long Integer – Auto Incremented)</p>

<b>Name</b>	Skill_emp
<b>Where/How Used</b>	Job announcement form page Job announcement viewing page
<b>Description</b>	<p>This table is a relation table that connects Announcement and Computer Skill Employer tables.</p> <p><b><u>Primary Key:</u></b> Announcement_id, Computer_skill_id <b><u>Foreign Key:</u></b> Announcement_id, Computer_skill_id</p> <p><b><u>Field Names:</u></b> <b><u>Announcement_id</u></b> (Long Integer – Auto Incremented) <b><u>Computer_skill_id</u></b> (Long Integer – Auto Incremented)</p>

<b>Name</b>	In_emp
<b>Where/How Used</b>	Job announcement form page Job announcement viewing page
<b>Description</b>	<p>This table is a relation table that connects Desired Web-sites for Employer and Web-Sites tables.</p> <p><b><u>Primary Key:</u></b> Des_website_id, Website_id</p>

	<p><b><u>Foreign Key:</u></b> Des_website_id, Website_id</p> <p><b><u>Field Names:</u></b></p> <p><u>Des_website_id</u> (Long Integer – Auto Incremented)</p> <p><u>Website_id</u> (Long Integer – Auto Incremented)</p>
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<b><i>Name</i></b>	Search_Employer
<b><i>Where/How Used</i></b>	Search Results Listing Search Information Recording
<b><i>Description</i></b>	<p>This table hold search history of employers for Notification property of i\$kolik</p> <p><b><u>Primary Key:</u></b> Search_id</p> <p><b><u>Foreign Key:</u></b> Sector_id(reference:Sector) Position_id(reference:Position)</p> <p><b><u>Field Names:</u></b></p> <p><u>Search_id</u> (Long Integer – Auto Incremented)</p> <p><u>Sector_id</u> (Long Integer) NOT NULL: Sector id from Sector table. It determines the sector which the related Employer searched for</p> <p><u>Position_id</u> (Long Integer) NOT NULL: Position id from Positions table. It determines the position which the related Employer searched for</p> <p><u>City</u> (VarChar(20)) NOT NULL: Working Place (City)</p> <p><u>Military_status</u> (VarChar(10))</p> <p><u>Willing_to_travel</u> (Booelan): State whether job-seeker wants to travel or not.</p> <p><u>Foreign_lang</u> (VarChar(20)): Desired Foreign Language</p> <p><u>Gender</u> (VarChar(1))</p> <p><u>Comp_skill</u> (VarChar(20)) : Computer Skills that Employer is looking for</p>

	<i>Experience</i> (Boolean) : Determine whether employer is looking for experienced or not
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<b>Name</b>	Search_JS
<b>Where/How Used</b>	Search Results Listing Search Information Recording
<b>Description</b>	<p>This table hold search history of Job-Seekers for Notification property of i\$kolik</p> <p><b><u>Primary Key:</u></b> Search_id</p> <p><b><u>Foreign Key:</u></b> Sector_id(reference:Sector) Position_id(reference:Position)</p> <p><b><u>Field Names:</u></b> <i>Search_id</i> (Long Integer – Auto Incremented) <i>Sector_id</i> (Long Integer) NOT NULL: Sector id from Sector table. It determines the sector which the related Employer searched for <i>Position_id</i> (Long Integer) NOT NULL: Position id from Positions table. It determines the position which the related Employer searched for <i>City</i> (VarChar(20)) NOT NULL: Working Place (City)</p>

<b>Name</b>	Emp_search
<b>Where/How Used</b>	Search Results Listing Search Information Recording
<b>Description</b>	<p>This table is a relation table that connects Employer and Search_Employer tables.</p> <p><b><u>Primary Key:</u></b> Search_id</p> <p><b><u>Foreign Key:</u></b> Employer_id, Search_id</p> <p><b><u>Field Names:</u></b></p>

	<i>Employer_id</i> (Long Integer – Auto Incremented) NOT NULL <i>Search_id</i> (Long Integer – Auto Incremented)
<b>Name</b>	JS_search
<b>Where/How Used</b>	Search Results Listing Search Information Recording
<b>Description</b>	This table is a relation table that connects Job_Seeker and Search_JS tables.  <b><u>Primary Key:</u></b> Search_id <b><u>Foreign Key:</u></b> Jobseeker_id, Search_id  <b><u>Field Names:</u></b> <i>Jobseeker_id</i> (Long Integer – Auto Incremented) NOT NULL <i>Search_id</i> (Long Integer – Auto Incremented)

### 4.3 Job Categorization

Insertion script for Sector Table which will be used in job categorization is listed below. Position Table will contain all positions for all relevant sectors, so listing insertions of Position table will be so detailed and unnecessary.

```

INSERT INTO Sector VALUES( "104", "Accounting");
INSERT INTO Sector VALUES( "105", "Administration");
INSERT INTO Sector VALUES( "149", "Advertising");
INSERT INTO Sector VALUES( "180", "Aerospace Engineering");
INSERT INTO Sector VALUES( "189", "Agriculture, Forestry,
Fishing");
INSERT INTO Sector VALUES( "172", "Airline Industry");
INSERT INTO Sector VALUES( "156", "Analog Engineer");
INSERT INTO Sector VALUES( "188", "Analyst, Project Management");
INSERT INTO Sector VALUES( "140", "Applications Engineering");
INSERT INTO Sector VALUES( "190", "Architectural Services");
INSERT INTO Sector VALUES( "191", "Arts, Entertainment, and
Media");
INSERT INTO Sector VALUES( "192", "Banking");
INSERT INTO Sector VALUES( "143", "BioTech");
INSERT INTO Sector VALUES( "173", "Business Development");
INSERT INTO Sector VALUES( "157", "Business Planning");
INSERT INTO Sector VALUES( "106", "CAD");
INSERT INTO Sector VALUES( "142", "Chemical Engineering");
INSERT INTO Sector VALUES( "144", "Chemist");
INSERT INTO Sector VALUES( "169", "Civil Engineering");
INSERT INTO Sector VALUES( "150", "Client/Server SW Consulting");

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INSERT INTO Sector VALUES( "107", "Communications");
INSERT INTO Sector VALUES( "193", "Community, Social Services,
and Nonprofit");
INSERT INTO Sector VALUES( "167", "Computer Programming");
INSERT INTO Sector VALUES( "148", "Construction Industry");
INSERT INTO Sector VALUES( "160", "Consulting");
INSERT INTO Sector VALUES( "179", "Contract Management");
INSERT INTO Sector VALUES( "178", "Co-Op/Internship");
INSERT INTO Sector VALUES( "108", "Customer / Technical
Support");
INSERT INTO Sector VALUES( "183", "Database Administration");
INSERT INTO Sector VALUES( "124", "Defense Industry");
INSERT INTO Sector VALUES( "109", "Design Engineering");
INSERT INTO Sector VALUES( "163", "Documentation");
INSERT INTO Sector VALUES( "161", "Education / Training");
INSERT INTO Sector VALUES( "110", "Electrical Engineering");
INSERT INTO Sector VALUES( "182", "Electronics Commerce");
INSERT INTO Sector VALUES( "194", "Employment Placement
Agencies");
INSERT INTO Sector VALUES( "111", "Engineering");
INSERT INTO Sector VALUES( "168", "Engineering - Management");
INSERT INTO Sector VALUES( "155", "Environmental Engineering");
INSERT INTO Sector VALUES( "112", "Executive Management");
INSERT INTO Sector VALUES( "113", "Facilities/Safety");
INSERT INTO Sector VALUES( "114", "Field Operations");
INSERT INTO Sector VALUES( "115", "Field Support");
INSERT INTO Sector VALUES( "116", "Finance");
INSERT INTO Sector VALUES( "195", "Financial Services");
INSERT INTO Sector VALUES( "117", "Firmware Engineering");
INSERT INTO Sector VALUES( "145", "Food Industry");
INSERT INTO Sector VALUES( "196", "Government and Policy");
INSERT INTO Sector VALUES( "164", "Graphic Art");
INSERT INTO Sector VALUES( "120", "Health Care Industry");
INSERT INTO Sector VALUES( "197", "Healthcare, Practitioner and
Technician");
INSERT INTO Sector VALUES( "186", "Hotel Industry");
INSERT INTO Sector VALUES( "118", "HR");
INSERT INTO Sector VALUES( "119", "HW Engineering");
INSERT INTO Sector VALUES( "159", "Information Technology");
INSERT INTO Sector VALUES( "198", "Installation, Maintenance, and
Repair");
INSERT INTO Sector VALUES( "171", "Insurance Industry");
INSERT INTO Sector VALUES( "166", "International Trade");
INSERT INTO Sector VALUES( "199", "Internet/E-Commerce");
INSERT INTO Sector VALUES( "152", "Investment/Portfolio
Management");
INSERT INTO Sector VALUES( "200", "Law Enforcement, and
Security");
INSERT INTO Sector VALUES( "121", "Legal");
INSERT INTO Sector VALUES( "187", "Management");
INSERT INTO Sector VALUES( "122", "Manufacturing");
INSERT INTO Sector VALUES( "125", "Marketing");
INSERT INTO Sector VALUES ( "151", "Materials Management");
INSERT INTO Sector VALUES ( "126", "Mechanical Engineering");
INSERT INTO Sector VALUES ( "201", "Military");
INSERT INTO Sector VALUES ( "177", "Network Administration");
INSERT INTO Sector VALUES ( "127", "Network Engineering");
INSERT INTO Sector VALUES ( "123", "Other");
INSERT INTO Sector VALUES ( "202", "Personal Care and Service");
INSERT INTO Sector VALUES ( "128", "Process Engineering");

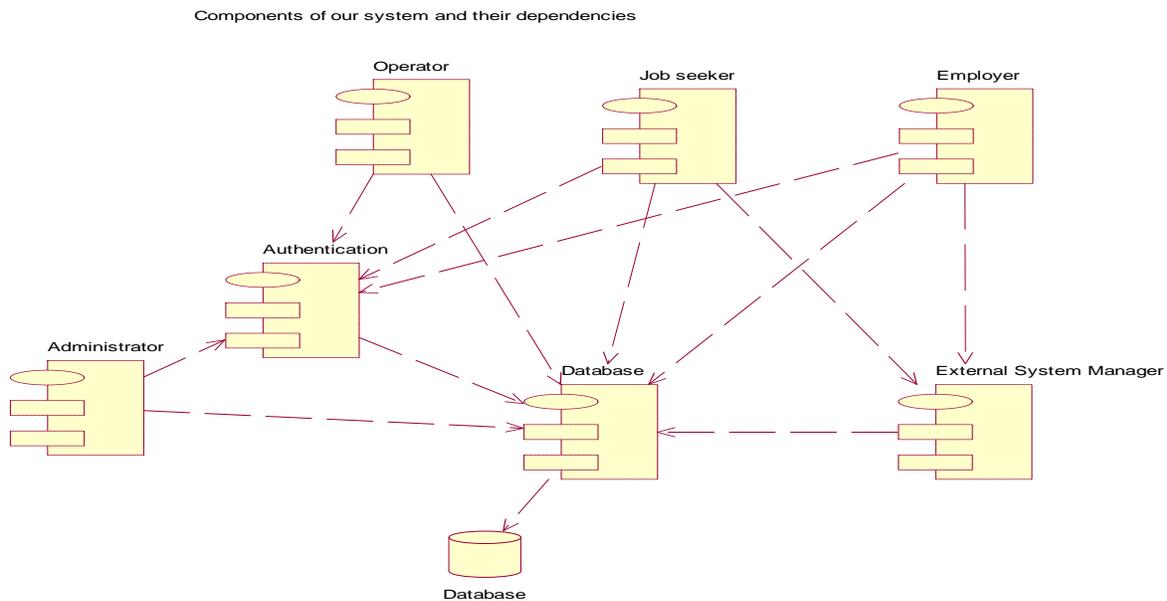
```

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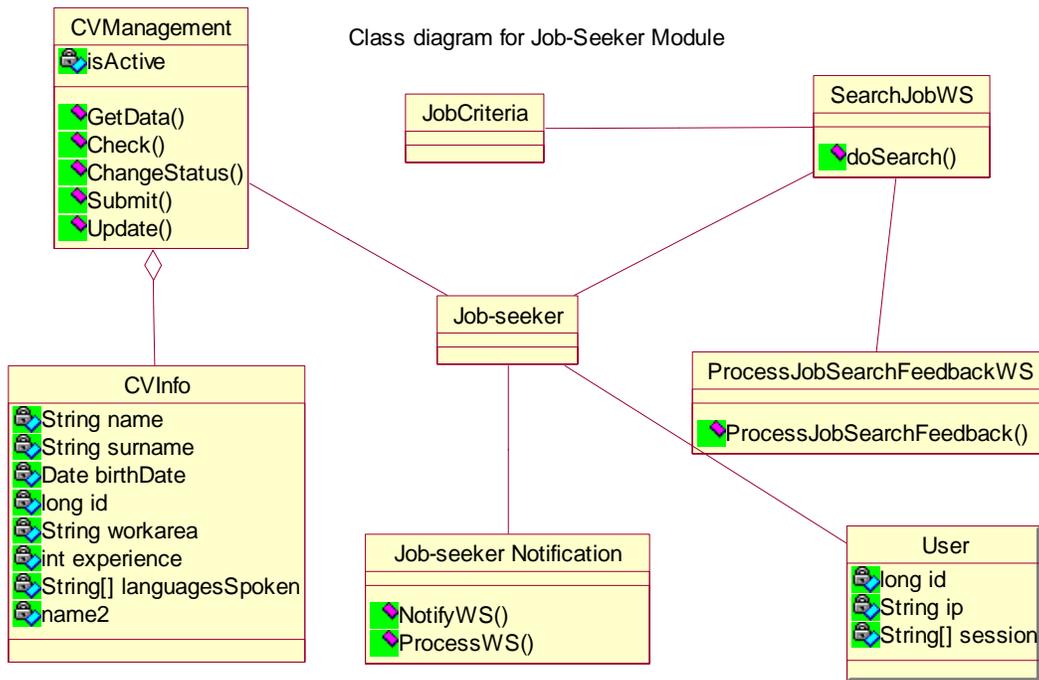
INSERT INTO Sector VALUES ( "129","Product Development");
INSERT INTO Sector VALUES ( "130","Product Engineering");
INSERT INTO Sector VALUES ( "131","Product Management");
INSERT INTO Sector VALUES ( "146","Professional Services");
INSERT INTO Sector VALUES ( "132","Project Management");
INSERT INTO Sector VALUES ( "133","Public Relations");
INSERT INTO Sector VALUES ( "165","Publishing");
INSERT INTO Sector VALUES ( "141","Purchasing");
INSERT INTO Sector VALUES ( "134","QA / Software Testing");
INSERT INTO Sector VALUES ( "147","Real Estate Industry");
INSERT INTO Sector VALUES ( "135","Research & Development");
INSERT INTO Sector VALUES ( "203","Restaurant and Food Service");
INSERT INTO Sector VALUES ( "176","Retail Sales");
INSERT INTO Sector VALUES ( "175","Risk Management");
INSERT INTO Sector VALUES ( "137","Sales / Sales Management");
INSERT INTO Sector VALUES ( "181","SAP Business Consulting");
INSERT INTO Sector VALUES ( "204","Science");
INSERT INTO Sector VALUES ( "153","Security");
INSERT INTO Sector VALUES ( "205","Sports and Recreation");
INSERT INTO Sector VALUES ( "136","SW Engineering");
INSERT INTO Sector VALUES ( "154","System Administration");
INSERT INTO Sector VALUES ( "138","Technical Writer");
INSERT INTO Sector VALUES ( "170","Technician");
INSERT INTO Sector VALUES ( "158","Tele-Communications");
INSERT INTO Sector VALUES ( "139","Test Engineering");
INSERT INTO Sector VALUES ( "174","Training");
INSERT INTO Sector VALUES ( "206","Transportation and
Warehousing");
INSERT INTO Sector VALUES ( "185","Travel");
INSERT INTO Sector VALUES ( "184","Web / Multimedia");
INSERT INTO Sector VALUES ( "162","Windows - Mac Development");

```

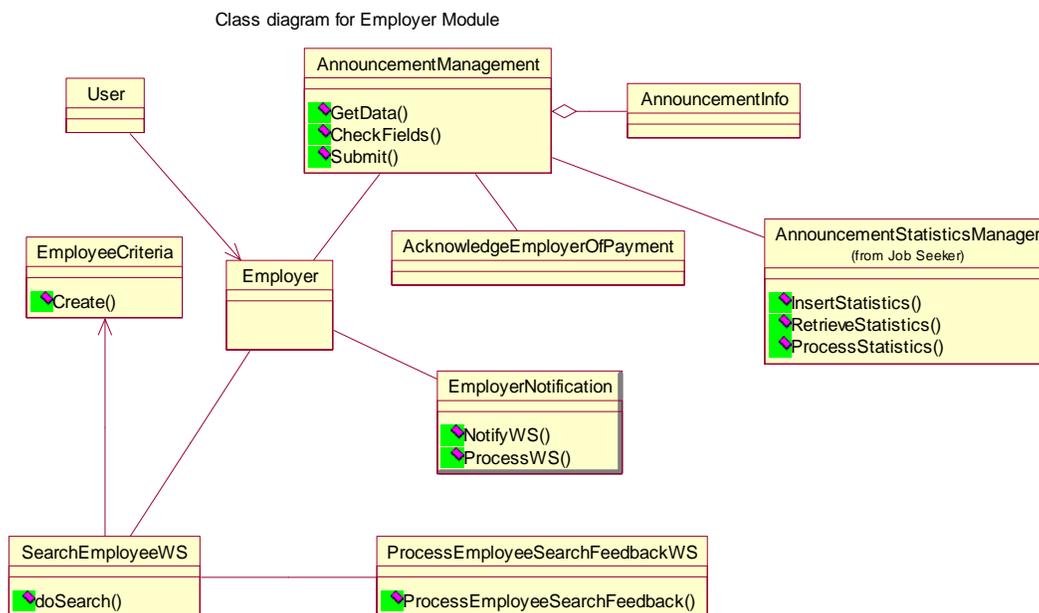
## 5. CLASS DIAGRAMS



## 5.1 Job Seeker Module

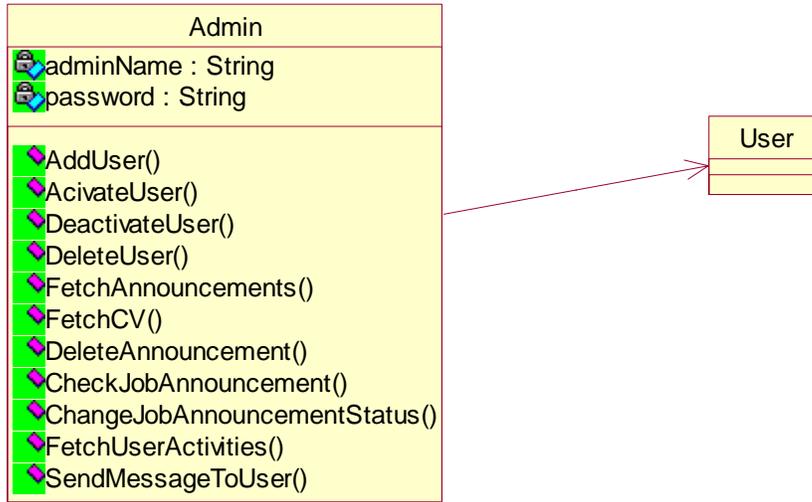


## 5.2 Employer Module



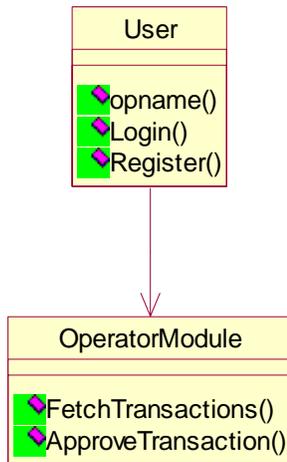
### 5.3 Administrator Module

Class diagram for Administrator Module



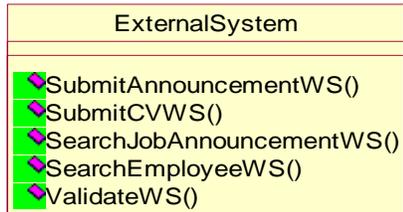
### 5.4 Operator Module

Class diagram for Operator Module



## 5.5 External system interaction module

Class diagram for External System Module



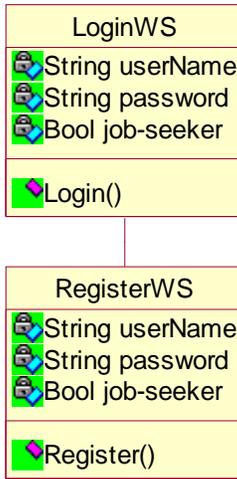
## 5.6 Database Module

Class diagram for Database Module



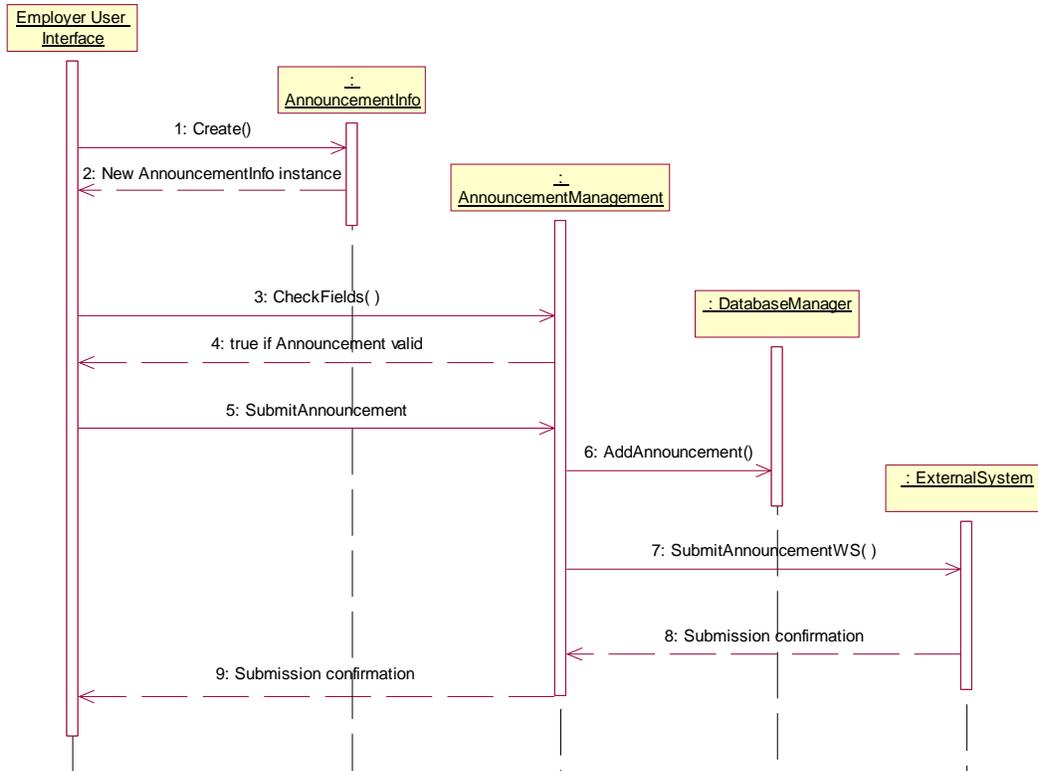
## 5.7 Authentication Module

Class diagram for Authentication Module

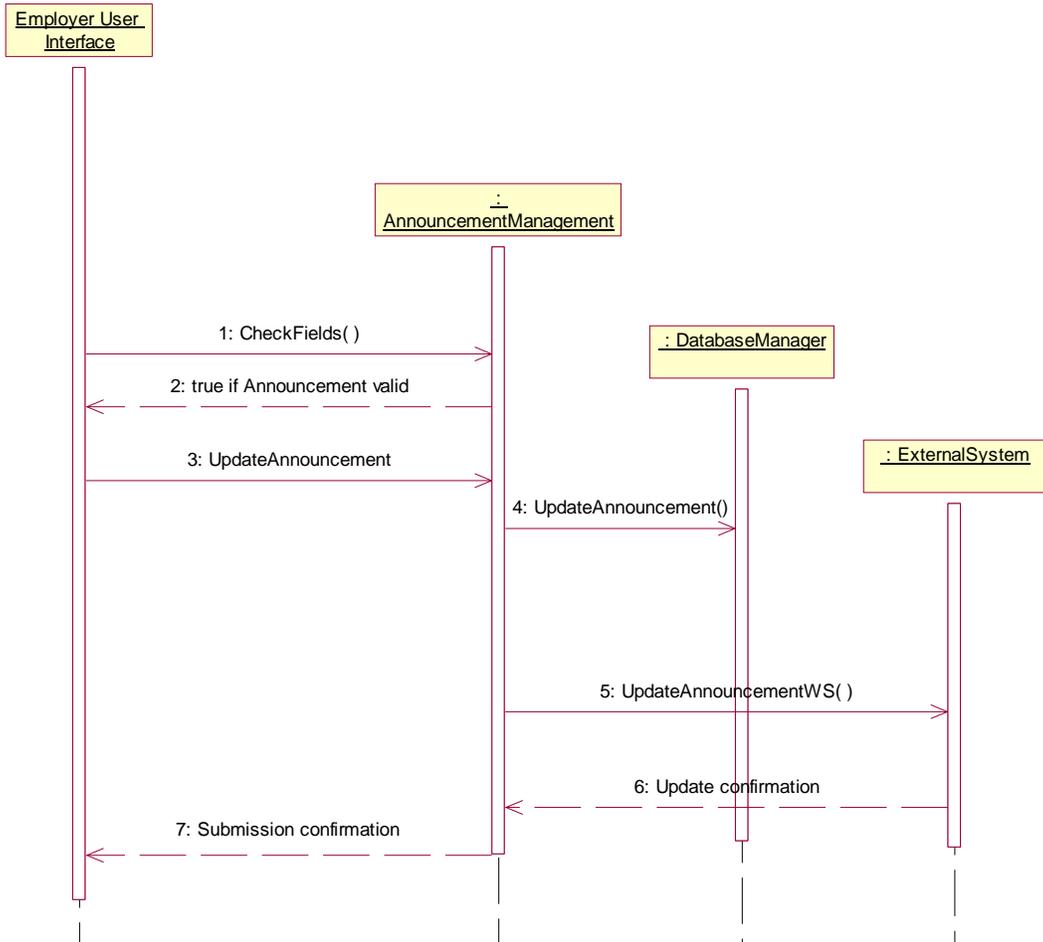


# 6. SEQUENCE DIAGRAMS

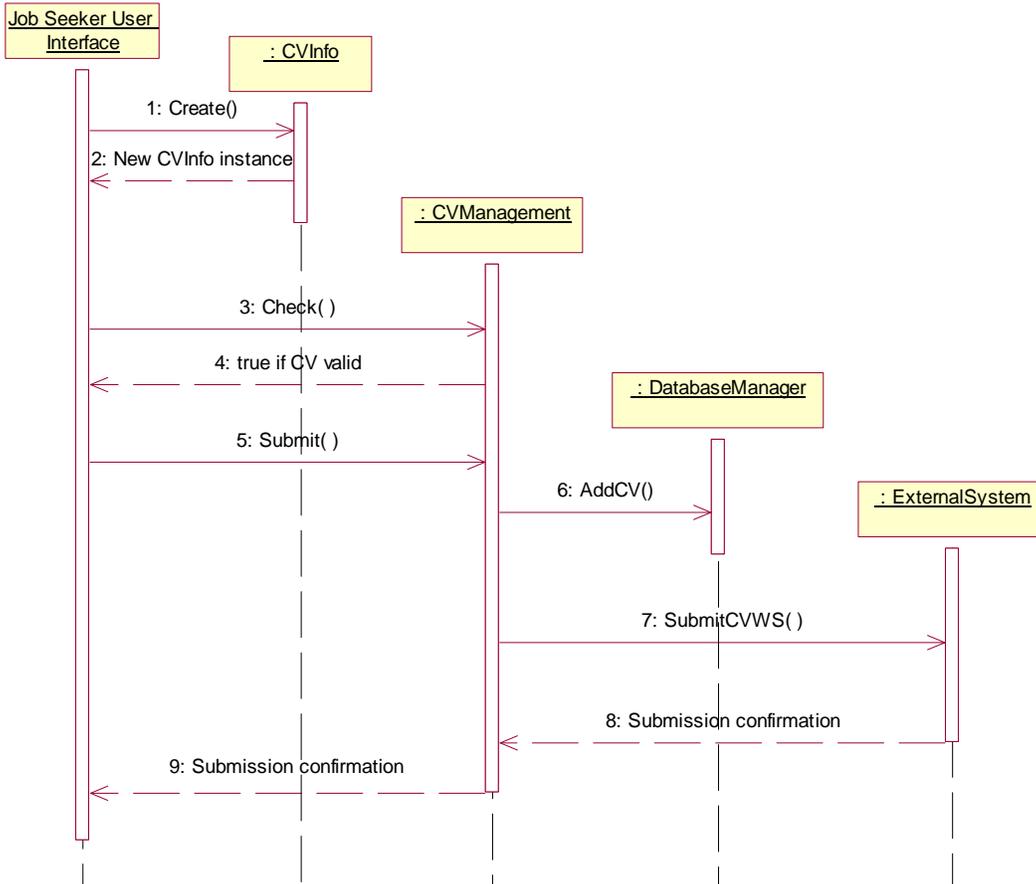
Sequence Diagram for Announcement Posting



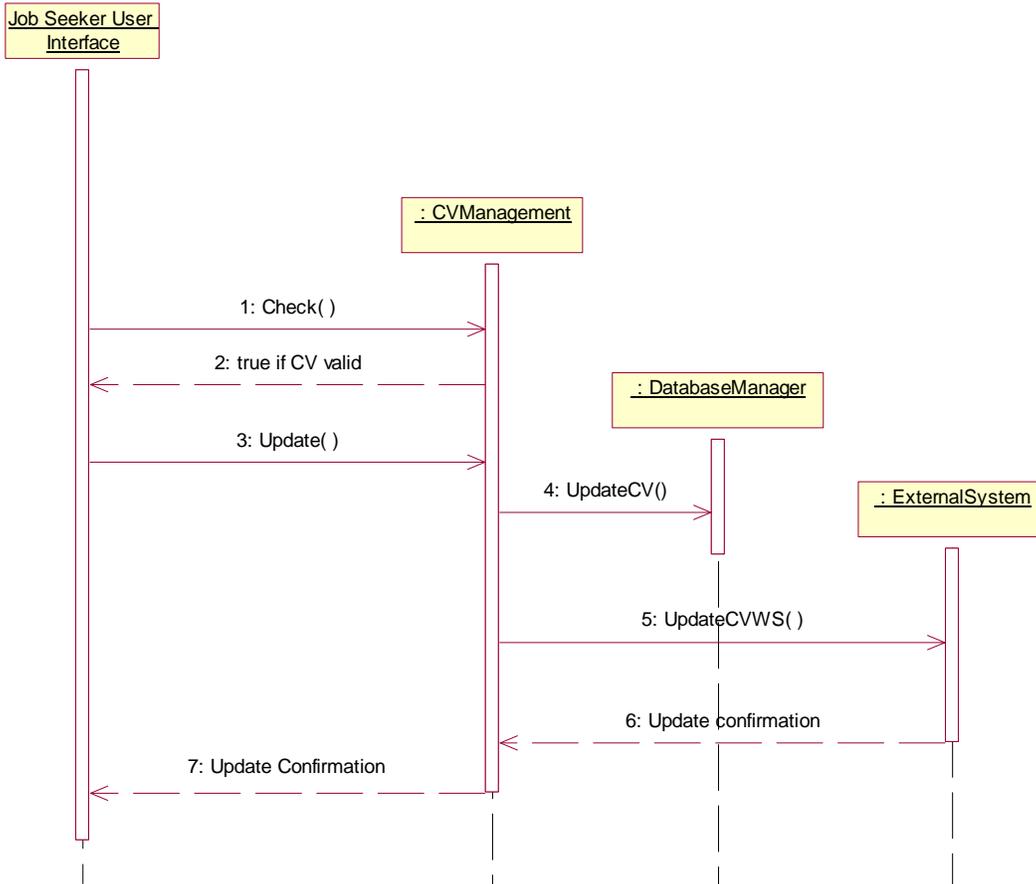
Sequence Diagram for Announcement Posting



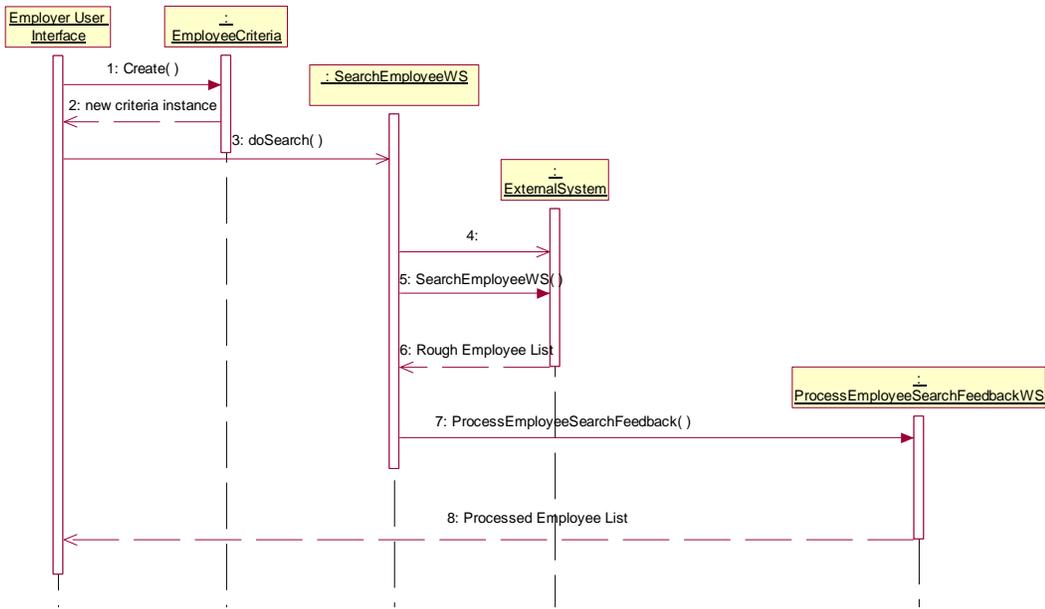
Sequence Diagram for CV Submission



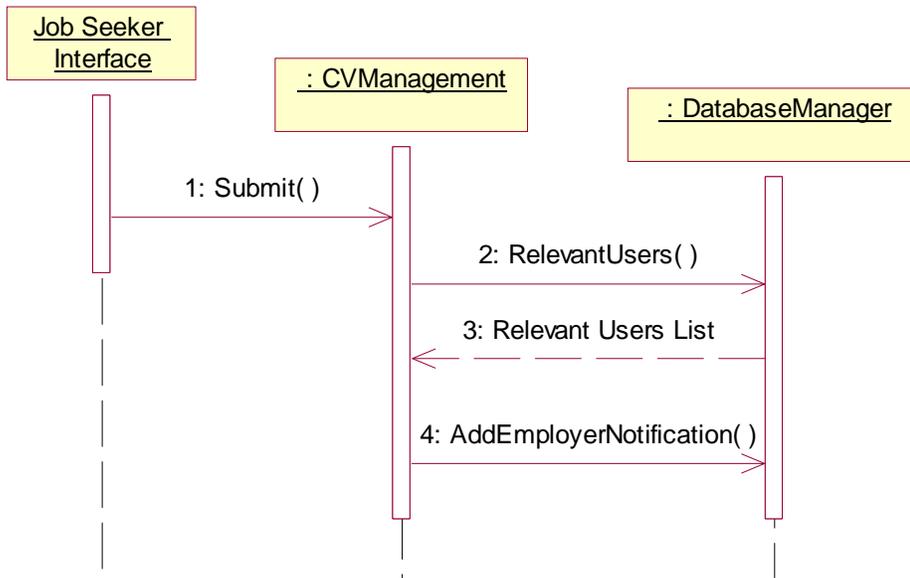
Sequence Diagram for CV Update



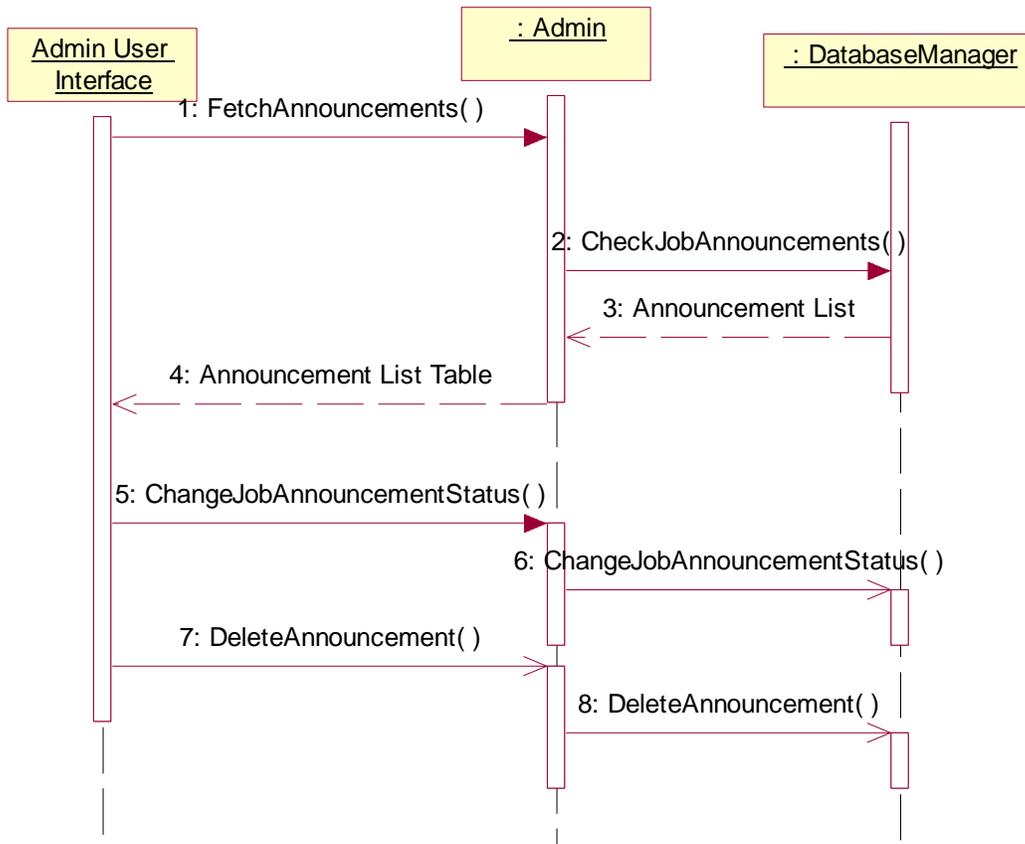
Sequence Diagram for Employee Seeking



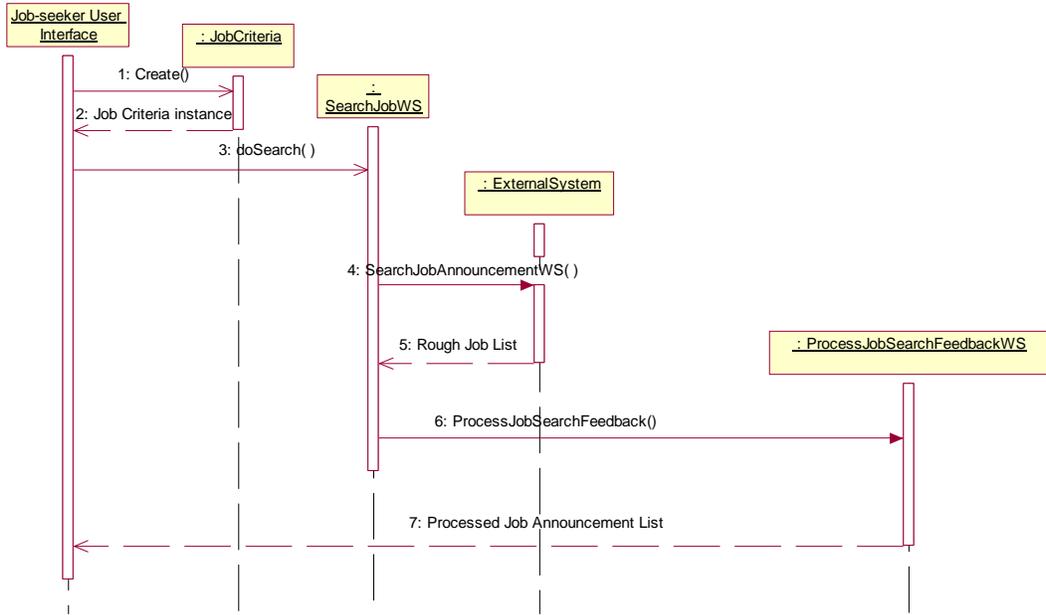
Sequence Diagram for Employer Notification



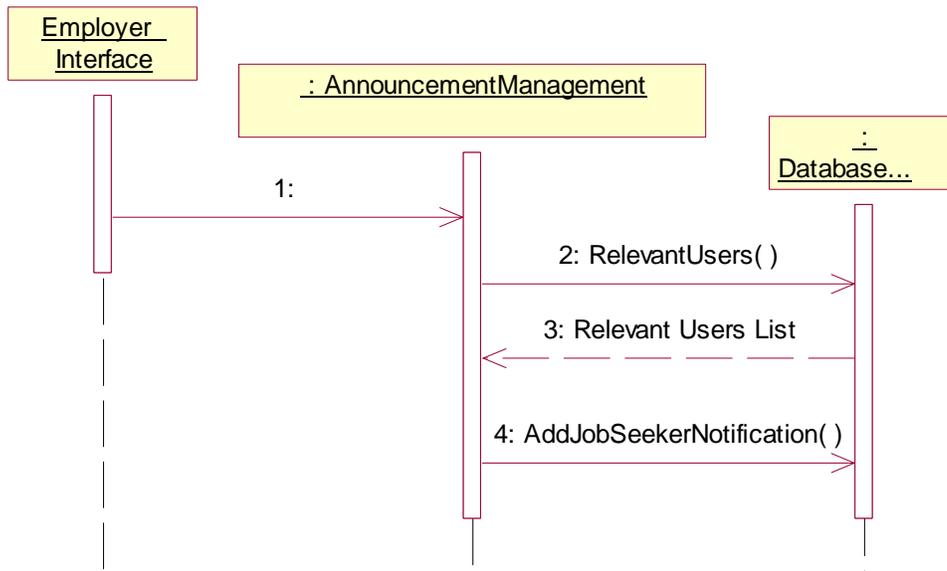
Sequence Diagram for Job Announcement Management



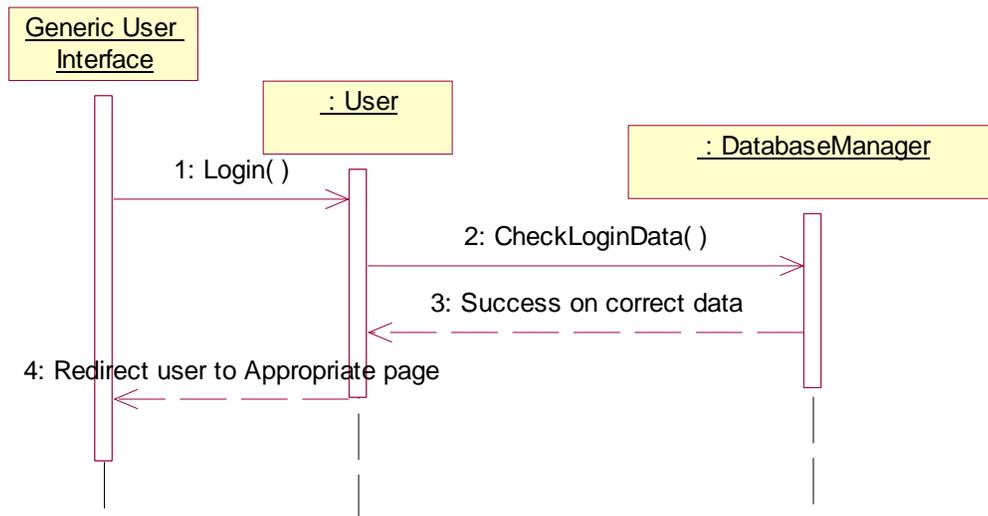
Sequence Diagram for Job Seeking



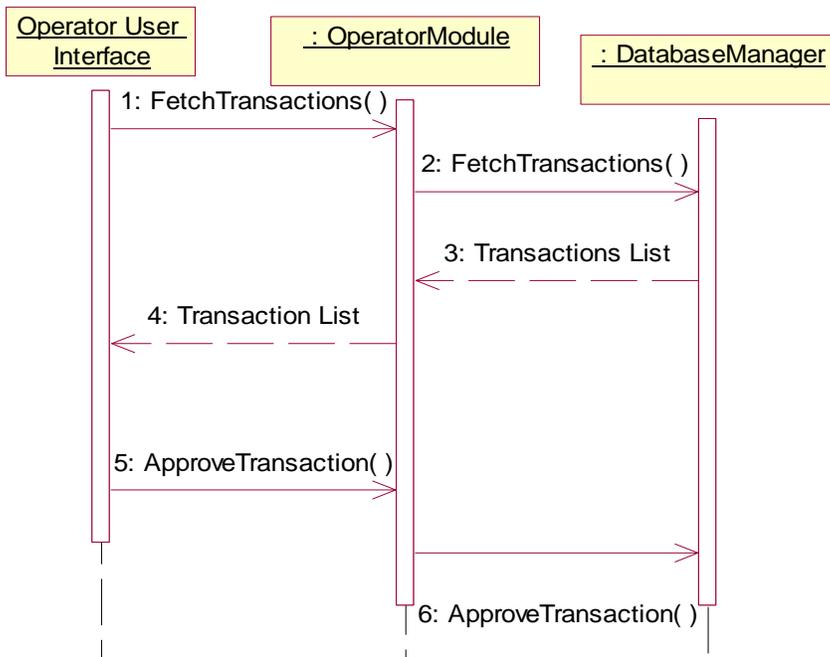
Sequence Diagram for Job Seeker Notification System



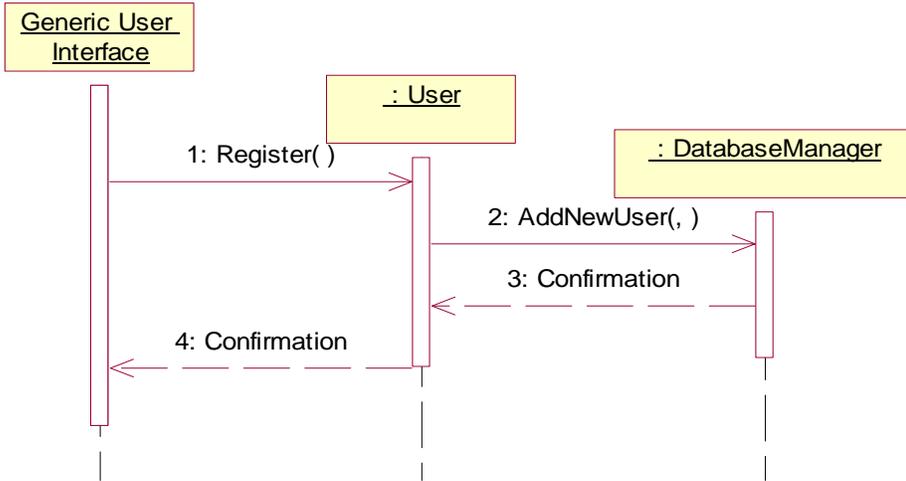
Sequence Diagram for Login Functionality



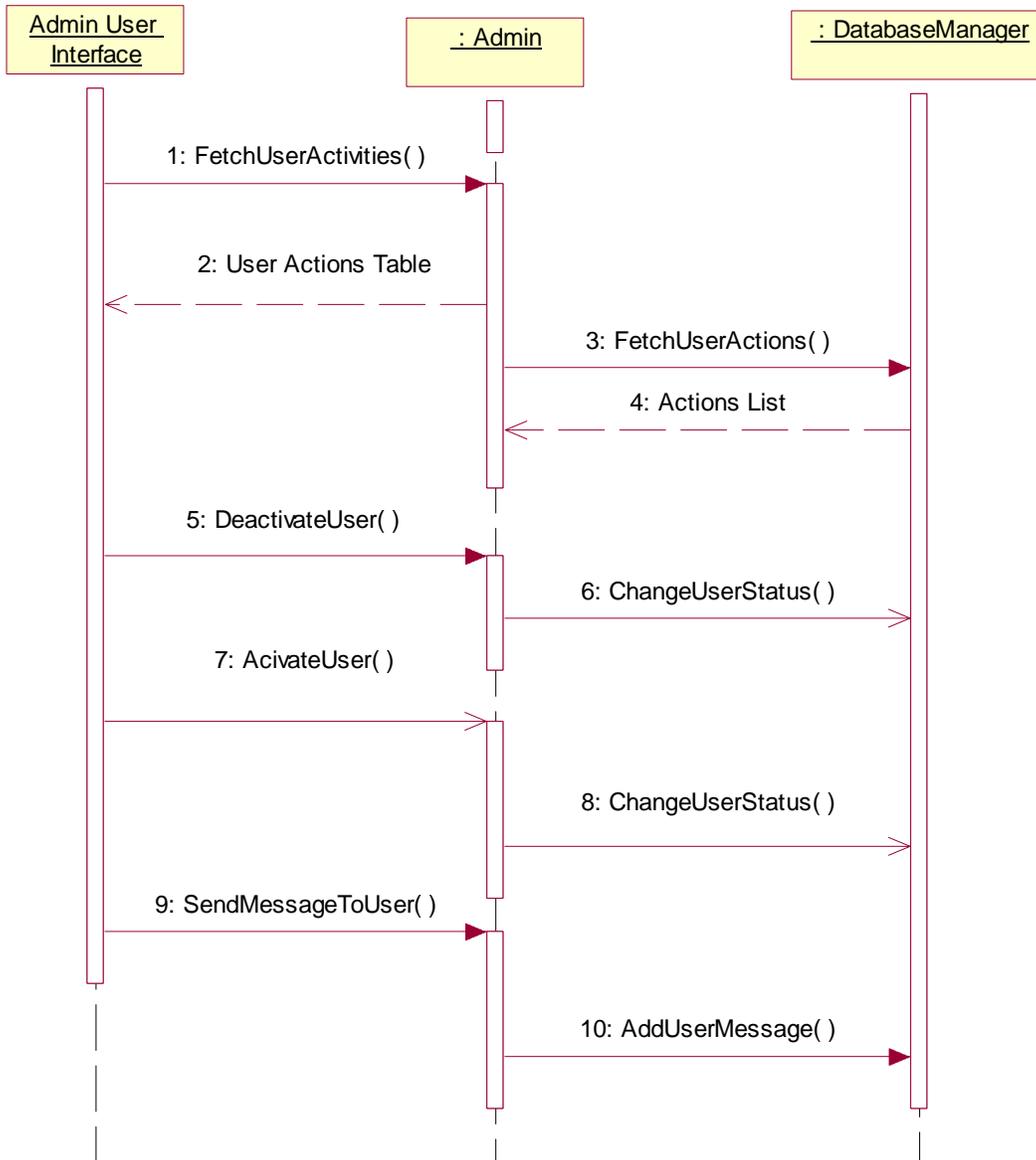
Sequence Diagram for Money Transaction Management Sequence Diagram



Sequence Diagram for Registration Functionality



Sequence Diagram for User Management



## **7. TECHNICAL ISSUES**

### **7.1. Technological Research**

To clarify how to develop each functionality we needed to make research about the possible technologies that can be used. We probed into details of ESB, Web 2.0, AJAX, Web Services, JAVA, XML, UML, SOA, SOAP, JDBC and WSDL.

We will use JAVA as programming language in that it provides many useful facilities for web services, which play vital role in the implementation of our project.

For sake of better understanding and communication we used UML. It is a standardized specification convention for object modeling. We used this convention to reveal requirements, behavioral model and structural design of our system. Yet we have modeled the requirements by forming the use-case diagrams, the behavioral model and structural design by means of activity diagrams, class diagrams and sequence diagrams.

Web Services have significant importance in our project. Web services use XML to decode the data and SOAP document to be transferred using open protocols. Using web services our application can publish its function or message as web-applications.

Basically we will use web services to use the services provided by other websites for us and publish our services to other websites.

XML (Extensible Mark-up Language) is designed to store, carry, and exchange data but it is not designed to display data. XML is the most important technology in our project in that communication and data transfer between our system and the job seeking websites will be via XML.

XML is a very important technology for our project because our system will send information to external web-sites with XML data format. Services in our system and external web sites will communicate with XML. We will also use xerces library of JAVA and XQuery technology. Xerces library will be used to parse XML documents. XQuery will be used to execute XML queries and obtain new XML documents.

An example XML document from our system which contains the CV data of a job seeker;

```
<CV>
  <row_1>
    <cv_id type='int'>
      123456
    </cv_id>
    <user_id type='int'>
      134564
    </user_id>
    <nationality type='varchar(20)'>
      Turkish
    </nationality>
    <birth_date type='date'>
      1985-05-30
    </birth_date>
    <birth_country type='varchar(20)'>
      Turkey
    </birth_country>
    <birth_city type='varchar(20)'>
      Ankara
    </birth_city>
    <father_name type='varchar(10)'>
      Omer
    </father_name>
    <mother_name type='varchar(10)'>
      Hatice
    </mother_name>
    <gender type='varchar(1)'>
      male
    </gender>
    <marial_status type='bool'>
      false
    </marial_status>
    <military_status type='varchar(10)'>
      Uncompleted
    </military_status>
    <driving_licencel type='bool'>
      True
    </driving_licencel>
    <driving_licencel_type type='varchar(1)'>
      B
    </driving_licencel_type>
    <driving_licence2 type='bool'>
    </driving_licence2>
    <driving_licence2_type type='varchar(1)'>
    </driving_licence2_type>
    <home_phone type='varchar(15)'>
      03123546825
    </home_phone>
    <cell_phone type='varchar(15)'>
      05325453394
    </cell_phone>
    <address type='varchar(200)'>
      Alinteri Bulari 207.sokak No:401 Batikent
    </address>
  </row_1>
</CV>
```

```
<country type='varchar(20)'\>
Turkey
</country>
<city type='varchar(20)'\>
Ankara
</city>
<town type='varchar(20)'\>
Yenimahalle
</town>
<post_code type='varchar(10)'\>
06370
</post_code>
<hobbies type='varchar(200)'\>
Going to cinema, Reading Book
</hobbies>
<registered_clubs type='varchar(200)'\>
Dagcilik Kulubu
</registered_clubs>
<blood_type type='varchar(10)'\>
0
</blood_type>
<smoking type='bool'\>
False
</smoking>
<preferred_workstyle type='varchar(50)'\>
Full Time
</preferred_workstyle>
<preferred_city1 type='varchar(20)'\>
Ankara
</preferred_city1>
<preferred_city2 type='varchar(20)'\>
</preferred_city2>
<preferred_city3 type='varchar(20)'\>
</preferred_city3>
<preferred_city4 type='varchar(20)'\>
</preferred_city4>
<preferred_country1 type='varchar(20)'\>
Turkey
</preferred_country1>
<preferred_country2 type='varchar(20)'\>
</preferred_country2>
<preferred_country3 type='varchar(20)'\>
</preferred_country3>
<preferred_country4 type='varchar(20)'\>
</preferred_country4>
<preferred_sector_id1 type='int'\>
1
</preferred_sector_id1>
<preferred_sector_id2 type='int'\>
</preferred_sector_id2>
<preferred_sector_id3 type='int'\>
</preferred_sector_id3>
<preferred_sector_id4 type='int'\>
</preferred_sector_id4>
<preferred_position_id1 type='int'\>
1
</preferred_position_id1>
<preferred_position_id2 type='int'\>
</preferred_position_id2>
<preferred_position_id3 type='int'\>
```

```

        </preferred_position_id3>
        <preferred_position_id4 type='int'>
        </preferred_position_id4>
        <cv_active type='bool'>
        true
        </cv_active>
        <willing_to_travel type='bool'>
        true
        </willing_to_travel>
        <expected_wage type='int'>
        2000
        </expected_wage>
        <cv_title type='varchar(50)'>
        Good CV
        </cv_title>
    </row_1>
</CV>

```

An enterprise service bus (ESB) is a pattern of middleware that unifies and connects services, applications and resources within a business. It's a way of integrating applications, coordinating resources and manipulating information. ESB is very important for our project because we will make use of this technology when we use the web-services of other job-seeking web-sites. Also ESB improves operational performance and reduces costs while simplifying the task of connecting dissimilar applications across a network of different operating systems.

Web 2.0 refers to a perceived second generation of web-based communities. It contains AJAX, XML, CSS, XHTML. We will also use Web 2.0 technology in our project. It contains especially AJAX and XML. By means of AJAX with an HTTP request, a web page can make a request to and get a response from a web server - without reloading the page. The user will stay on the same page without noticing that scripts request pages or sending data to a server in the background. We will use this approach in our project because loading the user requested data becomes faster and easier.

SOA (Service Oriented Architecture) represents a model in which functionality is decomposed into small, services, which can be distributed over a network regardless of the operating systems and can be combined together and reused to create business applications. We have adopt this architecture in the scope of our project.

WSDL (Web Services Description Language) is an XML-based language for describing Web services and how to access them. The document describes a Web service. It

specifies the location of the service and the operations (or methods) the service exposes. We need this language to form our system's web service implementation and build the web service architecture.

SOAP (Simple Object Access Protocol) provides a way to communicate between applications running on different operating systems, with different technologies and programming languages. We need to include SOAP documents in some steps of our project. The most important reason that we need SOAP is to exchange information between applications over HTTP. HTTP is supported by all Internet browsers and servers so SOAP was created to accomplish this. In many steps of our project we will need to send information to other applications and services in other websites and take information from them. SOAP provides us the ability to manage this situation.

## **7.2. Security of the system**

Security is one of most important concerns in design and implementation of our system. Below we explain how we plan to deal with security concerns.

First of all data sent over network will be encrypted. We plan to use SSL protocol for this. The SSL protocol protects data from alteration and disclosure while it is in transit at the same time it ensures that users are connecting to web sites they think they connect.

Another measure we plan to take is stateless user authentication. We will give user a random session id which will be stored on both client and server sides, this will be renewed each 5-10 minutes. Id will consist of a long string of random characters. With SSL session id is not exposed. Hashmap of session id's of users that are online will be kept. It will map to online user's information such as name, surname, id. This information will be kept on user and is not as of session variables. Users who do not have a unique session id given to them immediately after successful login will not be able to navigate to any pages except registration and main page, so that only legitimate users will be able to view other pages.

To prevent from breaking user password by corresponding breaking programs, we plan to do as gmail. The idea is that once user name and password is incorrectly entered several times, we will require entering not only username and password information but also the string which will be displayed on login window.

Password encryption by md5 will also be made, thus preventing passwords to be explicit in the database.

At the same time we will ensure that there is an administrator having many privileges over the system always monitoring the system.

# 8. USER INTERFACE

## 8.1 Employer Pages

### 8.1.1 Employer Registration

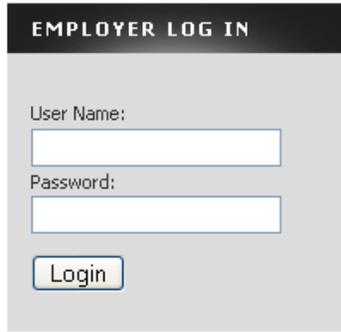
Employer Registration:

User Name	<input type="text"/>
Password	<input type="text"/>
Password (Again)	<input type="text"/>
Identity Card Number	<input type="text"/>
Name	<input type="text"/>
Surname	<input type="text"/>
E-mail 1	<input type="text"/>
E-mail 2	<input type="text"/>
Fax	<input type="text"/>
Security Question	<input type="text"/>
Answer of Security Question	<input type="text"/>
<b>COMPANY INFORMATION:</b>	
Company Name	<input type="text"/>
Sector	<input type="text" value="v"/>
Worker Number	<input type="text"/>
Address	<input type="text"/>
Country	<input type="text"/>
City	<input type="text"/>
Postal Code	<input type="text"/>
Web-site	<input type="text"/>

Employer Registration window is a part of user interface for employer registration. On the right part of the Register window, there are text edit boxes that have to be filled with correct information. Labels which are on just left of text boxes are used for defining the needed information that must be filled in text box on the right. After clicking “Register”

button, if information is valid all information will be recorded in database and registration will be completed successfully.

### 8.1.2 Employer Login



The image shows a screenshot of a web form titled "EMPLOYER LOG IN". The form has a dark header with the title in white. Below the header, there are two text input fields: "User Name:" and "Password:". Below the "Password:" field is a "Login" button. The form is set against a light gray background.

Login Box has very simple structure that is formed by a button and two text boxes which have to be filled correctly to login. When the button is clicked, correctness of information is checked and if information is correct, user is transferred to profile page or other personal pages.

## 8.1.3 Employer Profile



### My Profile:

User Name	<i>User_name</i>
Password	*****
Identity Card Number	<i>TC_kimlik_no</i>
Name	<i>Name</i>
Surname	<i>Surname</i>
E-mail 1	<i>Email1</i>
E-mail 2	<i>Email2</i>
Fax	<i>Fax</i>
Security Question	<i>Security_Question</i>
Answer of Security Question	<i>Security_Question_Answer</i>
<b>COMPANY INFORMATION:</b>	
Company Name	<i>Company_name</i>
Sector	<input type="text"/>
Worker Number	<i>Worker Number</i>
Address	<input type="text"/>
Country	<i>Country</i>
City	<i>City</i>
Postal Code	<i>Postal Code</i>
Web-site	<i>Web-site</i>

On the left part of the Employer profile window, there are two operation boxes, namely Employer operations box and Search box. Search box will be explained in detail in 8.1.3.2 . In Employer Operations box there are six links to other pages.

- Main Page : when clicked, main page of İŞkolik will be opened.
- My Profile : now this link is not active, because the user is already on profile window.
- Form/Update Job Announcement : when clicked, job announcement for page is opened.

- List My Job Announcements : when clicked, user’s job announcements list page will be opened, so user can view all of his/her announcements and if he wants he can modify them.
- Search for CVs: when clicked, search window will be opened.
- Notifications: when clicked, Notifications window will be opened.

On the right part of the Employer profile window, all profile information is displayed. On the bottom of window there is an “Update” button, for profile updating.

### 8.1.3.1 Employer Profile - Announcement Posting

The screenshot displays the 'Announcement Posting' interface. At the top left is the 'Işkolik by aiva' logo. The navigation menu includes 'Main Page', 'My Profile', 'Form Announcement', 'Search', and 'Log Out'. The main content area is divided into three sections:

- ANNOUNCEMENT FORM:** Contains four links: » Profile, » Form Announcement, » Desired Computer Skills, and » Desired Web-Sites.
- SEARCH FOR EMPLOYEE:** Features input fields for Sector, City, Country, Department, Position, and Keyword, with a 'Go' button below.
- Announcement:** A form with the following fields:
  - Announcement Title (text input)
  - Country (dropdown menu)
  - City (dropdown menu)
  - Desired Experiences (text area)
  - Work Area (text input)
  - E-mail 1 (text input)
  - Department (text input)
  - Military Status (text input)
  - Driving Licence Status (text input)
  - Detailed Job Information (text area)

A 'Save' button is located at the bottom right of the form.

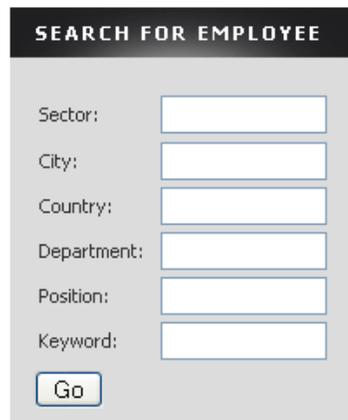
On the left part of the Announcement Posting window, there are two bars, namely Announcement Form bar and Search bar. Search bar will be explained in detail in 8.1.3.2 . In Announcement Form bar there are four links.

- Profile : when clicked, Employer Profile window will be opened..

- Form Announcement: this link is not active now, because the user is already in it.
- Desired Computer Skills: when clicked, Desired Computer Skills window is opened. In that window, user can fill computer skills that are requested from employee. That window is also a part of announcement form.
- Desired Web-Sites: when clicked, Desired Web-Sites window is opened. In that window, user can view and update his/her desired web-sites list.

On the right part of the Announcement Posting window, there are text boxes which must be filled correctly to form a correct job announcement. After filling all necessary parts of announcement form, user can save announcement by clicking “Save” button located at the bottom of the window.

### 8.1.3.2 Employer Profile - Employee Search



SEARCH FOR EMPLOYEE

Sector:

City:

Country:

Department:

Position:

Keyword:

Employee Search Box has very simple structure. It consists of six text boxes which must be filled with search information and a button. When the button is clicked, search will be performed and results will be displayed on Search List window.

## 8.2 Job Seeker Pages

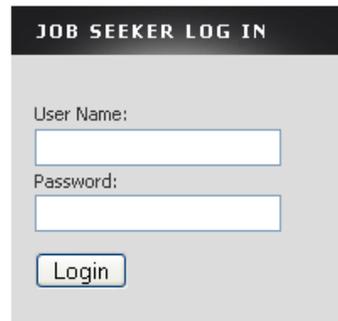
### 8.2.1 Job Seeker Registration

#### Job-Seeker Registration:

User Name	<input type="text"/>
Password	<input type="text"/>
Password (Again)	<input type="text"/>
Identity Card Number	<input type="text"/>
Name	<input type="text"/>
Surname	<input type="text"/>
E-mail 1	<input type="text"/>
E-mail 2	<input type="text"/>
Security Question	<input type="text"/>
Answer of Security Question	<input type="text"/>
	<input type="button" value="Register"/>

Registration Window is for entering “Job Seeker” registration information. On the right part of the Register window, there are text edit boxes that have to be filled with proper information. Labels which are on the left of text boxes explain information to be entered to the corresponding textbox. After clicking “Register” button, if correct registration will be completed.

### 8.2.2 Job Seeker Login



The image shows a login form titled "JOB SEEKER LOG IN". It features a dark header bar with the title in white. Below the header, there are two text input fields: "User Name:" and "Password:". At the bottom of the form is a "Login" button.

Login Box has very simple structure that is formed by a button and two text boxes which have to be filled correctly to login. When the button is clicked, correctness of information is checked and if information is correct, user is transferred to profile page or other personal pages.

## 8.2.3 Job Seeker Profile

**İşkolik**  
by aiva

Main Page My Profile Form CV Search Log Out

**JOB SEEKER**

- » Main Page
- » My Profile
- » Form/Update CV
- » Search for Job Announcements
- » Notifications

**SEARCH FOR JOB**

Sector:

City:

Country:

Department:

Position:

Keyword:

**My Profile:**

User Name : *User\_name*

Password : *\*\*\*\*\**

Identity Card Number : *TC\_kimlik\_no*

Name : *Name*

Surname : *Surname*

E-mail 1 : *Email1*

E-mail 2 : *Email2*

Security Question : *Security\_Question*

Answer of Security Question : *Security\_Question\_Answer*

On the left part of the Job-Seeker profile window, there are two operation boxes, namely Employer operations box and Search box. Search box will be explained in detail in 8.2.3.2 . In Employer Operations box there are five links:

- Main Page : when clicked, main page of İşkolik is opened.
- My Profile : now this link is not active, because the user is already on profile window.
- Form/Update CV : when clicked, CV form page is opened.
- Search for Announcements : when clicked, search window is opened.
- Notifications : when clicked, Notifications window is opened.

On the right part of the Job-Seeker profile window, profile information is displayed. On the bottom of that window there is a button named “Update”, when it is clicked “Profile Update” window will be opened.

## 8.2.3.1 Job Seeker Profile - CV Posting



### Form CV (Page 1):

**CV FORM**

- > Profile
- > CV Form
- > Schools
- > Foreign Languages
- > Experiences
- > References
- > Computer Skills
- > Desired Web-Sites

**SEARCH FOR JOB**

Sector:

City:

Country:

Department:

Position:

Keyword:

Nationality:

Birth Date:

Birth Country:

Birth City:

Father Name:

Mother Name:

Gender:

Marial Status:

Military Status:

Driving Licence Status 1:

Driving Licence Status 2:

Home Phone:

Cell Phone:

Address:

Country:

City:

Town:

Post Code:

Hobbies:

Registered Clubs:

Blood Type:

Smoking:



**CV FORM**

- » Profile
- » CV Form
- » Schools
- » Foreign Languages
- » Experiences»
- » References
- » Computer Skills
- » Desired Web-Sites

**SEARCH FOR JOB**

Sector:

City:

Country:

Department:

Position:

Keyword:

### Form CV (Page 2):

Preferred City 1

Preferred City 2

Preferred City 3

Preferred City 4

Preferred Country 1

Preferred Country 2

Preferred Country 3

Preferred Country 4

Preferred Sector 1

Preferred Sector 2

Preferred Sector 3

Preferred Sector 4

Preferred Position 1

Preferred Position 2

Preferred Position 3

Preferred Position 4

On the left part of the CV Posting window, there are two bars, namely CV Form bar and Search bar. Search bar will be explained in detail in 8.2.3.2 . In CV Form bar there are eight links.

- Profile : when clicked, Employer Profile window will be opened..
- CV Form : this link is not activated now, because CV Form window is already opened.
- Schools : when clicked, Schools window is opened. In that window, user can fill all of his/her school information. That window is also a part of CV form.
- Foreign Languages : when clicked, Foreign Languages window is opened. In that window, user can fill all of his/her foreign language information. That window is also a part of CV form.
- Experiences : when clicked, Experiences window is opened. In that window, user can fill all of his/her experience information. That window is also a part of CV form.

- References : when clicked, References window is opened. In that window, user can fill all of his/her reference information. That window is also a part of CV form.
- Computer Skills : when clicked, Computer Skills window is opened. In that window, user can fill all of his/her computer skill information. That window is also a part of CV form.
- Desired Web-Sites : when clicked, Desired Web-Sites window is opened. In that window, user can view his/her desired web-sites list and update the list.

On the right part of the CV Posting window, there are text boxes which must be filled properly to form a correct CV. After filling all necessary parts of CV form, user can save his/her CV by clicking “Save” button located at the bottom of the window.

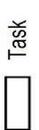
### 8.2.3.2 Job Seeker Profile - Job Searching

The image shows a web form titled "SEARCH FOR JOB" in a dark header. Below the header, there are six text input fields stacked vertically, each with a label to its left: "Sector:", "City:", "Country:", "Department:", "Position:", and "Keyword:". At the bottom of the form is a "Go" button.

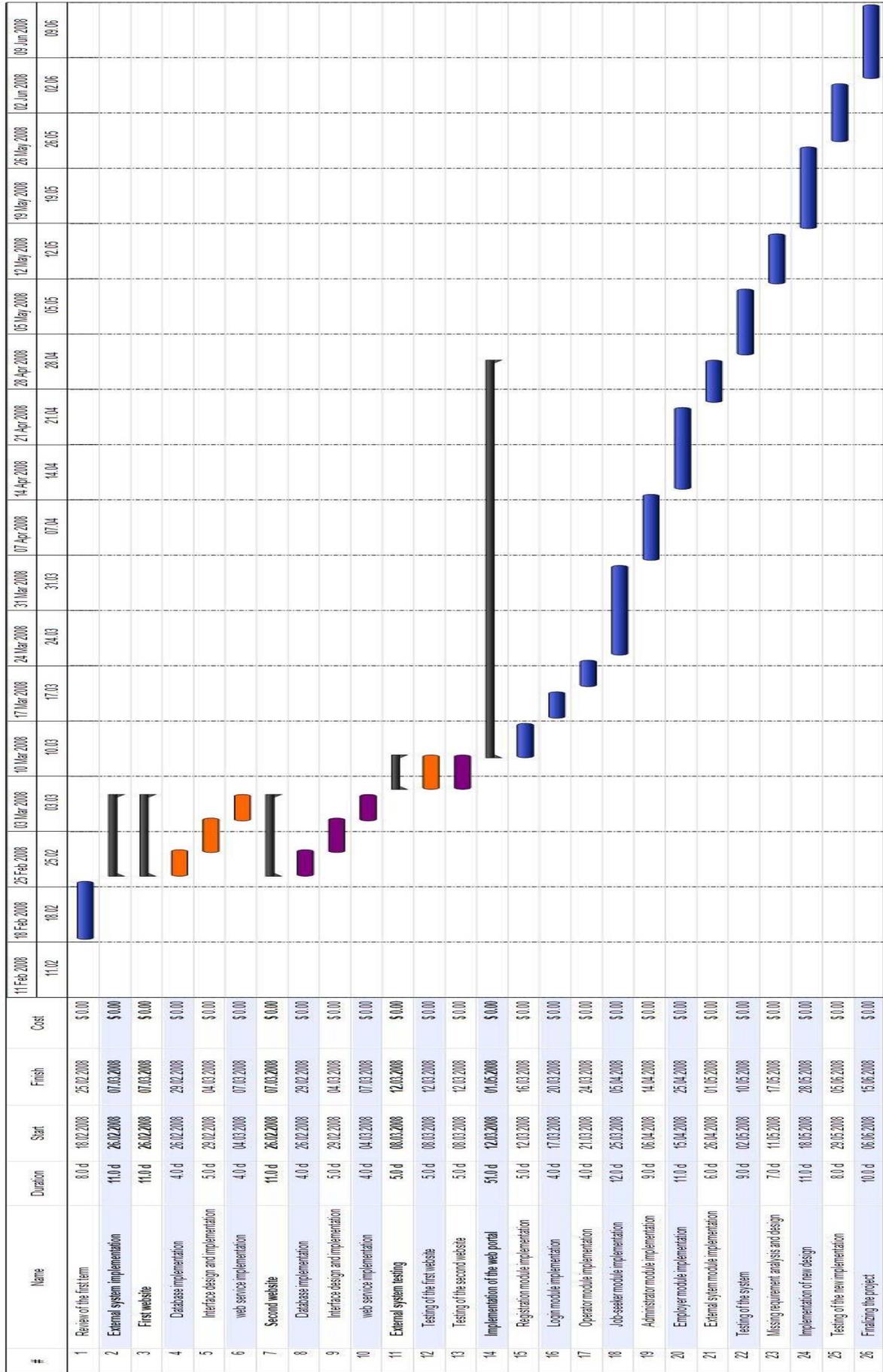
Job Searching Box has very simple structure that is formed by six text boxes containing search specifications. When the button is clicked, search will be made and results will be listed in Search List window.

## 9. GANTT CHART

# Gantt Analysis : Gantt Chart : Project



# Gantt first term : Gantt Chart : Project



Responsibility Distribution Coloring:

<b>Blue: All Members</b>	<b>Pink: Fatma</b>	<b>Green: Emrah</b>	
<b>Red: Damir</b>	<b>Yellow: Derya</b>	<b>Purple: Damir &amp; Emrah</b>	<b>Orange: Fatma &amp; Derya</b>