Software Requirement Specification

for

ITC Billing System

(ITCBS)

Version 2.0

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1. Introduction

1.1 Product Overview

The ITC Billing System (ITCBS) integrates the billing system for UPLB ITC's System Administration, Network Administration and Technical Support sections. It suffices the needs of the users to have a common system in managing job requests. It allows checking of funds that the administration officer is handling.

1.2 Purpose

This software requirement specification serves as an overview and provides a complete description of all the functions and specifications of the ITC Billing System of the Information Technology Center, University of the Philippines, Los Baños.

This document will serve as the baseline for the developers on the implementation of the design and development of the software. This allows users to know what to expect from the software. This also serves as the guide for the testers on the evaluation of the software's features and specifications.

1.3 Project Scope

The projects aims to create a unified and online billing system for UPLB ITC. This includes the generation of job request form given the inputted data from the users and the generation of statement of account due to the completion of the job request. The project also includes computation of available amount of the fund they are managing and the income that they are gaining as a whole.

1.4 References

1.4.1 Applicable Documents

A) 2009 Document Tracking System Version 1.0

1.5 Document Conventions

Acronym	Meaning
ITC	Information Technology Center
UPLB	University of the Philippines, Los Baños
ITCBS	Information Technology Center Billing System
SRS	Software Requirements Specification
SOA	Statement of Account
JR	Job Request

Table 1. Acronyms used and its respective definitions

Term/Phrase	Meaning
User	Personnel who can use the system. He/she can also edit his/her account.
Administrator	Person who adds, edits, and deletes an account to use the system.
Client	Someone who avails the services of UPLB ITC.
Normal user	User that can add, edit, cancel and view job requests.
Manager	User that has more privilege than a normal user. He/she can manage payments and income.
Executive	User which can view the statistics of payment and funds. He/she can also just view job requests and not allowed to add or edit them.
Job Request	A form that includes the details of the service that the client has availed.
Statement of Account	A form that includes the total amount and job requests a client has to pay.

Table 2. Terms and Phrases used and its respective definitions

2. Specific Requirements

2.1 External Interface Requirements

2.1.1 User Interfaces

User interface is defined to make an ease for the user to use the system. User needs to log in to the system first to be able to access the system. Upon logging in, the user will first be directed to the home page which shows the current updates about the system. The user can browse each tab on the upper part to see the details of each data in the system. For the details of job requests, the user will be able to add, edit, cancel and view the job request that he/she needs to manage. The page also shows the recent activities that are made to the system and the job request for each section. For the details of the service, the system will show the list of job request for each service that the office is offering. Next is the clients' information, it will display the clients information, alphabetically, and the number of job requests it has and the total amount it has to pay or paid. The system also is able to show the details about the statement of accounts. It shows the list of paid and unpaid statement of accounts. Each panel or tab shows the account information of the user who is logged in on the upper right part of the page. And below it is the detail or computation of the income of the office.

The system utilizes the dashboard style interface to be able to show the user easily the notice the recent updates on the system. And be able to check on the details of each data accordingly.

2.1.2 Hardware Interfaces

ITC billing system is a web-based system that needs a server to handle the web application and its database. Any computer which has an access to the Internet will be able to use the system.

The system will use printers for producing a hard copy of the job request forms and statement of account. There is no specific kind of printer required to use in the system and the printer driver must be installed depending on the kind of printer used. The USB port will also be used to connect the printer into the computer.

2.1.3 Software Interfaces

The system uses the standard web development tools to be able to create the system. No necessary external tools will be needed.

1. PHP. The system will be using the PHP Hypertext Processor to manage the design and inputs of the system. It will be the one to be used to connect to the DBMS and to fetch data from the database.

2. MySQL 5.x. The latest version of MySQL will be utilized by the system to manage the database. The tables to be used will be well defined for the system to access the database easily and quickly.

2.1.4 Communications Protocols

Since ITC billing system is a web-based system that could be reached through World Wide Web (WWW) users and mainly accessed using a web browser. Hypertext Transfer Protocol (HTTP) will be used for data communication between the system and the users.

2.1.5 Memory Constraints

For the users' side, the computers they are using in their office are well advanced to handle the operations that they need to do in the system. The system will take up to some kilobytes depending on the browser it is being accessed. For the least amount, it may take up to 64MB of the memory.

For the server side, the university has already one which is used to handle multiple user requests for its main site.

2.1.6 Operation

The user can entertain request from client within office hours from 8am to 5pm except on 4-day work which is from 7am to 6pm. But the users can manage job request anytime even beyond office hours. They can able to update the job request and download the form for printing.

2.1.7 Product Function

The system will keep record of all the services requested from the ITC. The system will generate a print version of the job requests and also statement of accounts for each service done. It also keeps track of the fund used for the rent to own service and the income that the office is gaining.

2.1.8 Assumption and Dependency

The system assumes that each user has already an account added by the administrator for them to have access to the system. Each user has its section where it belong whether from the technical support or from the administration office. Users from each section have a predefined interface for their convenience. Each user must also use the latest version of the browser that they are using.

The users must update the job request forms and statement of accounts frequently so that the system will be able to update the computation of the fund and income.

2.2 Software Product Features

The software product must be able to do the following

1. The user can see the recent job requests and be able to view the details of each job request.

2. The user can add, edit and cancel job request whenever they have to. This includes the updating of the job request whether it is already done or still on-going.

3. The system can generate job request forms and statement of accounts.

4. The system can track the fund and income of ITC by computing the data that have been updated by the users which includes the payment of statement of accounts.

2.3 Software System Attributes

2.3.1 Reliability

The system must be able to recover from a serious error. It will also post warning messages if there will be errors encountered or during maintenance.

2.3.2 Availability

The system will always be available except during maintenance and other network problems.

2.3.3 Security

In order to use the system, the user must log-in first. Only the administrators are allowed to create user accounts.

2.3.4 Maintainability

The system will comply with the w3c web standards. The coding convention should be well-documented.

2.3.5 Portability

ITC billing system will be able to run on any operating system as long as it has a web browser on its latest version.

2.3.6 Performance

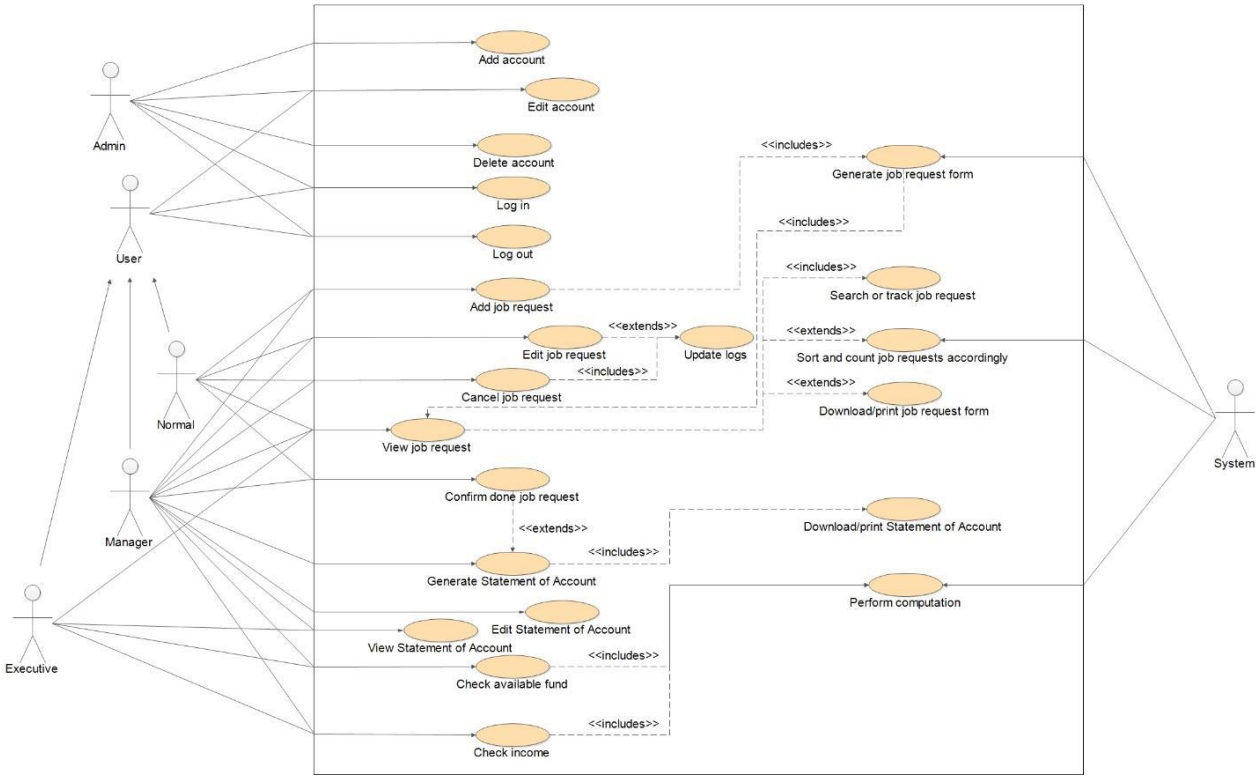
The system must be able to handle requests and usage of the user swiftly and at ease. Considering some possible constraints like Internet connection speed, server and computer hardware, web browser and etc., the ITCBS's services should still cater the needs of the user.

2.4 Database Requirements

The system will use MYSQL version 5.x as its database. The system will have its own database which will be used for storing and tracking Job Requests, User Accounts, and current funds. Refer to section 3.2 of this document for the schema.

3. Functional Requirements

3.1 Use Cases



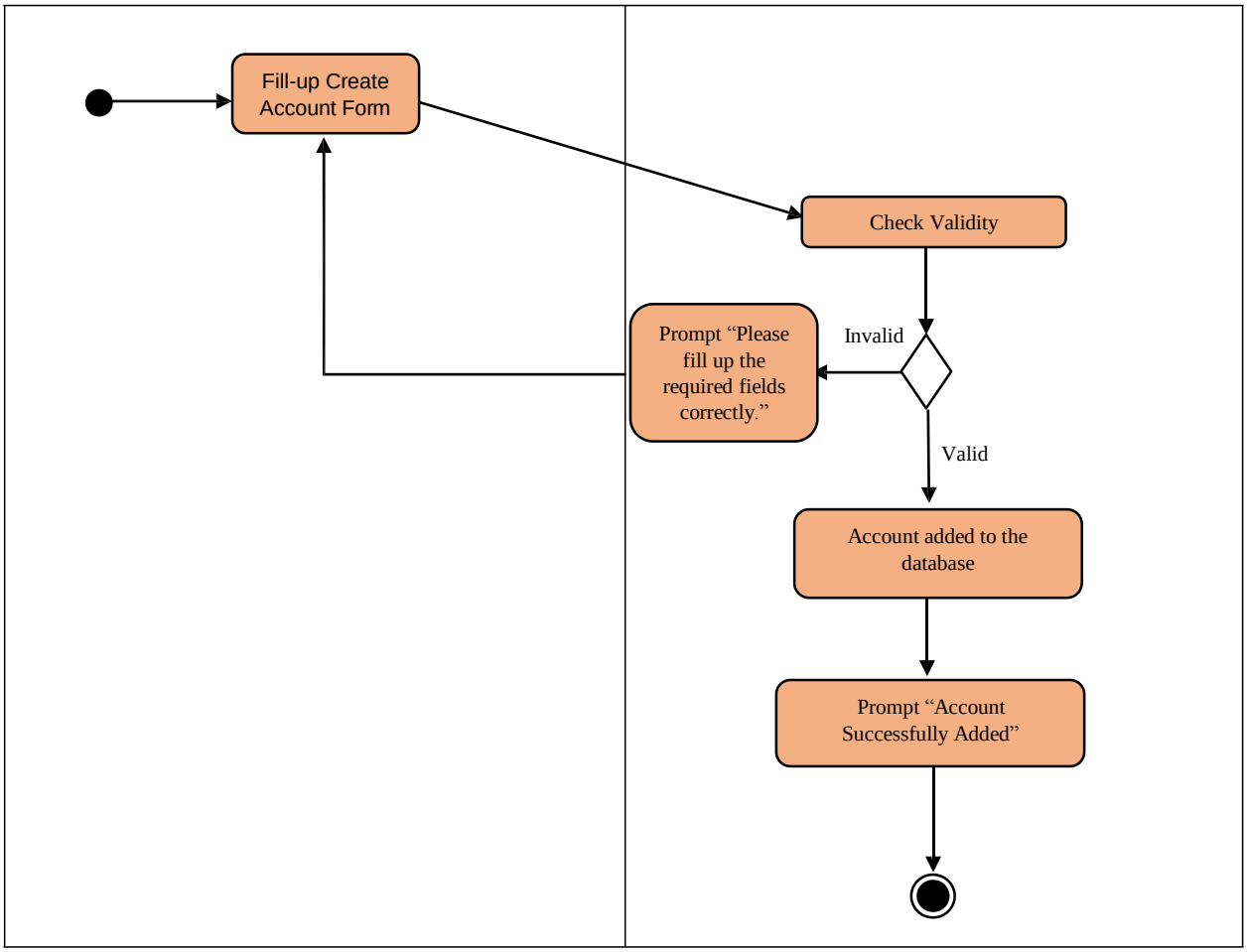
3.1.1 Use Case: Add Account

3.1.1.1 Use Case Specification

Description	Administrator creates an account for a new user.
Goal	There must be users of the system.
Preconditions	Administrator is logged-in.
Assumptions	You are connected to a network.
Frequency	
Flow of Events	**Main Flow:** 1. Administrator creates an account. 2. Fill ups the form. 3. System checks validity of each field in the form.
	A) Alternate Flow: Username is invalid A1) Prompt "Please fill up the required fields correctly." A2) Return to step 1 of the Main Flow.
Post-conditions	Prompt "Account Successfully Added".
Actors	Administrator
Included Use Cases	None
Extended Use Cases	None
Notes	Only the administrator can create a new account for the users. An account includes: 1) Employee number 2) Full Name 3) Username 4) Password 5) Classification

3.1.1.2 Activity Diagram

Administrator	ITCBS



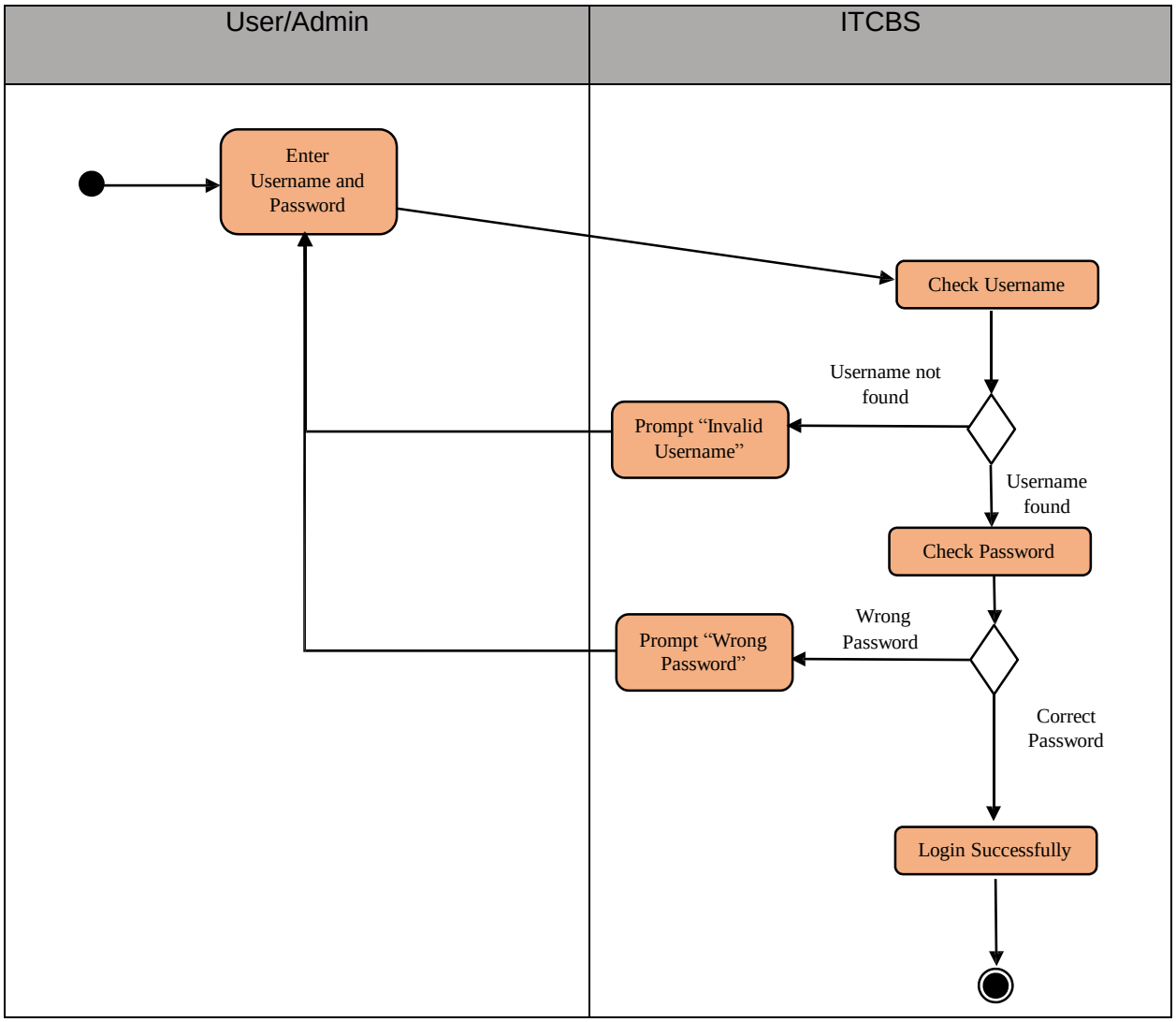
3.1.2 Use Case: Log-in

3.1.2.1 Use Case Specification

Description	Administrator/User enters his/her username and password.
Goal	To allow only valid administrators and users to use the system.
Preconditions	The system is online.
Assumptions	You are connected to a network.
Frequency	Every time the administrator or the user needs to use the system.
Flow of Events	**Main Flow:** 1. The administrator/user enters his/her username and password 2. System Authentication.
	A) Alternate Flow: Authentication fails. A1) Prompt "Wrong Password". A2) Return to step 1 of the Main Flow **B) Alternate Flow:** Username is not found in database. B1) Prompt "Invalid username" B2) Return to step 1 of the Main Flow.

Post-conditions	The user can now access and use the system.
Actors	Administrator, User
Included Use Cases	None
Extended Use Cases	None
Notes	

3.1.2.2 Activity Diagram



3.1.3 Use Case: Edit Account

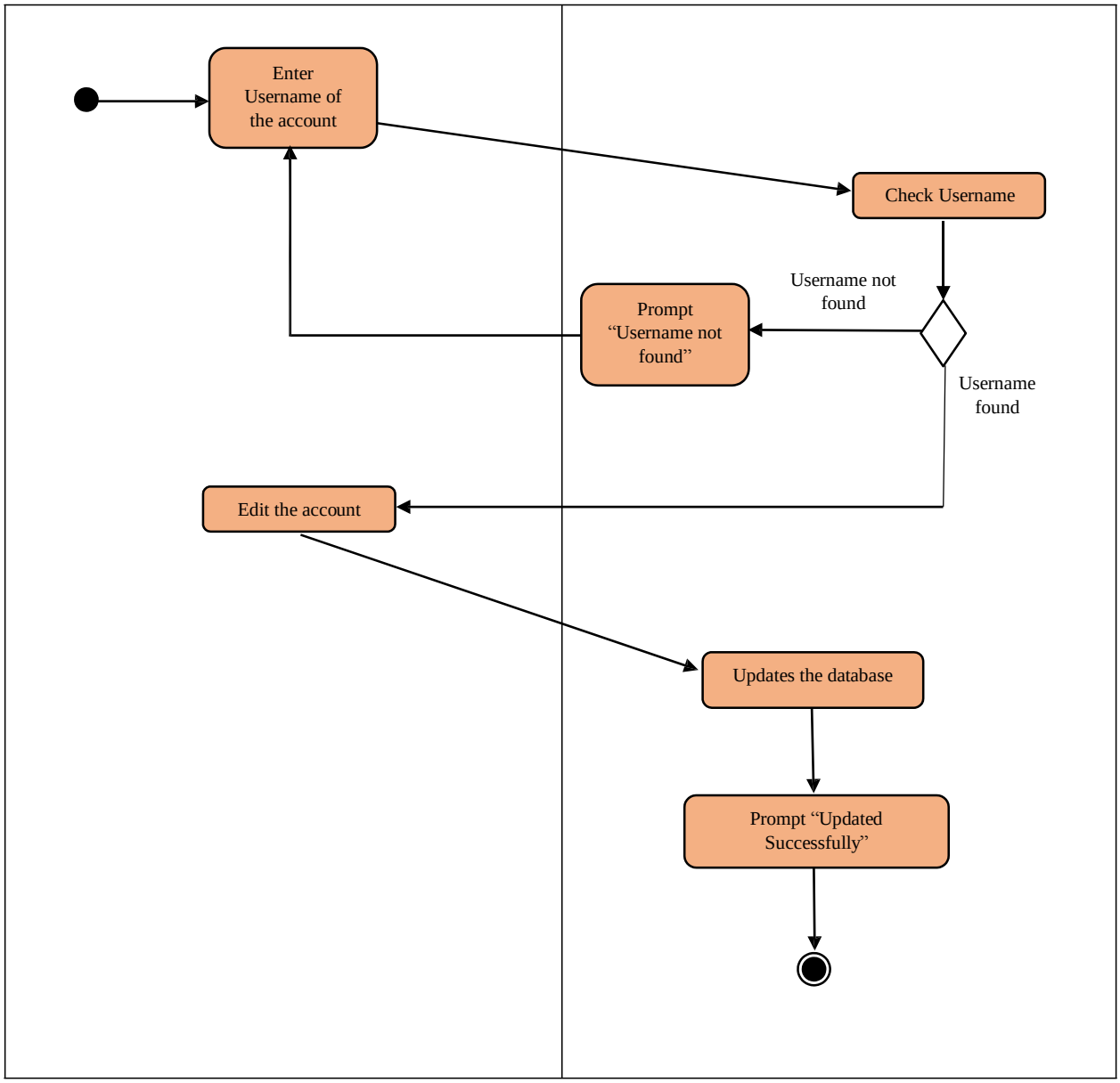
3.1.3.1 Use Case Specification for Administrator

Description	Administrator modifies an account for necessary updates.
Goal	To eliminate errors and update accounts.
Preconditions	The account to be edited exists in the database.

Assumptions	You are connected to a network.
Frequency	Anytime.
Flow of Events	**Main Flow:** 1. The administrator enters the username of the account to be edited. 2. System Authentication.
	A) Alternate Flow: Username is not found in database. A1) Prompt "Invalid username" A2) Return to step 1 of the Main Flow.
Post-conditions	The edited account is updated to the database.
Actors	Administrator
Included Use Cases	None
Extended Use Cases	None
Notes	Only the administrator can edit an account. An account includes: 1) Employee number 2) Full Name 3) Username 4) Password 5) Classification

3.1.3.2 Activity Diagram for Administrator

Admin	ITCBS



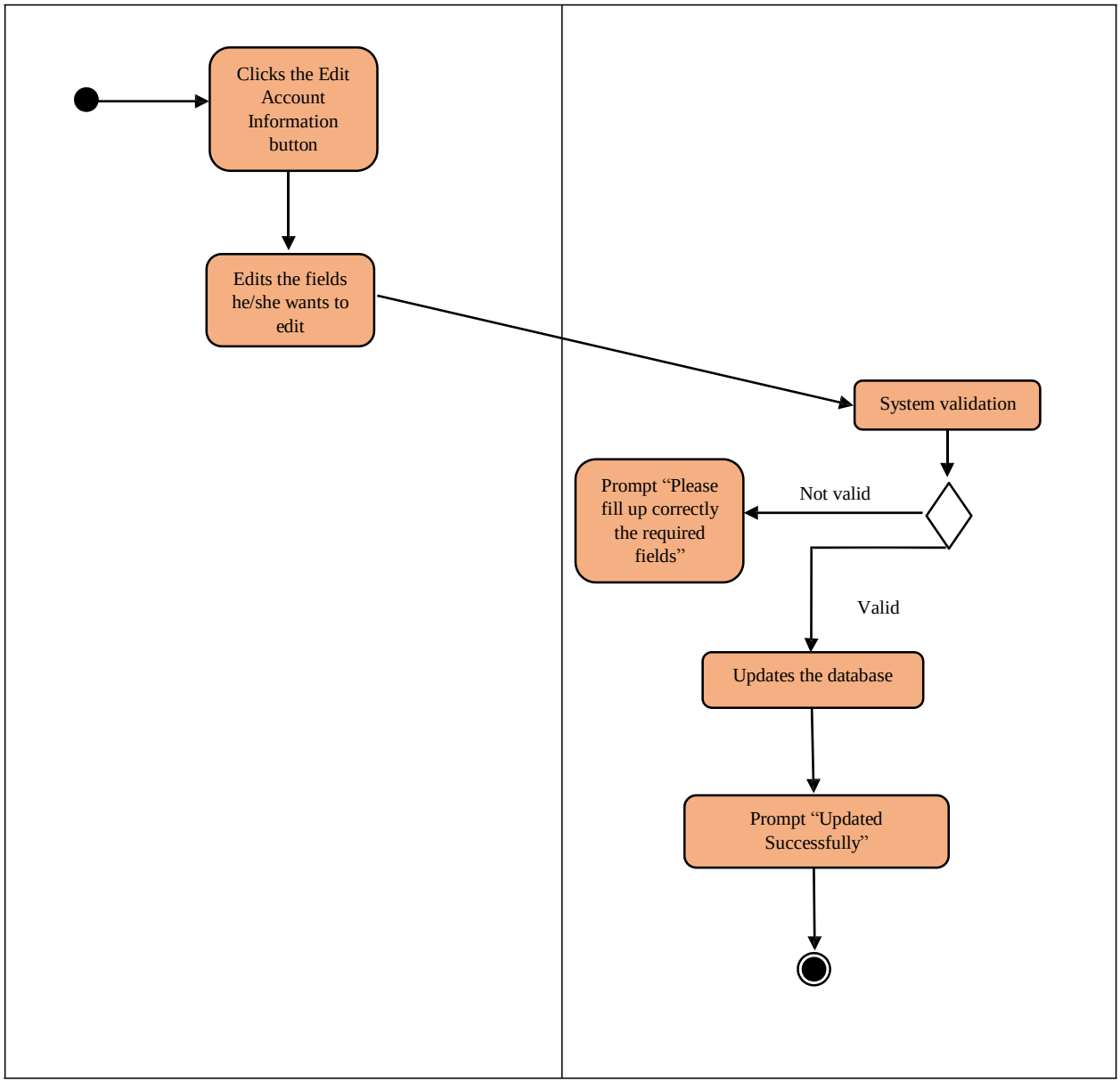
3.1.3.3 Use Case Specification for User

Description	User can also modify his/her account.
Goal	To update his/her information and error upon adding his/her account.
Preconditions	The user is logged in to the system.
Assumptions	You are connected to a network.
Frequency	Anytime.
Flow of Events	**Main Flow:** 1. The user clicks the Edit Account Information. 2. Updates the fields the user needs/wants to edit. 3. System Authentication.

Post-conditions	His/her account is updated to the database.
Actors	User
Included Use Cases	None
Extended Use Cases	None
Notes	Only the administrator can edit an account. An account includes: 1) Employee number 2) Full Name 3) Username 4) Password 5) Classification

3.1.3.4 Activity Diagram for User

User	ITCBS



3.1.4 Use Case: Delete Account

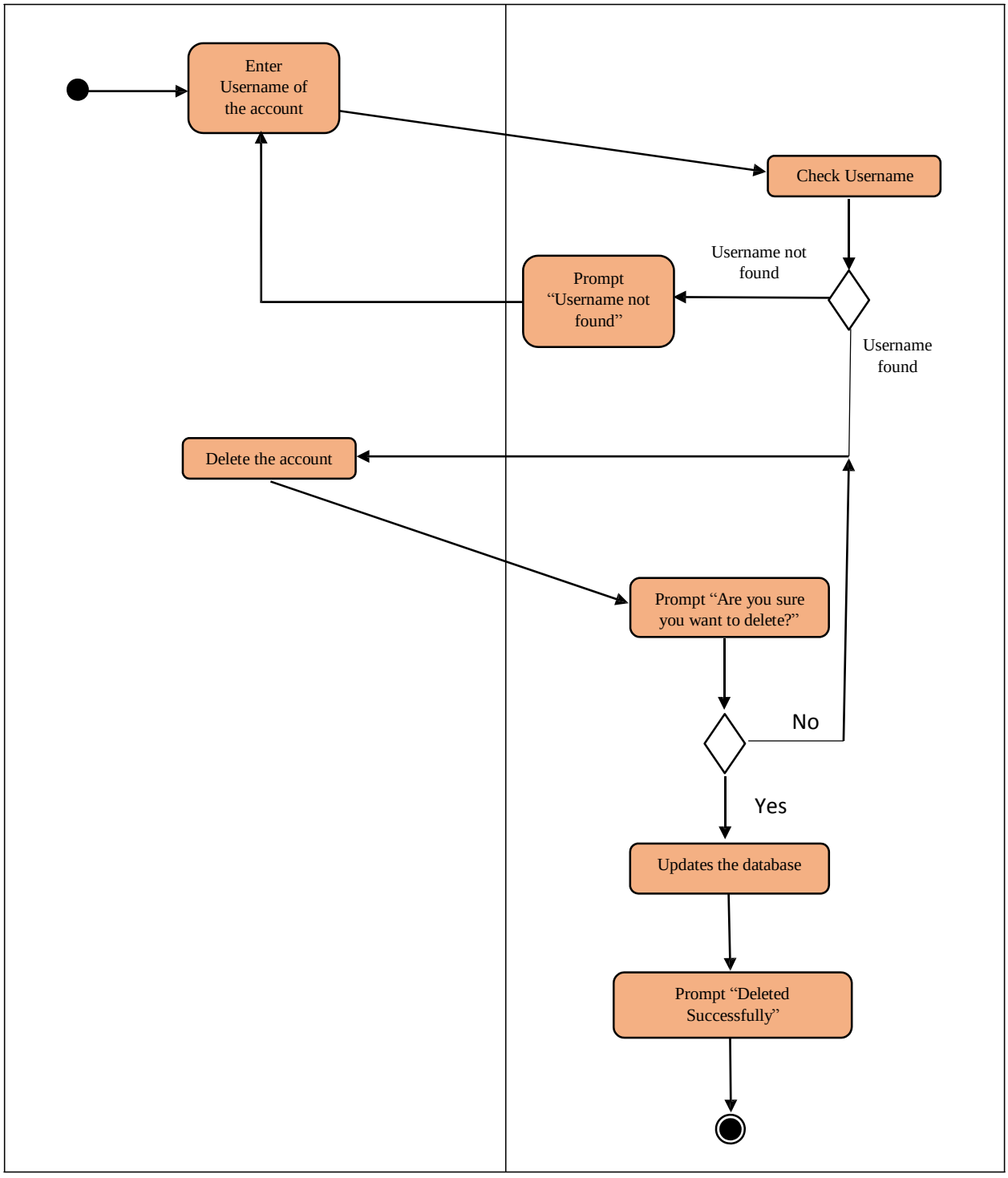
3.1.4.1 Use Case Specification

Description	Administrator deletes an account.
Goal	The user may no longer be authorized.
Preconditions	The account to be deleted exists in the database.
Assumptions	You are connected to a network.
Frequency	Once a user left the field.
Flow of Events	**Main Flow:**

	1. The administrator enters the username of the account to be deleted. 2. System Authentication.
	A) Alternate Flow: Username is not found in database. A1) Prompt “Invalid username” A2) Return to step 1 of the Main Flow.
Post-conditions	The specified account is deleted.
Actors	Administrator
Included Use Cases	None
Extended Use Cases	None
Notes	Only the administrator can edit an account. An account includes: 1) Employee number 2) Full Name 3) Username 4) Password

3.1.4.2 Activity Diagram

Admin	ITCBS



3.1.5 Use Case: Add Job Request

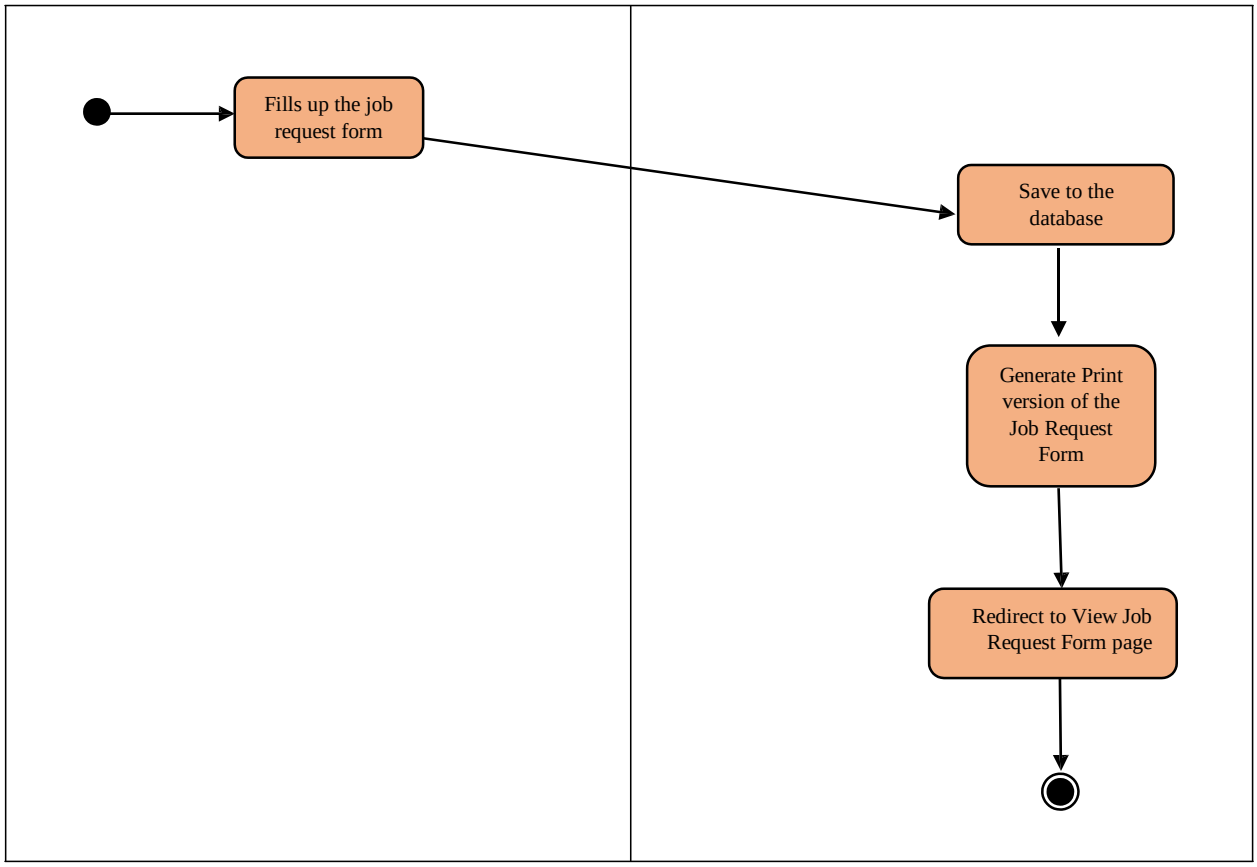
3.1.5.1 Use Case Specification

Description	A normal user/manager creates a new job request.

Goal	Insert some information about a job request to the database.
Preconditions	The normal user/manager should be logged-in.
Assumptions	You are connected to a network.
Frequency	New job request is retrieved.
Flow of Events	**Main Flow:** 1. Normal user/manager inputs Client Info and the problem. 2. Normal user/manager designates the section to where the problem be addressed to. 3. Normal user/manager chooses the specific service to be provided. 4. Normal user/manager inputs the recommendations for the client if there is any. 5. Normal user/manager assigns a personnel to do the service.
Post-conditions	Normal user/manager adds new job request to the database and updates the number of job request and the dashboard of its respective section.
Actors	Normal user, Manager
Included Use Cases	Generate job request form
Extended Use Cases	None
Notes	Job Request Form includes: 1) Job request number 2) Date created 3) Date accomplished 4) Start time 5) End time 6) Client Information 7) Equipment info 8) Service Information 9) Recommendations 10) Status 11) Assigned Personnel 12) Payment Status 13) Invoice number of the SOA it is included in

3.1.5.2 Activity Diagram

Normal User/Manager	ITCBS



3.1.6 Use Case: Edit Job Request

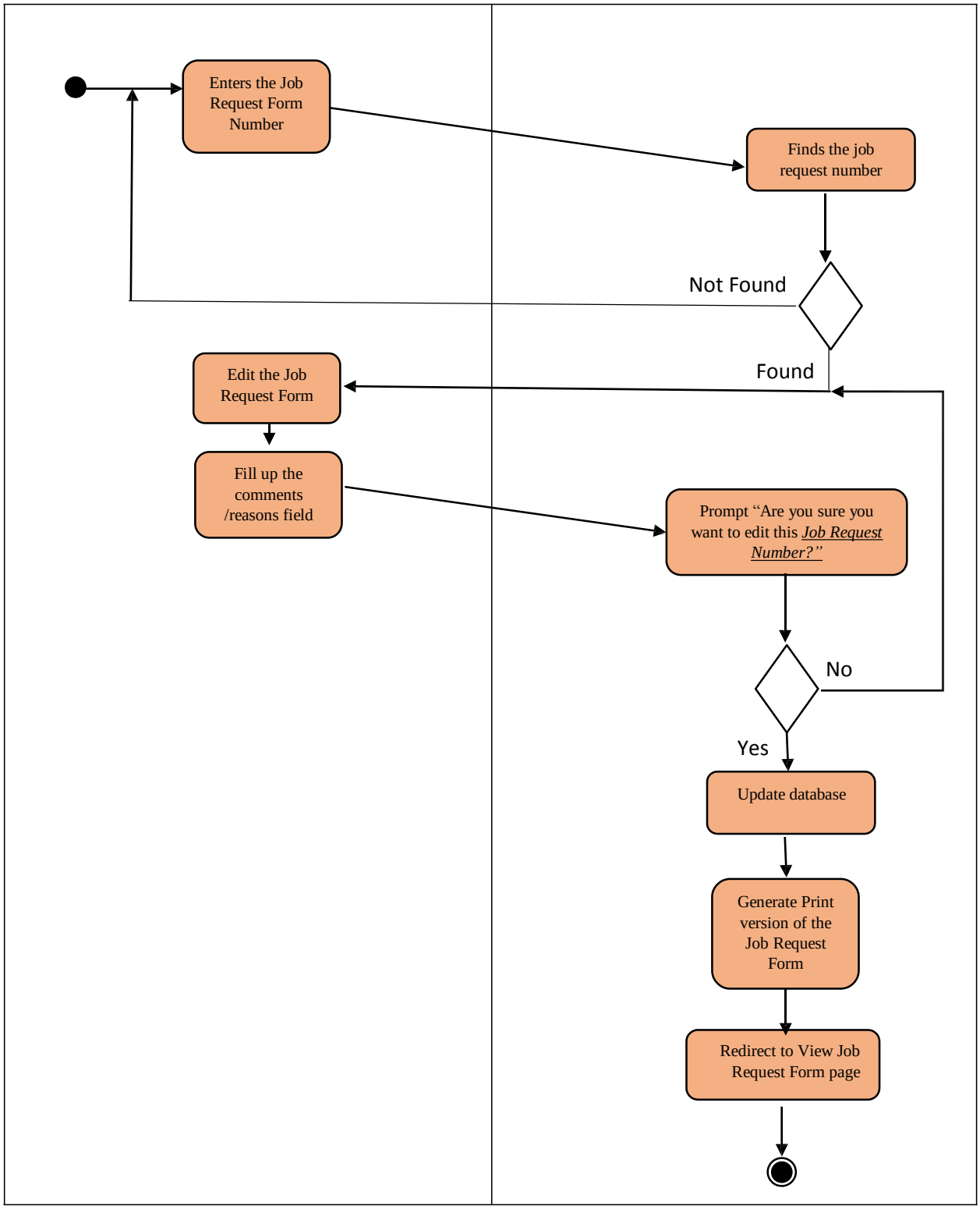
3.1.6.1 Use Case Specification

Description	A normal user/manager edits a job request.
Goal	Insert or edit some information of a job request.
Preconditions	Normal user/manager should be logged-in.
Assumptions	You are connected to the system.
Frequency	Every time it is needed to update a job request.
Flow of Events	**Main Flow:** 1. Normal user/manager inputs the job request number. 2. The system checks if the JR number is in the database. 3. Normal user/manager edits the field he/she needs to update. 4. Normal user/manager provides the reasons/comments for editing. 5. System confirms the changes made.
	A) Alternate Flow: Job request number is not found in database. A1) Prompt "Invalid job request number." A2) Return to step 1 of the Main Flow.

	B) Alternate Flow: Unconfirmed changes made. B1) Return to step 3 of the Main Flow.
Post-conditions	Normal user/manager updates the job request.
Actors	Normal user, Manager
Included Use Cases	None
Extended Use Cases	Update logs
Notes	Job Request Form includes: 1) Job request number 2) Date created 3) Date accomplished 4) Start time 5) End time 6) Client Information 7) Equipment info 8) Service Information 9) Recommendations 10) Status 11) Assigned Personnel 12) Payment status 13) Invoice number of the SOA it is included in Logs includes: 1) Status logs – entering the reason/s for changing the status of the job request; required 2) Edit logs – entering comments of updating the job requests; recommended

3.1.6.2 Activity Diagram

Normal User/Manager	ITCBS


Enters the Job Request Form Number
Finds the job request number
Not Found
Found
Edit the Job Request Form
Fill up the comments /reasons field
Prompt "Are you sure you want to edit this Job Request Number?"
No
Yes
Update database
Generate Print version of the Job Request Form
Redirect to View Job Request Form page

3.1.7 Use Case: Cancel Job Request

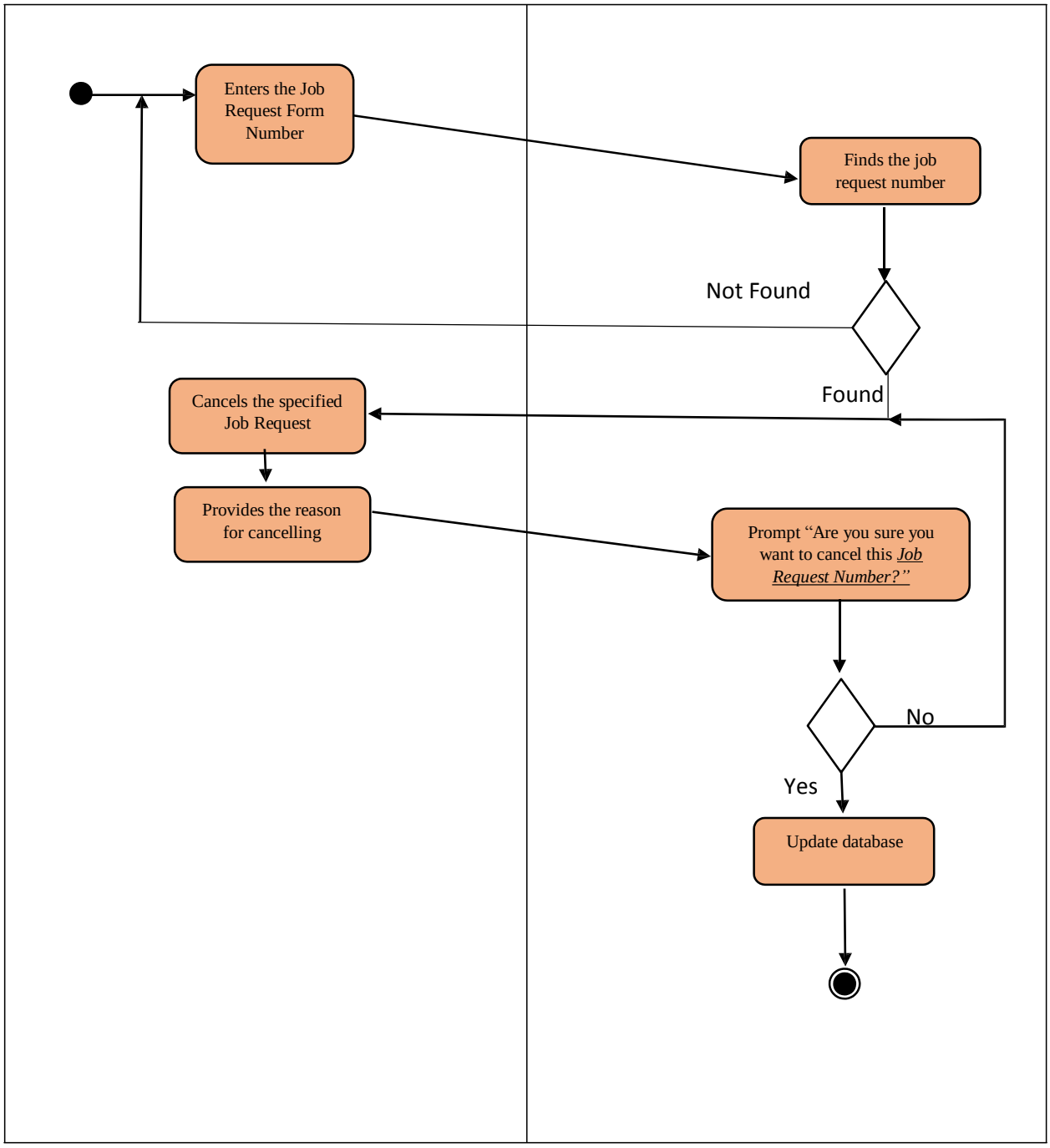
3.1.7.1 Use Case Specification

Description	A normal user/manager cancels a job request.
Goal	Remove the job request from the database.
Preconditions	Normal user/manager should be logged-in.
Assumptions	You are connected to the system.
Frequency	Every time it is needed to update a job request.
Flow of Events	**Main Flow:** 1. Normal user/manager inputs the job request number. 2. System checks for the existence of the JR number in the database. 3. Normal user/manager clicks the cancel button. 4. Normal user/manager provide the reason for cancelling the JR. 5. System confirms the cancellation.
	A) Alternate Flow: Job request number is not found in database. A1) Prompt "Invalid job request number." A2) Return to step 1 of the Main Flow. **B) Alternate Flow:** Unconfirmed cancellation made. B1) Return to step 3 of the Main Flow.
Post-conditions	Job request is cancelled.
Actors	Normal User, Manager
Included Use Cases	Update logs
Extended Use Cases	None
Notes	Job Request Form includes: 1) Job request number 2) Date created 3) Date accomplished 4) Start time 5) End time 6) Client Information 7) Equipment info 8) Service Information 9) Recommendations 10) Status 11) Assigned Personnel 12) Payment status 13) Invoice number of the SOA it is included in Logs includes:

	1) Status logs – entering the reason/s for changing the status of the job request; required 2) Edit logs – entering comments of updating the job requests; recommended

3.1.7.2 Activity Diagram

Normal User/Manager	ITCBS



3.1.8 Use Case: View Job Request

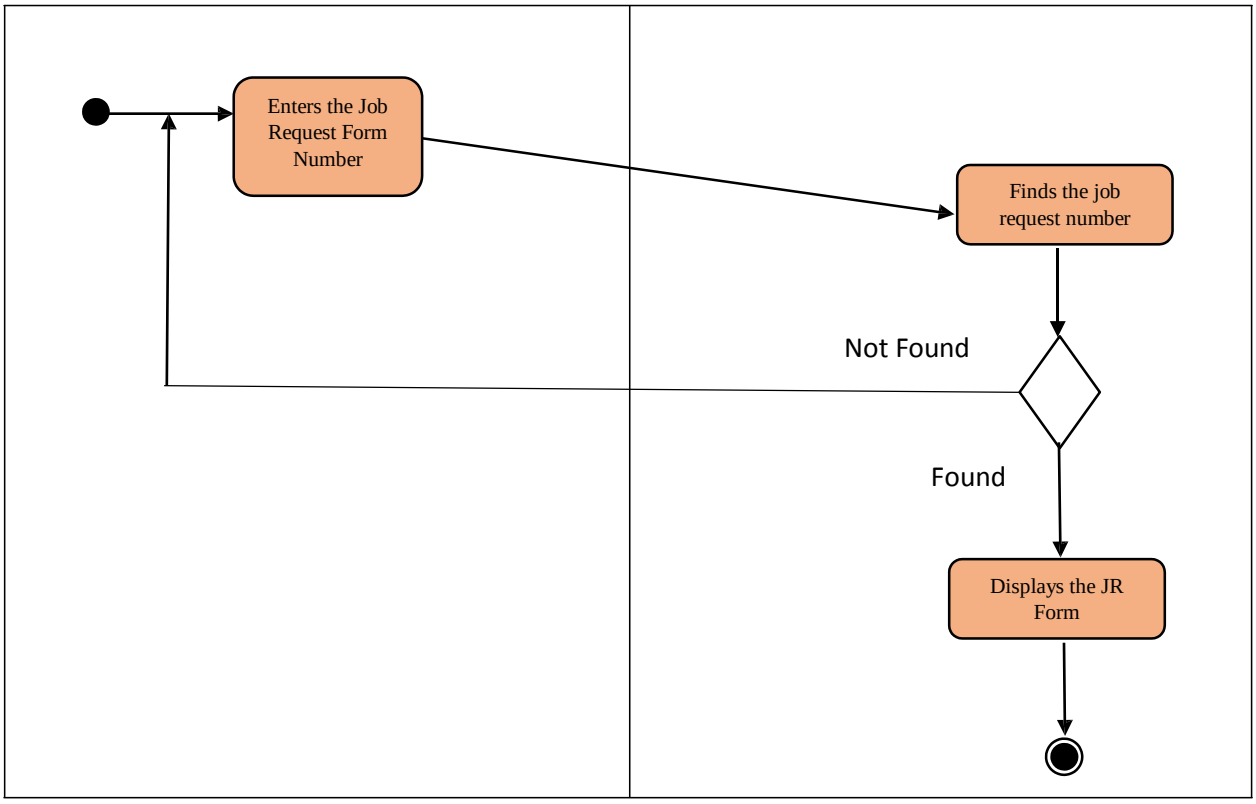
3.1.8.1 Use Case Specification for Specific Job Request

Description	User views a specific job request.
Goal	User may view the full details of a job request.
Preconditions	User should be logged-in and job requests are already inputted in the database.

Assumptions	You are connected to the system.
Frequency	Every time a user needs to view a job request.
Flow of Events	**Main Flow:** 1. User inputs the job request number. 2. System checks the existence of the job request number in the database. 3. System shows the full details of the entered JR number.
	A) Alternate Flow: Job request number is not found in database. A1) Prompt "Invalid job request number." A2) Return to step 1 of the Main Flow.
Post-conditions	Job request details is displayed.
Actors	User
Included Use Cases	Search or track job request
Extended Use Cases	Sort and count job requests accordingly
Notes	Job Request Form includes: 1) Job request number 2) Date created 3) Date accomplished 4) Start time 5) End time 6) Client Information 7) Equipment info 8) Service Information 9) Recommendations 10) Status 11) Assigned Personnel 12) Payment status 13) Invoice number of the SOA it is included in

3.1.8.2 Activity Diagram for Specific Job Request

User	ITCBS



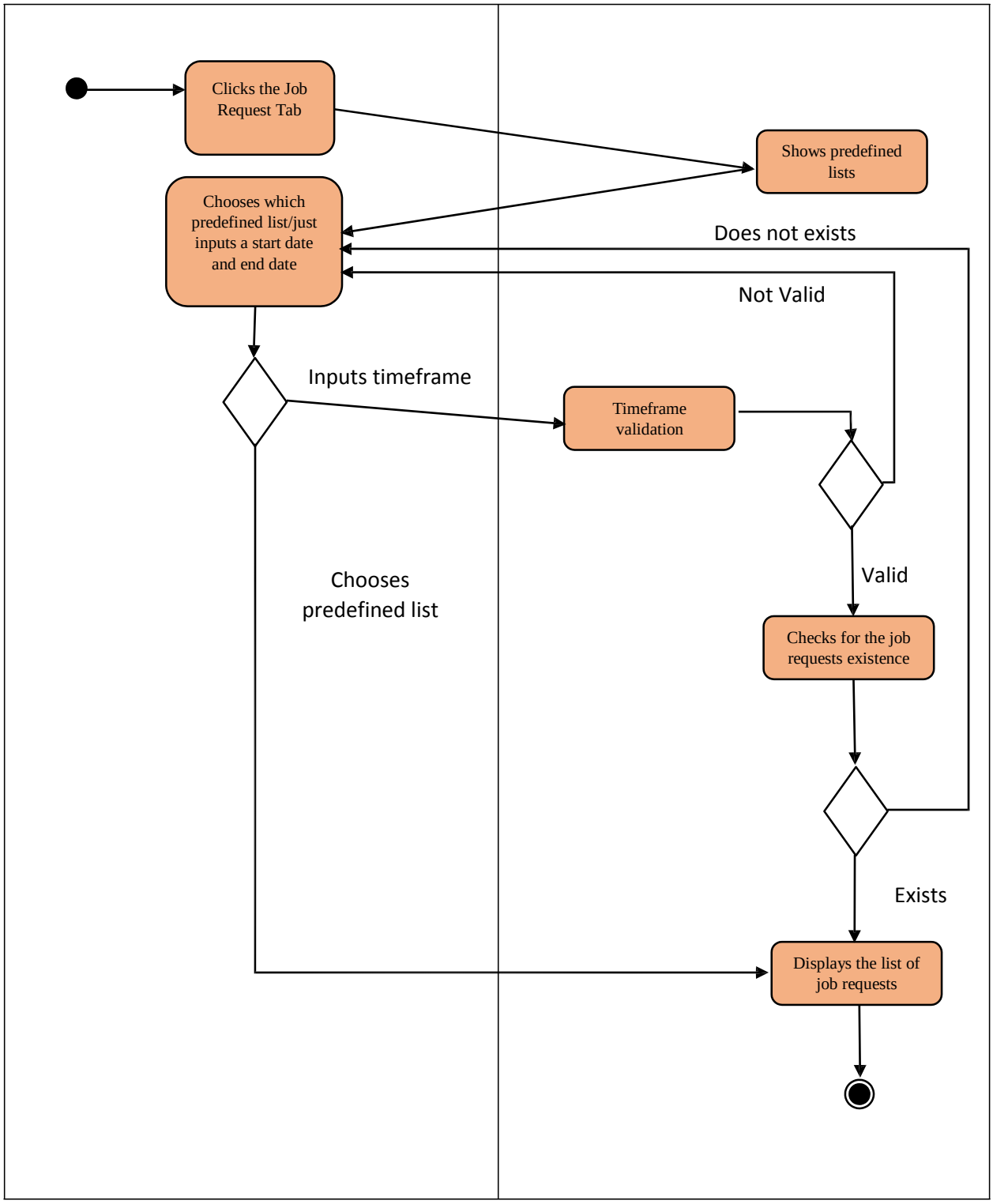
3.1.8.3 Use Case Specification for List of Job Requests

Description	User views a list of some certain job requests depending on the viewing criteria.
Goal	User may view a list of job requests depending to the needs of the user.
Preconditions	User should be logged-in and job requests are already inputted in the database.
Assumptions	You are connected to the system.
Frequency	Every time a user needs to view a list of job requests.
Flow of Events	**Main Flow:** 1. User clicks the Job Request Tab. 2. User chooses which list he/she wants to view or just inputs a certain start date and end date on which a JR is created. 3. System checks the validity of the timeframe and the job requests for the inputted timeframe. 4. System shows the lists and number of JR for the specified list or timeframe.
	A) Alternate Flow: Entered timeframe not valid. A1) Prompt "Invalid Start Date or End Date." A2) Return to step 2 of the Main Flow. **B) Alternate Flow:** Job Requests for the specified timeframe not found.

	B1) Prompt “There are no Job Requests for the specified timeframe.”
Post-conditions	List and number of job request is displayed.
Actors	User
Included Use Cases	Search or track job request
Extended Use Cases	Sort and count job requests accordingly
Notes	Job Request Form includes: 1) Job request number 2) Date created 3) Date accomplished 4) Start time 5) End time 6) Client Information 7) Equipment info 8) Service Information 9) Recommendations 10) Status 11) Assigned Personnel 12) Payment status 13) Invoice number of the SOA it is included in Predefined lists are: 1) Recent Job Requests for the section of a normal user who is logged in or all Job Requests for the manager and executive who is logged in. 2) Job Requests for each section if the user logged in is a manager or executive.

3.1.8.4 Activity Diagram for List of Job Requests

User	ITCBS

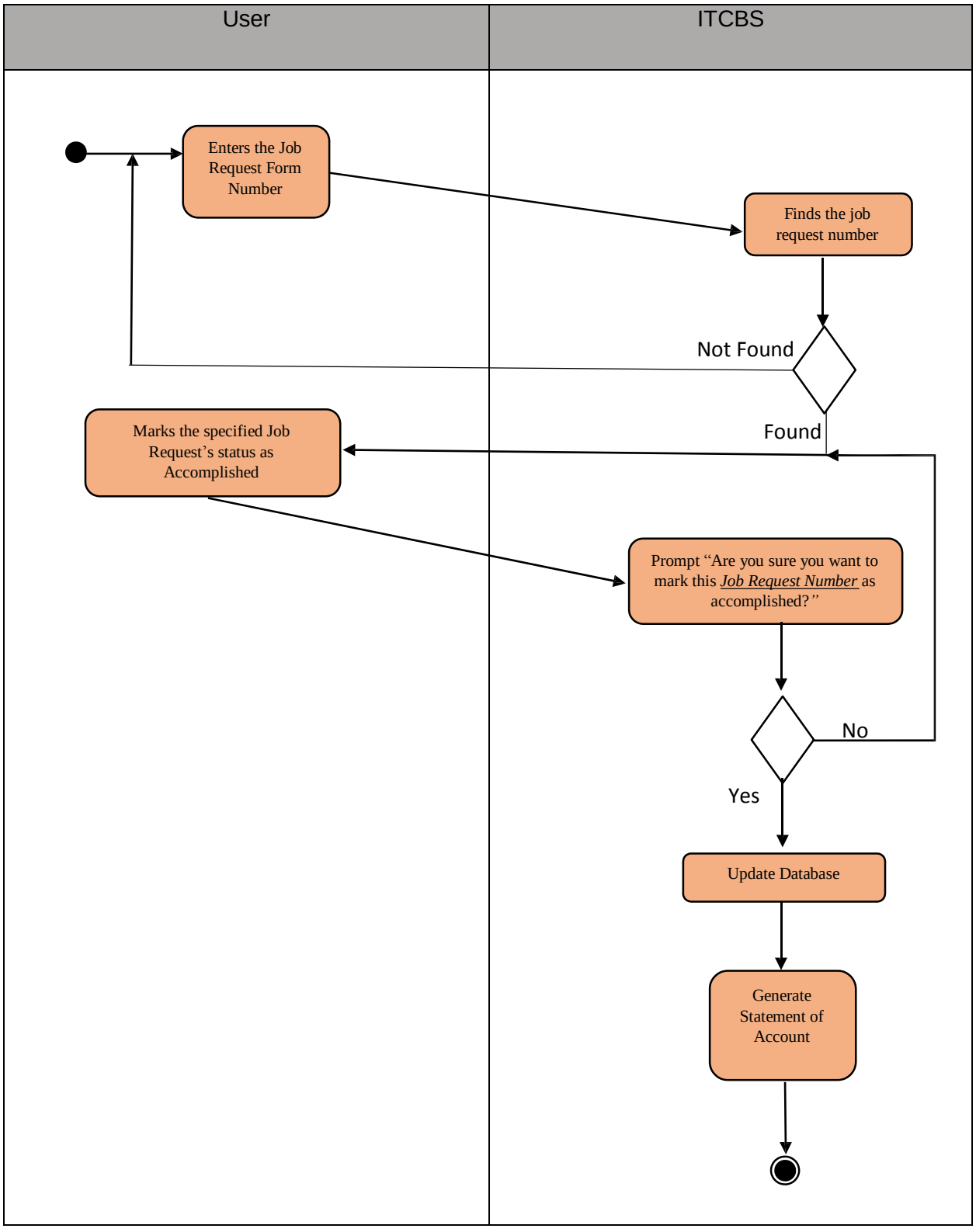

Clicks the Job Request Tab
Shows predefined lists
Chooses which predefined list/just inputs a start date and end date
Does not exists
Not Valid
Inputs timeframe
Timeframe validation
Chooses predefined list
Valid
Checks for the job requests existence
Exists
Displays the list of job requests

3.1.9 Use Case: Confirm Done Job Request

3.1.9.1 Use Case Specification

Description	User settles the job request as done or accomplished.
Goal	To be able to generate the statement of account for a client.
Preconditions	User should be logged-in and job requests are already inputted in the database.
Assumptions	You are connected to the system.
Frequency	Every time a user needs to approve accomplished job requests.
Flow of Events	**Main Flow:** 1. User inputs the job request number. 2. User changes the status of the specified job request to "Accomplished".
	A) Alternate Flow: Job request number is not found in database. A1) Prompt "Invalid job request number." A2) Return to step 1 of the Main Flow.
Post-conditions	Job request is mark as accomplished.
Actors	Manager
Included Use Cases	None
Extended Use Cases	Generate Statement of Account
Notes	Job Request Form includes: 1) Job request number 2) Date created 3) Date accomplished 4) Start time 5) End time 6) Client Information 7) Equipment info 8) Service Information 9) Recommendations 10) Status 11) Assigned Personnel 12) Payment status 13) Invoice number of the SOA it is included in Logs includes: 1) Status logs – entering the reason/s for changing the status of the job request; required 2) Edit logs – entering comments of updating the job requests; recommended

3.1.9.2 Activity Diagram



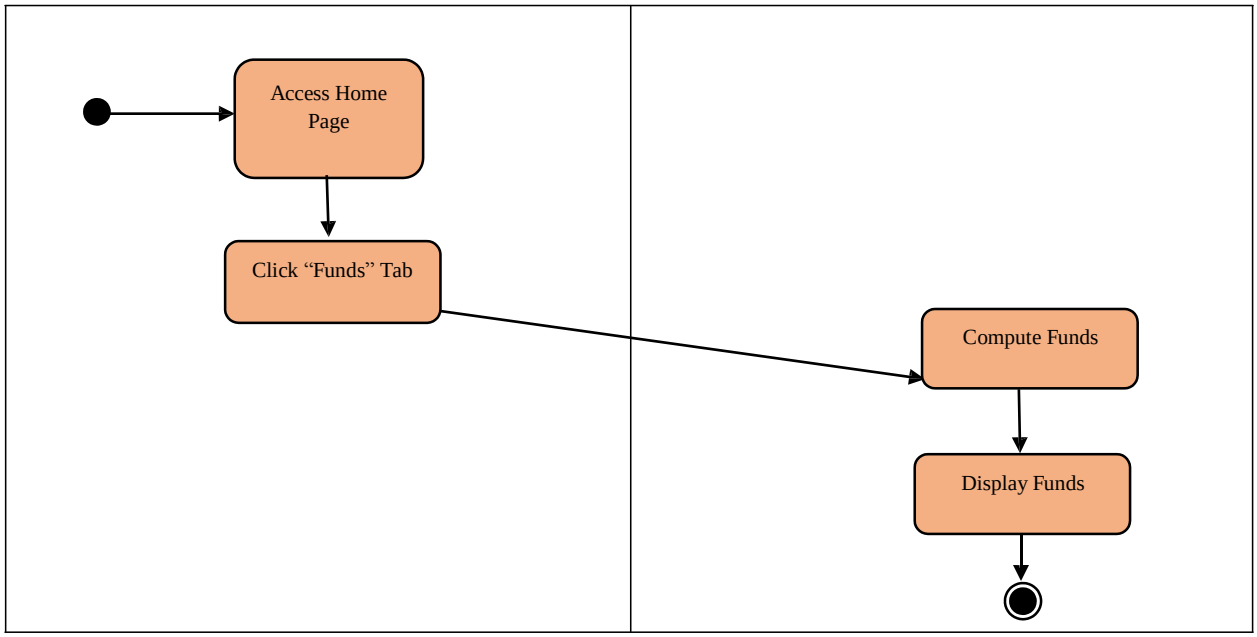
3.1.10 Use Case: Check Available Fund

3.1.10.1 Use Case Specification

Description	Manager/Executive checks Remaining Available Funds that can be used for Rent-To-Own expenses
Goal	To determine the current amount of available funds based on computations regarding incoming and outgoing funds.
Preconditions	Manager/Executive should be logged-in.
Assumptions	You are connected to the system.
Frequency	Since computation of the fund appear on the home page's dashboard, then you can check the Current Available Fund any time you surf the ITCBS's homepage
Flow of Events	**Main Flow:** 1. Access ITCBS's homepage. 2. Click "Income" Tab
Post-conditions	None
Actors	Manager, Executive
Included Use Cases	None
Extended Use Cases	Perform computation
Notes	None

3.1.10.2 Activity Diagram

Manager/Executive	ITCBS

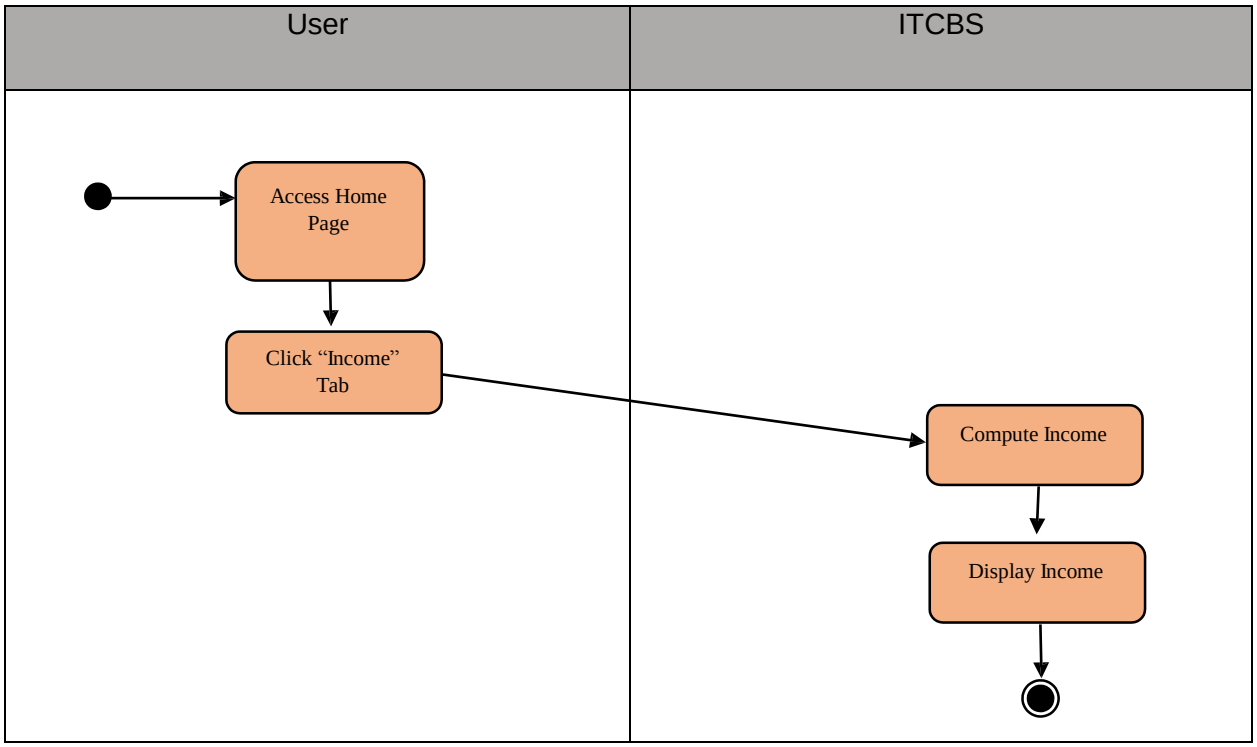


3.1.11 Use Case: Check Income

3.1.11.1 Use Case Specification

Description	User checks ITC UPLB's Income.
Goal	To determine the current income per year.
Preconditions	User should be logged-in.
Assumptions	You are connected to the system.
Frequency	Since yearly income appears on the home page's dashboard, then you can check the Current Available Fund any time you surf the ITCBS's homepage
Flow of Events	**Main Flow:** 1. Access ITCBS's homepage. 2. Click "Income" Tab.
Post-conditions	None
Actors	User
Included Use Cases	Perform computation
Extended Use Cases	None
Notes	None

3.1.11.2 Activity Diagram



3.1.12 Use Case: Issue SOA

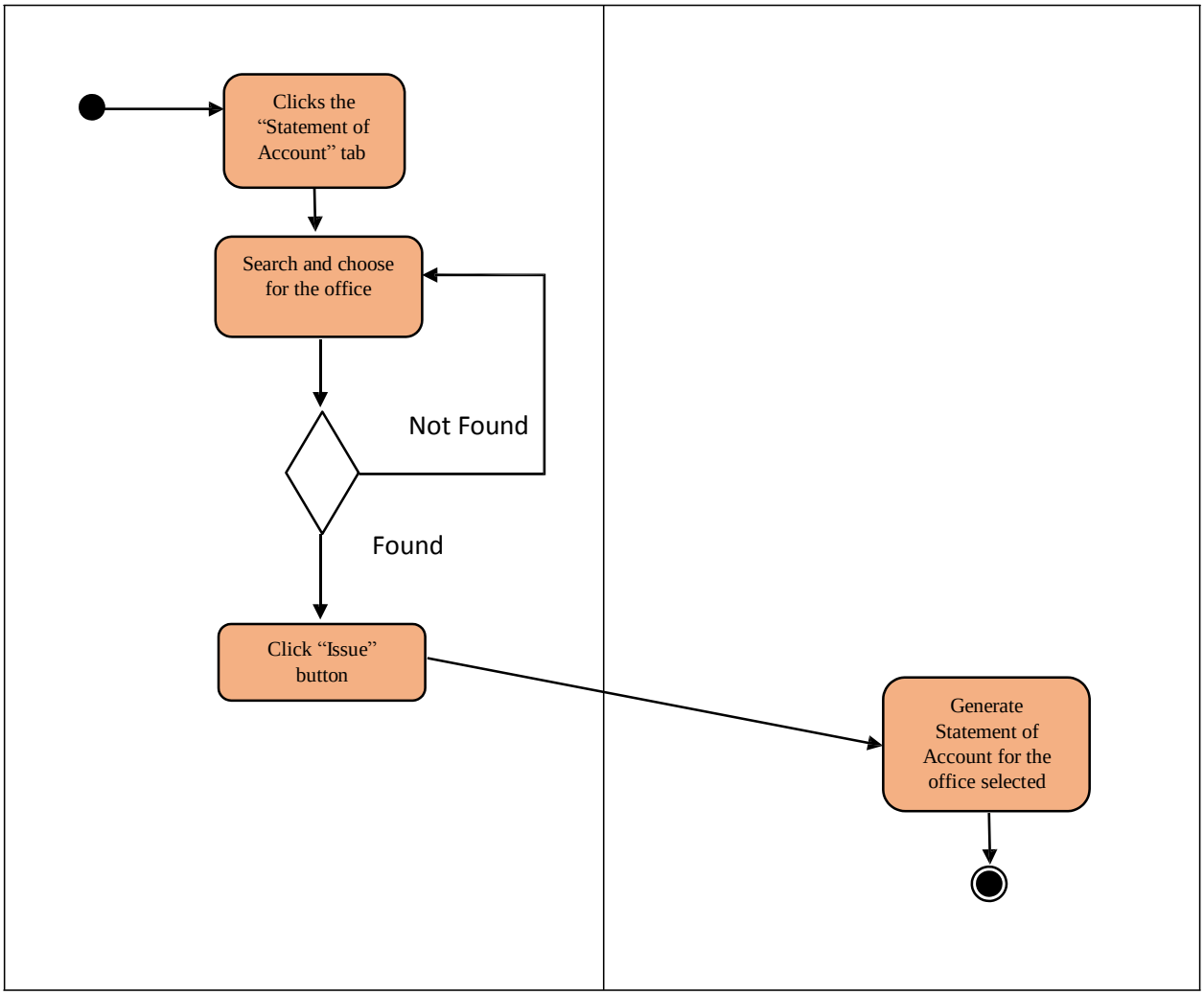
3.1.12.1 Use Case Specification

Description	Manager releases Statement of Account
Goal	To issue a statement of account containing one or more JRs
Preconditions	Manager should be logged-in.
Assumptions	You are connected to the system.
Frequency	Every time a manager wants to issue a SOA for specified client or office
Flow of Events	**Main Flow:** 1. Manager clicks Statement of Account Tab 2. Manager may search for the office he/she needs to issue a statement of account. 3. System will generate a statement of account form to be downloaded or to be printed.
	A) Alternate Flow: Office is not found in database A1) return to step 2 of the main flow.
Post-conditions	A statement of account is generated for the office selected.
Actors	Manager

Included Use Cases	None
Extended Use Cases	None
Notes	Statement of Account includes: 1) SOA number 2) Client Info 3) Date created 4) Date paid 5) Payment Status 6) Check number 7) Official Receipt (OR) number 8) Total Amount to be paid

3.1.12.2 Activity Diagram

User	ITCBS



3.1.13 Use Case: Edit SOA

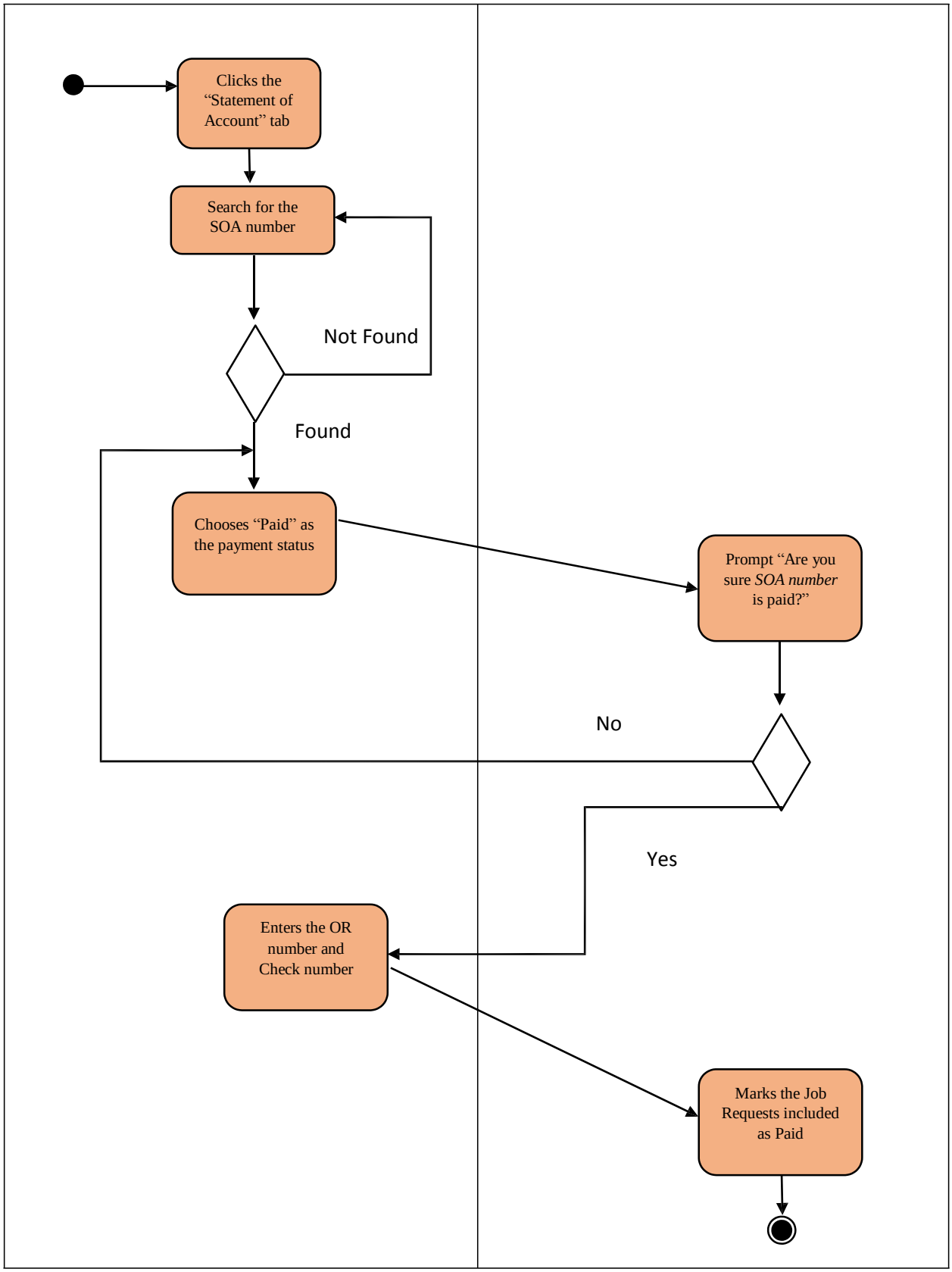
3.1.13.1 Use Case Specification

Description	Manager marks a Statement of Account as paid or still unpaid. If paid, inputs the check no. and OR no.
Goal	To mark a statement of account be paid manually.
Preconditions	Manager should be logged-in.
Assumptions	You are connected to the system.
Frequency	Every time a manager wants to issue a SOA for specified client or office
Flow of Events	**Main Flow:** 1. Manager clicks Statement of Account Tab 2. Manager searches for the SOA number. 3. Manager changes the payment status to Paid and enters the OR number and check number. 4. System will then updates the Job Requests included in the SOA to be paid also.

	A) Alternate Flow: SOA number is not found in database A1) return to step 2 of the main flow.
Post-conditions	The statement of account is mark as paid and the job requests it contains are also marked paid.
Actors	Manager
Included Use Cases	None
Extended Use Cases	None
Notes	Statement of Account includes: 1) SOA number 2) Client Info 3) Date created 4) Date paid 5) Payment Status 6) Check number 7) Official Receipt (OR) number 8) Total Amount to be paid

3.1.13.2 Activity Diagram

User	ITCBS

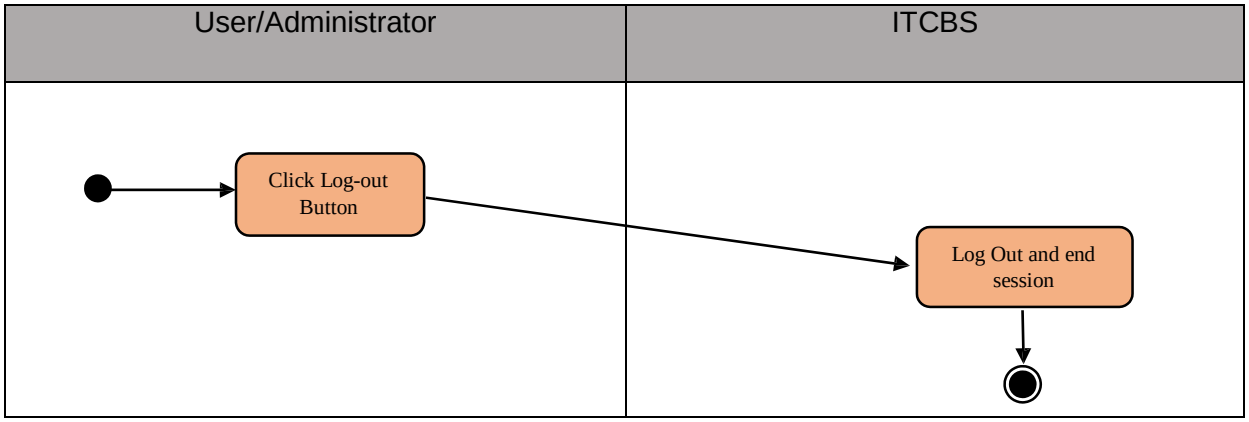

Clicks the "Statement of Account" tab
Search for the SOA number
Not Found
Found
Chooses "Paid" as the payment status
Prompt "Are you sure *SOA number* is paid?"
No
Yes
Enters the OR number and Check number
Marks the Job Requests included as Paid

3.1.14 Use Case: Log-out

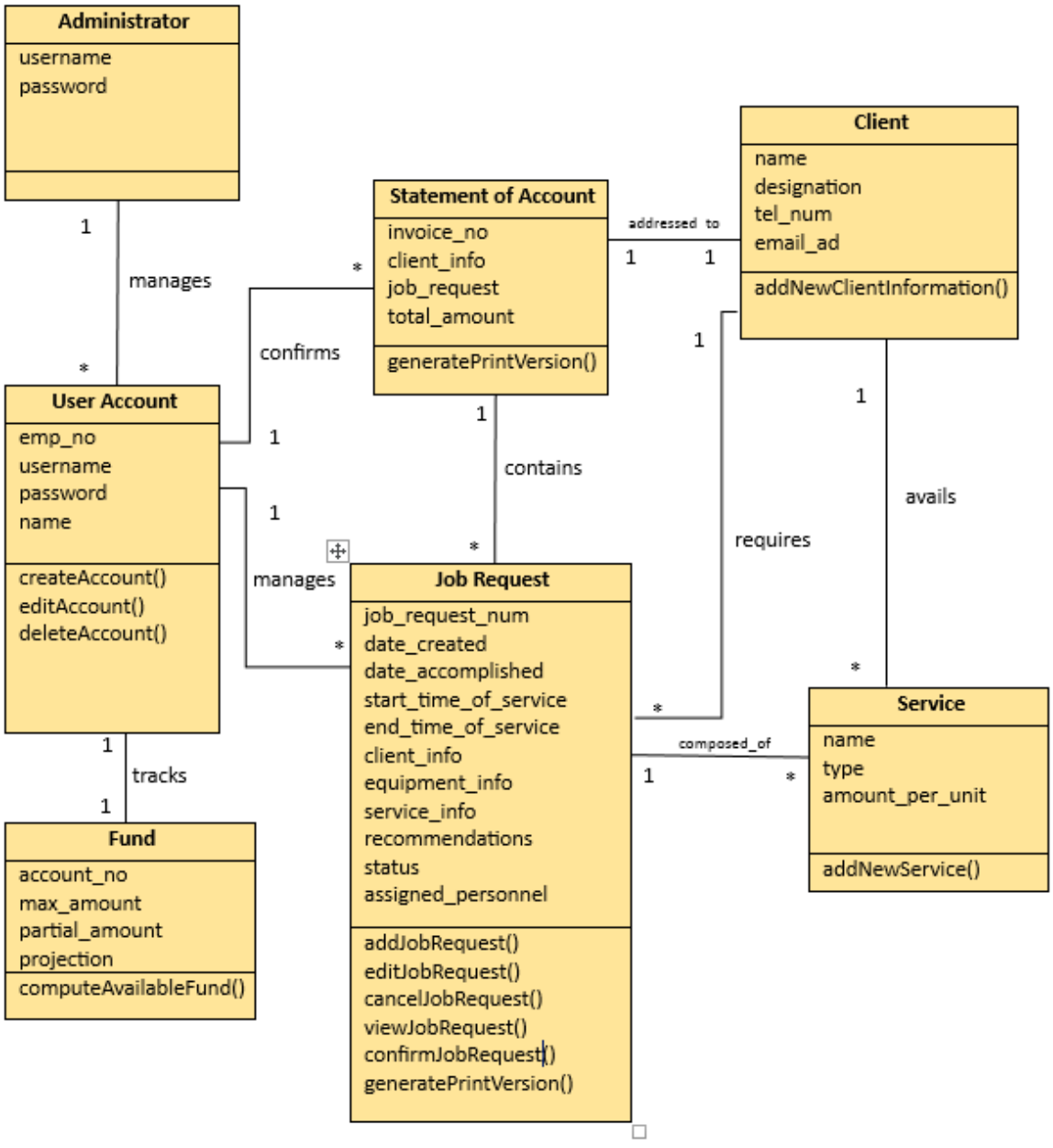
3.1.14.1 Use Case Specification

Description	User/Administrator logs out.
Goal	End User's/Administrator's use of the system
Preconditions	User/Administrator should be logged-in.
Assumptions	You are connected to the system.
Frequency	Whenever you want end your session.
Flow of Events	**Main Flow:** 1. Click Logout
Post-conditions	None
Actors	User/Administrator
Included Use Cases	None
Extended Use Cases	None
Notes	None

3.1.14.2 Activity Diagram

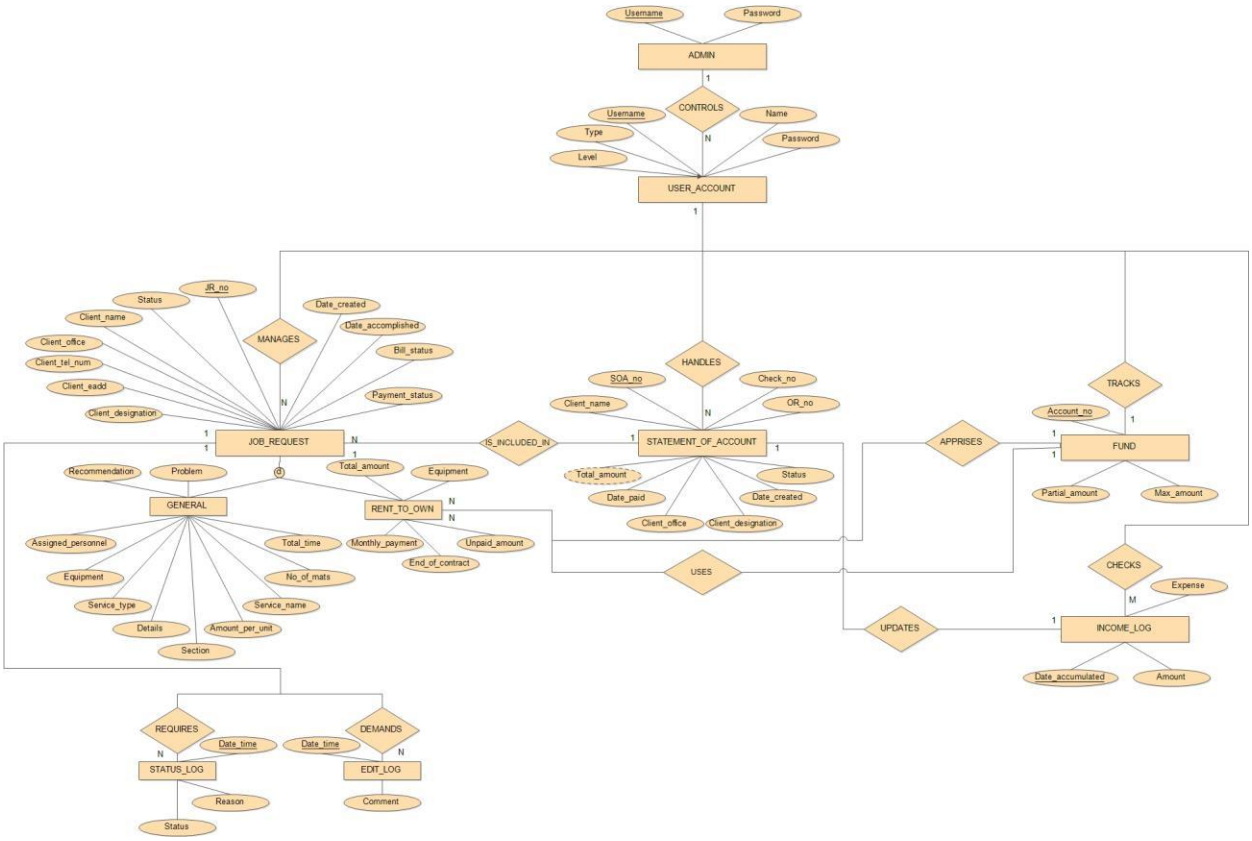


3.2 Database Schema



4. Appendices

4.1 Entity Relationship Diagram



4.2 Installation

Assuming wamp, xampp or any server is installed and running.

1) Copy "Joomla" folder to htdocs(xampp), www(wamp) or any web server folder
2) Create a database in mySQL, specifically named it as "itcbs_db"
3) Choose the "itcbs_db" database then import "itcbs_db.sql"
4) Change all $con=mysqli_connect("localhost","root","","itcbs_db"); into $con=mysqli_connect("<server>","<user>","<password>","itcbs_db"); in functions.php and soa.php
5) Enter the page using the localhost
6) To access the administration level for User Management, accesss "/Joomla/administrator"

predefined admin:
username: admin
password: 000000