ErieGarbage Online

Version 1.0

SWENG 497

|  |  |
| --- | --- |
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Revision History

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| --- | --- | --- | --- |
| **Date** | **Version** | **Description** | **Author** |
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Table of Contents

1. Introduction 4

1.1 Purpose 4

1.2 Scope 4

1.3 Definitions, Acronyms, and Abbreviations 4

1.4 References 4

1.5 Overview 4

2. Problem description 4

2.1 Project Purpose, Scope, and Objectives 4

2.1.1 User interfaces 5

2.2 Product Functions 5

2.3 User Description 5

2.3.1 User Environment 5

2.3.2 User Profiles 5

2.4 Assumptions and Dependencies 6

2.5 Constraints 6

2.6 Specific Requirements 6

2.6.1 Applicable Standards 6

2.6.2 System Requirements 6

2.6.3 Performance Requirements 6

2.6.4 Environmental Requirements 6

2.7 Analysis model 7

3. Team Members Log Sheets 45

3.1 Jake Wheeler 45

3.2 Nate Christiansen 45

3.3 Alex Lee 46

Project Analysis and

# Introduction

ErieGarbage is a garbage pick-up and disposal proprietorship located in Erie, PA. ErieGarbage is currently serving around 3,000 customers in total. They provide garbage collections services to both residential customers and small businesses in Erie County.

## Purpose

The purpose of this document is to define the requirements and the specifications of the ErieGarbage Online system in terms of its behavior and operation in accordance to the customer’s requirements. It ensures that all parties involved in the development process of ErieGarbage Online are aware of the issues surrounding the system and the proposed solution.

## Scope

The scope of this project includes admin and user functionality within the application. The focus of this application will be on giving the customers a good experience, meaning they are able to create an account and perform actions using that account. It will also focus on giving admins a similar experience; the ability to modify some customer data, make adjustments to customer billing, and other functionalities.

## Definitions, Acronyms, and Abbreviations

SRS – Software Requirements Specifications

EGO – ErieGarbage Online

GUI – Graphical User Interface

User – Person using the system that cannot use admin functionality

Admin – Person using the system with access to all admin functionality, and some customer functionality

## References

Secure Software Design – Author(s): Theodor Richardson & Charles Thies – 2013

Software Quality Assurance – Authors(s): Daniel Galin - 2004

## Overview

Section 2

This section describes the problem, product functionality, a user description, assumptions and dependencies, constraints, specific requirements, and analysis model.

Section 3

This section lists the team members and each of their purposes in regards to the project.

# Problem description

## Project Purpose, Scope, and Objectives

The purpose of this project is to create a web-based application to allow ErieGarbage to easily monitor and assist their customers, record customer and admin actions in a database, and allow customers an easy way to view and modify information that relates to them.

### User interfaces

The user interface of EGO will consist of multiple parts:

* Main login page
* Customer view
* Admin view

## Product Functions

The following is a breakdown of distinct tasks that an admin can perform while using EGO:

Admin Functionality:

* Update customer’s billing information
* Send emails to customers
  + Send electronic receipt to customers
* Check customer accounts with payments due
  + See a list with information about user
* View complaints
  + Ability to respond to complaints
* Suspend customer account
  + Due to customer request
  + Due to non-payment
* View customer complaints
  + Ability to respond to complaints
* View bill disputes
  + Ability to respond to disputes
* Create additional admin accounts

The following is a breakdown of distinct tasks that a customer can perform while using EGO:

Customer Functionality:

* Update profile
* View billing information
  + Ability to update billing information
* Pay bill
* View garbage pick-up time
* Suspend account
* File complaint
* Dispute bill
* Cancel account

## User Description

### User Environment

The client has stated that this software will be web-based, meaning that users will be able to access the system from their browser of choice. The system will be scalable to allow for thousands of users to use the service concurrently.

### User Profiles

The user will need a basic knowledge of using their preferred operation system (Windows, Mac, Linux). Since this is a web-based application, there are no operating system dependencies.

## Assumptions and Dependencies

It is assumed that this software will be in constant use by thousands of customers and many admins. It is also assumed that customers will have a basic understanding of web-services to understand how to use the product. Dependencies include the hardware specifications of the server hosting the database and application

## Constraints

System constraints include:

* The system is web-based and can be accessed from a browser
* User friendly interface
* Admin should be proficient with the system in two hours of training or less
* Customers should be able to use the system without training
* Hints and help should be provided to the user

## Specific Requirements

### Applicable Standards

The user must be able to access the system from a web browser.

### System Requirements

The client system should be a laptop or desktop computer with a web browser installed.

### Performance Requirements

None specified.

### Environmental Requirements

Invalid operations will generate an error message to let the user know that something has gone wrong with the system. These error messages will be displayed to the user so that input can be taken again. Major modifications of EGO will be done by the development team at SecQuality Development.

## Analysis model

[UML diagrams: use-case diagrams, class diagrams and sequence diagrams.]

**Use Case Diagram:**



**Use Cases:**

|  |  |
| --- | --- |
| Use Case #1 | View Account Information |
| Goal in Context | To allow the user to view account information |
| Scope | ErieGarbage Online |
| Level | Primary |
| Primary Actor | User |
| Preconditions | User has an account and is logged in. |
| Success Guarantee | User’s account information will be displayed |
| Fail Case | User information is not displayed |
| Consequence of Failure | User’s will not be able to view or update information |
| Associated Risks | User may feel that the service is unreliable and may discontinue their usage |
| Nonfunctional Requirements | Information should be displayed within one second after attempt |
| Trigger | User attempts to view account information |
| 1 | User attempts to view account information |
| 2 | The system displays the user’s information |

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| --- | --- |
| Use Case #2 | Update Account Information |
| Goal in Context | To allow the user to update account information |
| Scope | ErieGarbage Online |
| Level | Primary |
| Primary Actor | User |
| Preconditions | User has an account, is logged in, and is viewing profile. |
| Success Guarantee | User’s account information will be updated |
| Fail Case | User’s information is not updated |
| Consequence of Failure | User’s information will be incorrect |
| Associated Risks | User information will be outdated and may cause unnecessary charges or work |
| Nonfunctional Requirements | Information should be updated immediately after saving |
| Trigger | User attempts to update account information |
| 1 | User attempts to update account information |
| 2 | The system displays user’s changeable information |
| 3 | The user enters new information |
| 4 | The user saves changes |
| 5 | The system changes the information in the database |
|  | Extensions |
| 4a | The user cancels changes |
|  | 4a-1 The system discards the changes |

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| --- | --- |
| Use Case #3 | Make Payment |
| Goal in Context | To allow the user to add money to their running balance |
| Scope | ErieGarbage Online |
| Level | Primary |
| Primary Actor | User |
| Preconditions | User has an account and is logged in. |
| Success Guarantee | User’s account balance will increase by the amount they pay |
| Fail Case | User’s payment doesn’t go through |
| Consequence of Failure | User may be charged without taking effect, or may be suspended unduly |
| Associated Risks | User may start a chargeback, or may feel that their billing information is not secure and cancel their account |
| Nonfunctional Requirements | The user’s balance should update immediately after payment clears |
| Trigger | User attempts to add money to account balance |
| 1 | User attempts to add money to account balance |
| 2 | The system displays the payment form |
| 3 | The user enters amount they wish to pay |
| 4 | The system charges the user’s billing account |
| 5 | The system updates balance after receiving confirmation |
|  | Extensions |
| 4a | The user’s billing information is out of date |
|  | 4a-1 The system discards the payment |

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| Use Case #4 | View Pickup Time |
| Goal in Context | To allow the user to view pickup times |
| Scope | ErieGarbage Online |
| Level | Primary |
| Primary Actor | User |
| Preconditions | User has an account and is logged in. |
| Success Guarantee | ErieGarbage pickup times are displayed |
| Fail Case | Nothing is displayed |
| Consequence of Failure | User will not be able to view times for pickup |
| Associated Risks | User may not be prepared for pickup, causing a failure in the service, and the user may feel uncertain about the quality of the service. |
| Nonfunctional Requirements | Information should be displayed within one second of attempt |
| Trigger | User attempts to view pickup times |
| 1 | User attempts to view pickup times |
| 2 | The system displays the pickup times for the service |

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| Use Case #5 | Notify Admin |
| Goal in Context | To allow user to send a request to the admin |
| Scope | ErieGarbage Online |
| Level | Primary |
| Primary Actor | User |
| Preconditions | User has an account and is logged in |
| Success Guarantee | Admin will be notified of User’s request |
| Fail Case | Admin is not notified |
| Consequence of Failure | Admin will not know what the user was attempting to notify about |
| Associated Risks | User will feel that the system is unreliable or that the administrators don’t respond to users, and may cancel their account |
| Nonfunctional Requirements | Notifications should be sent as soon as user requests it, and should have a guaranteed delivery |
| Trigger | User attempts to notify admin |
| 1 | User attempts to notify admin |
| 2 | User chooses to dispute bill, request suspension, or cancel account |
| 3 | The system runs the specified sub function |
| 4 | The user sends the notification |
| 5 | The system notifies the admin that the user has sent a message |
|  | Extensions |
| 4a | The user cancels the message |
|  | 4a-1 The system discards the message |

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| Use Case #6 | Request Suspension |
| Goal in Context | To allow user to request a suspension on their account |
| Scope | ErieGarbage Online |
| Level | Subfunction |
| Primary Actor | User |
| Preconditions | User has an account, is logged in, and has chosen notification type suspension |
| Success Guarantee | Admin will be notified of suspension request |
| Fail Case | Admin is not notified |
| Consequence of Failure | Admin will not know that user wishes to suspend account |
| Associated Risks | User will be charged during desired suspension period, and will likely dispute or cancel service |
| Nonfunctional Requirements | Notifications should be sent as soon as user requests it, and should have a guaranteed delivery |
| Trigger | User chooses to request suspension |
| 1 | User attempts to request suspension |
| 2 | User specifies length of time for suspension |
| 3 | The system notifies the admin that the user has requested a suspension |

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| Use Case #7 | File Complaint |
| Goal in Context | To allow the user to file a complaint |
| Scope | ErieGarbage Online |
| Level | Subfunction |
| Primary Actor | User |
| Preconditions | User has an account, is logged in, and chooses to file a complaint |
| Success Guarantee | Admin will be notified of the user’s complaint |
| Fail Case | User’s complaint is not filed |
| Consequence of Failure | User’s complaint will not reach the administration |
| Associated Risks | User will feel that their feedback is not important, and a valid concern may be not be taken care of |
| Nonfunctional Requirements | Complaint should be filed immediately after attempt |
| Trigger | User chooses to file a complaint |
| 1 | User chooses to file a complaint |
| 2 | The user fills out specified information to file the complaint |
| 3 | The system notifies the admins about the complaint |

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| Use Case #8 | Dispute Bill |
| Goal in Context | To allow the user to dispute bill |
| Scope | ErieGarbage Online |
| Level | Primary |
| Primary Actor | User |
| Preconditions | User has an account, is logged in, has a charge to their account, and chooses to dispute a bill |
| Success Guarantee | Admin will be notified of the user’s dispute |
| Fail Case | User’s dispute is not filed |
| Consequence of Failure | User’s dispute will not reach the administration |
| Associated Risks | User will feel that their notifications are ignored, and may be wrongly charged |
| Nonfunctional Requirements | Dispute should be filed immediately after attempt |
| Trigger | User chooses to dispute a bill |
| 1 | User chooses to dispute a bill |
| 2 | The user selects a bill to dispute |
| 3 | The system notifies the admins about the dispute |

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| Use Case #9 | Cancel Account |
| Goal in Context | To allow the user to cancel their account |
| Scope | ErieGarbage Online |
| Level | Primary |
| Primary Actor | User |
| Preconditions | User has an account and is logged in |
| Success Guarantee | User’s account will be cancelled |
| Fail Case | User’s account is not cancelled |
| Consequence of Failure | User’s account will remain in effect |
| Associated Risks | User may have inaccurate activity or charges made, and could potentially involve the law |
| Nonfunctional Requirements | Account should be deleted immediately after the user requests it |
| Trigger | User attempts to cancel account |
| 1 | User attempts to cancel account |
| 2 | The user specifies required cancellation information |
| 3 | The system deletes the users account |
|  | Extensions |
| 3a | The user cancels request |
|  | 4a-1 The systems discards the account cancellation request |

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| Use Case #10 | Send Email |
| Goal in Context | Allow the admin to email a customer |
| Scope | ErieGarbage Online |
| Level | Primary |
| Primary Actor | Admin |
| Preconditions | Admin is logged into their account |
| Success Guarantee | An email will be sent to the user of the admin’s choice |
| Fail Case | The user never receives a message from the admin |
| Consequence of Failure | Admin may assume incorrect information about the user if there is no response |
| Associated Risks | User will be unhappy if the admin makes an assumption due to the lack of  response and alters the user’s account due the assumption |
| Nonfunctional Requirements | Admin should be notified immediately if there are issues sending the message |
| Trigger | Admin attempts to email a user |
| 1 | The admin attempts to email a user |
| 2 | The admin enters the  header, subject, and body information of the email |
| 3 | The admin submits the email |
| 4 | The system sends the email to the user |
|  | Extensions |
| 3a | The admin cancels the email |
|  | 3a-1 The system discards the email |

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| Use Case #11 | Send Receipt |
| Goal in Context | Allow the admin to email a customer their receipt |
| Scope | ErieGarbage Online |
| Level | Primary |
| Primary Actor | Admin |
| Preconditions | Admin is logged into their account |
| Success Guarantee | A receipt will be sent to the user of the admin’s choice |
| Fail Case | The user never receives a receipt from the admin |
| Consequence of Failure | User will wonder why they have not received a receipt for the month |
| Associated Risks | User will have to contact ErieGarbage to make sure their payment went through; user may be upset by this inconvenience |
| Nonfunctional Requirements | Admin should be notified immediately if there are issues sending the receipt |
| Trigger | Admin attempts to send a receipt to a user |
| 1 | Admin attempts to send a receipt to a user |
| 2 | The admin enters the  header, subject, and receipt information of the email |
| 3 | The admin submits the email |
| 4 | The system sends the email to the user |
|  | Extensions |
| 3a | The admin cancels the email |
|  | 3a-1 The system discards the email |

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| Use Case #12 | Create Admin Account |
| Goal in Context | Allow an admin to create another admin account |
| Scope | ErieGarbage Online |
| Level | Primary |
| Primary Actor | Admin |
| Preconditions | Admin is logged into their account |
| Success Guarantee | The admin creates an account for another admin to use |
| Fail Case | No account is created or the created account is a customer account |
| Consequence of Failure | Admin will not be able to login or will only have customer privileges |
| Associated Risks | Admin will be confused and may waste time trying to resolve this issue |
| Nonfunctional Requirements | The new admin account should be useable immediately |
| Trigger | Admin attempts to create another admin account |
| 1 | The admin attempts to create another admin account |
| 2 | The admin enters the email, password, and phone number of the new admin account |
| 3 | The admin submits the account information |
| 4 | The system validates that the account is unique and valid |
| 5 | The system creates an account using the provided information |
|  | Extensions |
| 3a | The admin cancels the creation process |
|  | 3a-1 The system discards the information |
| 4a | The account is not valid |
|  | 4a-1 The admin modifies the invalid information |

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| Use Case #13 | Update Billing Information |
| Goal in Context | Allow an admin to update a user’s billing information |
| Scope | ErieGarbage Online |
| Level | Primary |
| Primary Actor | Admin |
| Preconditions | Admin is logged into their account |
| Success Guarantee | The admin alters the user’s billing information |
| Fail Case | User’s billing information remains the same |
| Consequence of Failure | User may not be able to pay if their billing information is incorrect |
| Associated Risks | User and admin will become frustrated; they may try to work around the system to allow the customer to pay on time |
| Nonfunctional Requirements | The user’s billing information should be updated immediately once submitted by the admin |
| Trigger | Admin attempts to update the user’s billing information |
| 1 | The admin enters the email of the user that needs their billing information updated |
| 2 | The system locates and displays the user’s information |
| 3 | The admin can update the user’s email address, home address, and phone number |
| 4 | The admin submits the billing information updates |
| 5 | The system updates the user’s records |
|  | Extensions |
| 4a | The admin cancels the update |
|  | 4a-1 The system discards the updated information |

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| Use Case #14 | View Notifications |
| Goal in Context | Allow an admin to view notifications sent by users |
| Scope | ErieGarbage Online |
| Level | Primary |
| Primary Actor | Admin |
| Preconditions | Admin is logged into their account |
| Success Guarantee | The admin is able to view a list of notifications from users |
| Fail Case | The admin is not able to view the list |
| Consequence of Failure | Admin will not be able to respond to users |
| Associated Risks | Users will become frustrated they they are not being assisted by admins; admins will become frustrated that they cannot perform their job duties |
| Nonfunctional Requirements | The list should be color coded depending on the type of notification in the inbox |
| Trigger | Admin attempts to view list of notifications |
| 1 | The admin attempts to view their notifications |
| 2 | The system retrieves notifications sent to admins and displays them in a list |
| 3 | The admin selects an individual notification |
| 4 | The system assigns the admin to that notification |
| 5 | The system calls a subfunction depending on notification type  (Respond To Complaints, Respond To Bill Dispute, or Grant Suspension Request) |

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| Use Case #15 | Respond To Complaints |
| Goal in Context | Allow an admin to respond to a user’s complaint |
| Scope | ErieGarbage Online |
| Level | Primary |
| Primary Actor | Admin |
| Preconditions | Admin is logged into their account and has selected a complaint notification |
| Success Guarantee | The admin is able to respond to a user’s complaint |
| Fail Case | The admin’s response is not sent to the user |
| Consequence of Failure | Admin will not be able assist a user with their request |
| Associated Risks | Users may not want to use a system with seemingly careless admins; admins will become frustrated that they are trying to help but cannot |
| Nonfunctional Requirements | The admin should be notified immediately if their response cannot be sent |
| Trigger | The admin attempts to respond to a notification |
| 1 | The admin responds to the notification and submits it |
| 2 | The system sends the admin’s response to the user |
|  | Extensions |
| 1a | The admin cancels the response |
|  | 1a-1 The system discards the response data |
|  | 1a-2 The system reverts to the notification list |

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| Use Case #16 | Respond To Bill Dispute |
| Goal in Context | Allow an admin to respond to a user’s bill dispute request |
| Scope | ErieGarbage Online |
| Level | Primary |
| Primary Actor | Admin |
| Preconditions | Admin is logged into their account and has selected a bill dispute notification |
| Success Guarantee | The admin is able to respond to a user’s bill dispute request |
| Fail Case | The admin’s response is not sent to the user |
| Consequence of Failure | Admin will not be able assist a user with their request |
| Associated Risks | Users may not want to use a system with seemingly careless admins; admins will become frustrated that they are trying to help but cannot |
| Nonfunctional Requirements | The admin should be notified immediately if their response cannot be sent |
| Trigger | The admin attempts to respond to a notification |
| 1 | The admin responds to the notification and submits it |
| 2 | The system sends the admin’s response to the user |
|  | Extensions |
| 1a | The admin cancels the response |
|  | 1a-1 The system discards the response data |
|  | 1a-2 The system reverts to the notification list |

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| Use Case #17 | Respond To Grant Suspension Request |
| Goal in Context | Allow an admin to respond to a user’s request to have their account suspended |
| Scope | ErieGarbage Online |
| Level | Primary |
| Primary Actor | Admin |
| Preconditions | Admin is logged into their account and has selected a suspension request notification |
| Success Guarantee | The admin is able to respond to a user’s suspension request |
| Fail Case | The admin’s response is not sent to the user |
| Consequence of Failure | Admin will not be able assist a user with their request |
| Associated Risks | Users may not want to use a system with seemingly careless admins; admins will become frustrated that they are trying to help but cannot |
| Nonfunctional Requirements | The admin should be notified immediately if their response cannot be sent |
| Trigger | The admin attempts to respond to a notification |
| 1 | The admin suspends the user’s account |
| 2 | The system notifies the user of their suspension |
|  | Extensions |
| 1a | The admin denies the suspends request |
|  | 1a-1 The system notifies the user that their request has been denied |

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| Use Case #18 | Login |
| Goal in Context | Allow a user or admin to login to the system |
| Scope | ErieGarbage Online |
| Level | Primary |
| Primary Actor | User or Admin |
| Preconditions | User can access the system through an internet connection |
| Success Guarantee | User is logged into the system |
| Fail Case | User enters correct credentials and is not logged in |
| Consequence of Failure | User is not able to interact with admins and access their profile |
| Associated Risks | It may be affecting many users; the site may lose customers |
| Nonfunctional Requirements | The user should be able to login within 5 seconds |
| Trigger | User attempts to login to ErieGarbage Online |
| 1 | The user enters their account username and password |
| 2 | The system logs the user ErieGarbage Online |
|  | Extensions |
| 1a | Username or password is incorrect |
|  | 1a-1 The system prompts the user that the username or password is incorrect |

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| Use Case #19 | Check Account with Due Payment |
| Goal in Context | Allow an admin to obtain a list of users that have due payments |
| Scope | ErieGarbage Online |
| Level | Primary |
| Primary Actor | Admin |
| Preconditions | Admin is logged into their account |
| Success Guarantee | Admin has a viewable list of users that have due payments |
| Fail Case | A list with no results is returned even though there are users that have missed payments |
| Consequence of Failure | Admin is not able to handle interact with only the user accounts that have missed payments |
| Associated Risks | Admin may need to find a work around to interact with these specific users |
| Nonfunctional Requirements | The list returned should be in alphabetical order by user’s last name |
| Trigger | Admin attempts to check accounts with due payments |
| 1 | The admin attempts to check accounts with due payments |
| 2 | The system returns a list of users with due payments and displays it to the admin |

**Sequence Diagrams:**







































# Team Members Log Sheets

## Jake Wheeler

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| --- | --- | --- |
| **date** | **task** | **duration** |
| 10/7/2016 | Meeting with customer (teacher) for more information.  Initial document edits to all sections.  Initial use case diagram. | 2.5 hrs. |
| 10/9/2016 | First draft of user sequence diagrams. | 2.5 hrs. |
| 10/11/2016 | Add more use cases. | 1.5 hr. |
| 10/12/2016 | Add more use cases. | 1 hr. |
| 10/14/2016 | More use cases | 2 hrs. |
| 10/15/2016 | Use case diagram  Added Vs to sequence diagrams | 1.5 hrs. |
| 10/18/2016 | Prepare to submit version 1.0 | 1.5 hrs. |
|  | **Total :** | 12.5 hrs. |

## Nate Christiansen

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| --- | --- | --- |
| **date** | **task** | **duration** |
| 10/7/2016 | Meeting with customer (teacher) for more information. | ¼ hr. |
| 10/8/2016 | Add to document, add many user use cases, and update use case diagram | 1.5 hr. |
| 10/12/2016 | Added some admin sequence diagrams. | 1 hr. |
| 10/13/2016 | Added more admin sequence diagrams | 2 hrs. |
| 10/14/2016 | Finished admin sequence diagrams | 2 hrs. |
|  |  |  |
|  |  |  |
|  | **Total :** | 6.75 hrs. |

## Alex Lee

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| --- | --- | --- |
| **date** | **task** | **duration** |
| 10/7/2016 | Meeting with customer (teacher) for more information. | ¼ hr. |
|  | Tasks not updated |  |
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|  | **Total :** | Tasks not updated |