Software Requirements Specification Template

Software Engineering

The following annotated template shall be used to complete the Software Requirements Specification (SRS) assignment of SWE 312. The instructor must approve any modifications to the overall structure of this document.

Template Usage:
Text contained within angle brackets ('<', '>') shall be replaced by your project-specific information and/or details. For example, <Project Name> will be replaced with 'Payroll Management System'.

Italicized text is included to briefly annotate the purpose of each section within this template. This text should not appear in the final version of your submitted SRS.

This cover page is not a part of the final template and should be removed before your SRS is submitted.

Acknowledgements:
Sections of this document are based upon the IEEE Guide to Software Requirements Specification (ANSI/IEEE Std. 830-1984). The SRS templates of Dr. Orest Pilskalns (WSU, Vancover) and Jack Hagemeister (WSU, Pullman) have also be used as guides in developing this template for SWE 312 course.

Payroll Management System

Software Requirements Specification

Version 2

4-12-2017

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Fall 2017

Work Distribution

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Revision History

Date	Description	Author	Comments
4-12-2017	Version 1	Raghad, Shahad, Rahaf, Maha	
25-12-2017	Version 2	Raghad, Shahad, Rahaf, Maha	

Document Approval

The following Software Requirements Specification has been accepted and approved by the following:

Signature	Printed Name	Title	Date
	<Your Name>	Lead Software Eng.	

Table of Contents

1. Introduction

This SRS fully describes what the software will do and how it will be expected to perform which will minimizes the time and effort required by developers to achieve desired goals and minimizes the development cost. So, this section gives a scope description and overview of everything included in this SRS document. furthermore, the purpose for this document is described and a list of abbreviations and definitions is provided.

1.1 Purpose

The purpose of this document is to give a detailed description of the requirements for the software, and to organize it so it would be easy to read and understand. It will illustrate the purpose and complete declaration for the development of system. It will also explain system constraints, interface and interactions with other external applications. This document is primarily intended to be proposed to a customer for its approval and a reference for developing the first version of the system for the development team.

1.2 Scope

The "Payroll management system" is a Windows-based desktop interface which helps employees to record timecard information electronically and to automatically generate paychecks based on the number of hours worked and total amount of sales.

Employees can access from their desktop, employees can only access and edit their timecards and purchase order. The system will retain information of all employees in the company, and it must pay each employee the correct amount and on time. An administrator can manage employees' information.

Furthermore, the system must interface with existing bank systems via an electronic transaction. The new system must work with the existing Project Management Database, which is a DB2 database running on an IBM mainframe. The Payroll System will access, but not update, information stored in the Project Management Database.

1.3 Definitions, Acronyms, and Abbreviations

Definitions:

1.Bank System: Any bank(s) to which direct deposit transactions are sent.
2. Employee: A person that works for the company that owns and operates the payroll system (Acme, Inc.)

3. Payroll Administrator: The person responsible for maintaining employees and employee information in the system.
4. Project Management Database: The legacy database that contains all information regarding projects and charge numbers.
5.Pay Period: The amount of time over which an employee is paid.
6. Paycheck: A record of how much an employee was paid during a specified Pay Period.
7. Payment Method: How the employee is paid, either pick-up, mail, or direct deposit.
8. Timecard: A record of hours worked by the employee during a specified pay period.
9. Purchase Order: A record of a sale made by an employee.
10. Salaried Employee: An employee that receives a salary.
11. Commissioned Employee: An employee that receives a salary plus commissions.
12. Hourly Employee: An employee that is paid by the hour.

1.4 References

This subsection should:
(1) Provide a complete list of all documents referenced elsewhere in the SRS, or in a separate, specified document.
(2) Identify each document by title, report number - if applicable - date, and publishing organization.
(3) Specify the sources from which the references can be obtained.
This information may be provided by reference to an appendix or to another document.

1.5 Overview

The remainder of this document includes

Functional Requirements:
This subsection contains the requirements for the Payroll management system and some features.

Use case:

This subsection contains the use case model for the system.

Non-Functional Requirements:
Contains all the non-functional requirements in the system.

Design Constraints:
Contains restrictions on the design of the system, and the design information.

2. General Description

This section of the SRS should describe the general factors that affect 'the product and its requirements. It should be made clear that this section does not state specific requirements; it only makes those requirements easier to understand.

2.1 Product Perspective

This subsection of the SRS puts the product into perspective with other related products or projects. (See the IEEE Guide to SRS for more details).

2.2 Product Functions

This subsection of the SRS should provide a summary of the functions that the software will perform.

2.3 User Characteristics

This subsection of the SRS should describe those general characteristics of the eventual users of the product that will affect the specific requirements. (See the IEEE Guide to SRS for more details).

2.4 General Constraints

This subsection of the SRS should provide a general description of any other items that will limit the developer's options for designing the system. (See the IEEE Guide to SRS for a partial list of possible general constraints).

2.5 Assumptions and Dependencies

This subsection of the SRS should list each of the factors that affect the requirements stated in the SRS. These factors are not design constraints on the software but are, rather, any changes to them that can affect the requirements in the SRS. For example, an assumption might be that a specific operating system will be available on the hardware designated for the software product. If, in fact, the operating system is not available, the SRS would then have to change accordingly.

3. Specific Requirements

This will be the largest and most important section of the SRS. The customer requirements will be embodied within Section 2, but this section will give the D-requirements that are used to guide the project's software design, implementation, and testing.

Each requirement in this section should be:

- *Correct*
- *Traceable (both forward and backward to prior/future artifacts)*
- *Unambiguous*
- *Verifiable (i.e., testable)*
- *Prioritized (with respect to importance and/or stability)*
- *Complete*
- *Consistent*
- *Uniquely identifiable (usually via numbering like 3.4.5.6)*

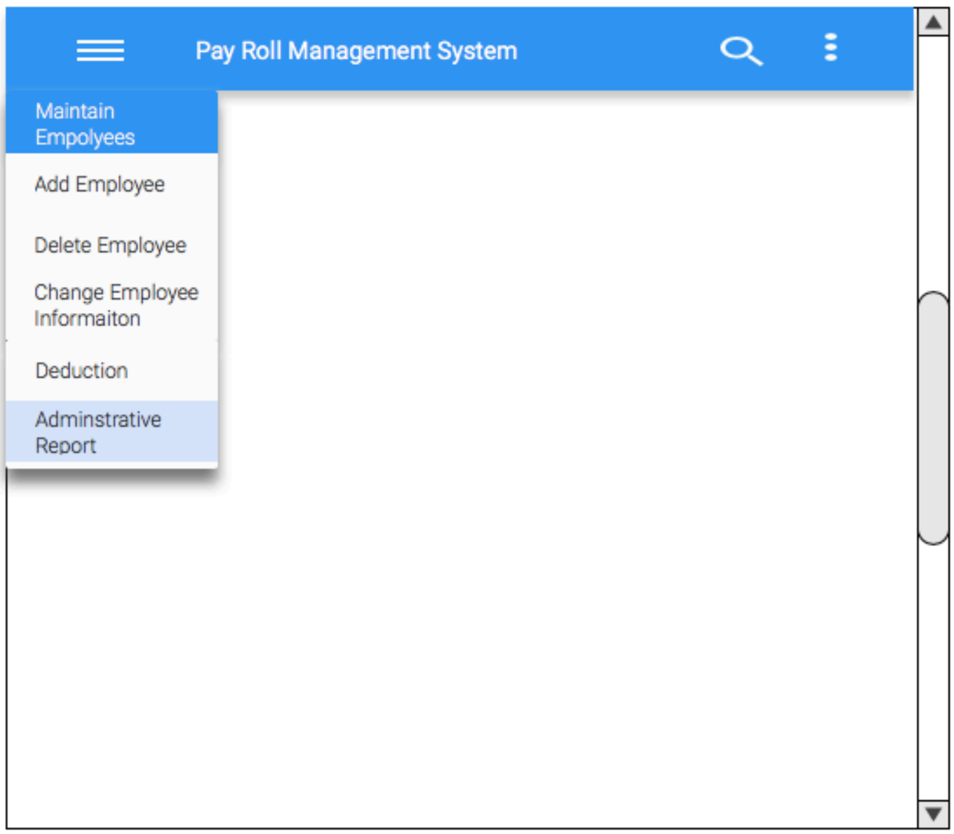
Attention should be paid to the carefuly organize the requirements presented in this section so that they may easily accessed and understood. Furthermore, this SRS is not the software design document, therefore one should avoid the tendency to over-constrain (and therefore design) the software project within this SRS.

3.1 External Interface Requirements

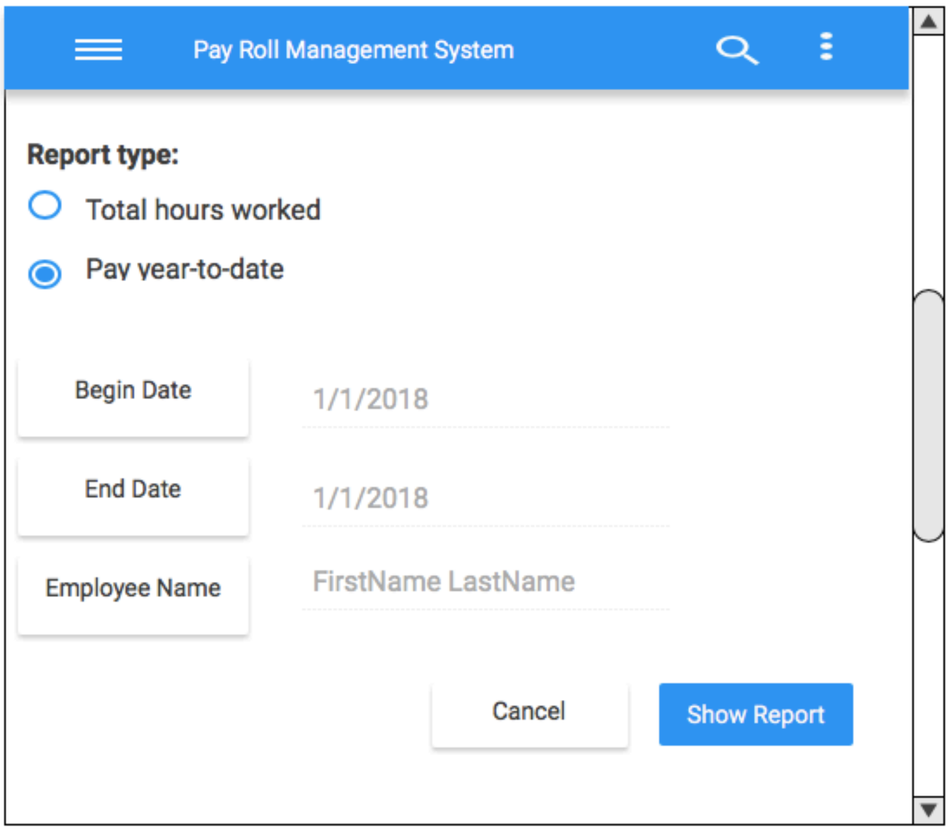
3.1.1 User Interfaces

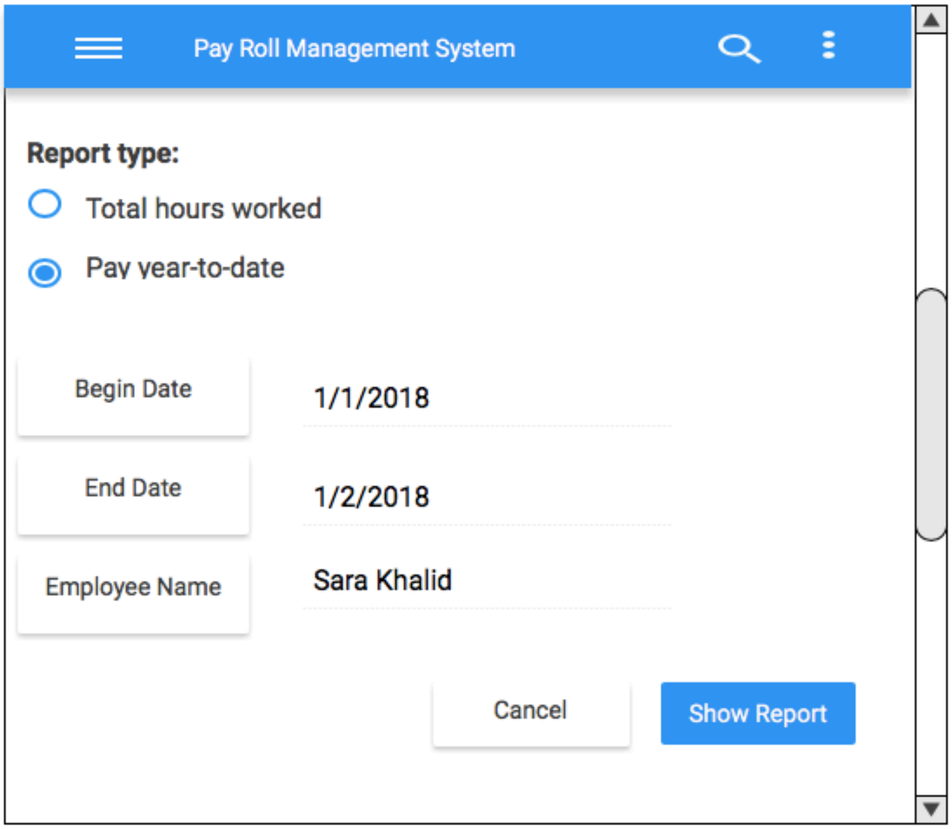
3.1.1.1 Create Administrative Report

1- Payroll Administrator choose "Adminstrative Report"

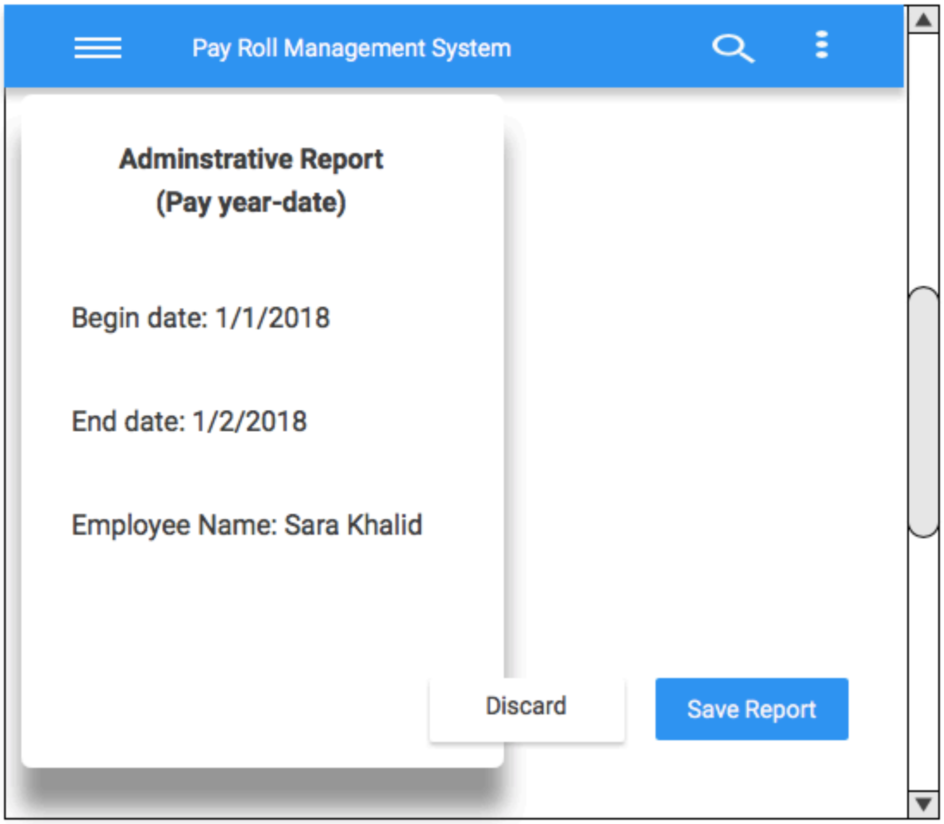


2- Payroll Administrator should choose Report type and fills in required fields, and selects "Show Report" option.

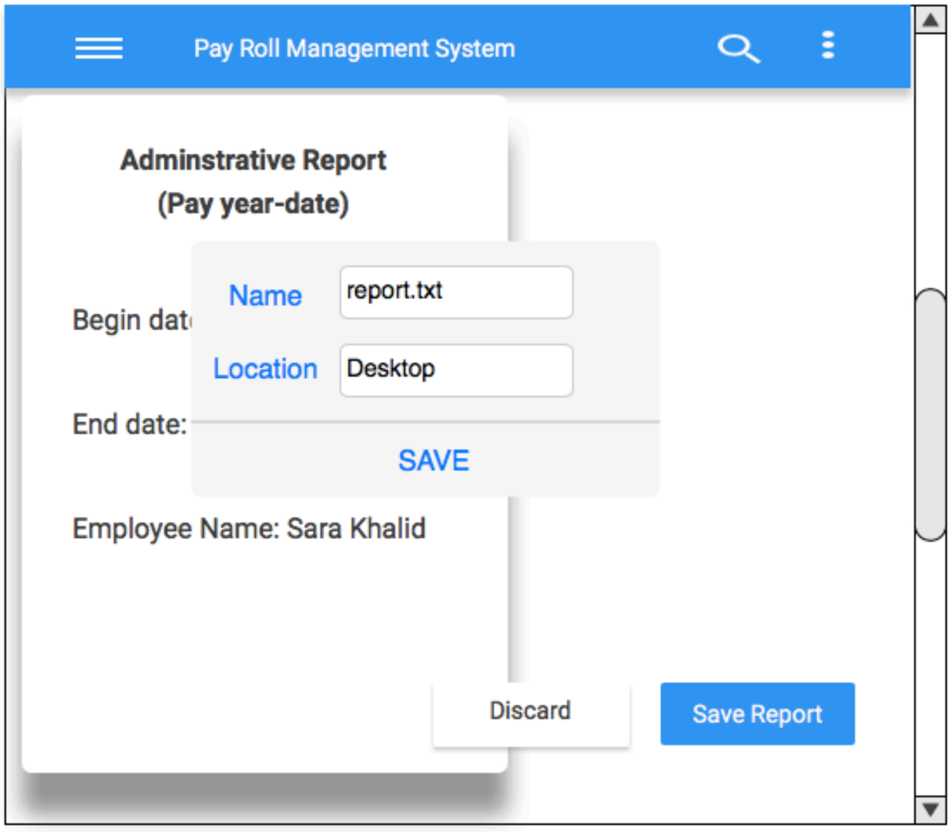




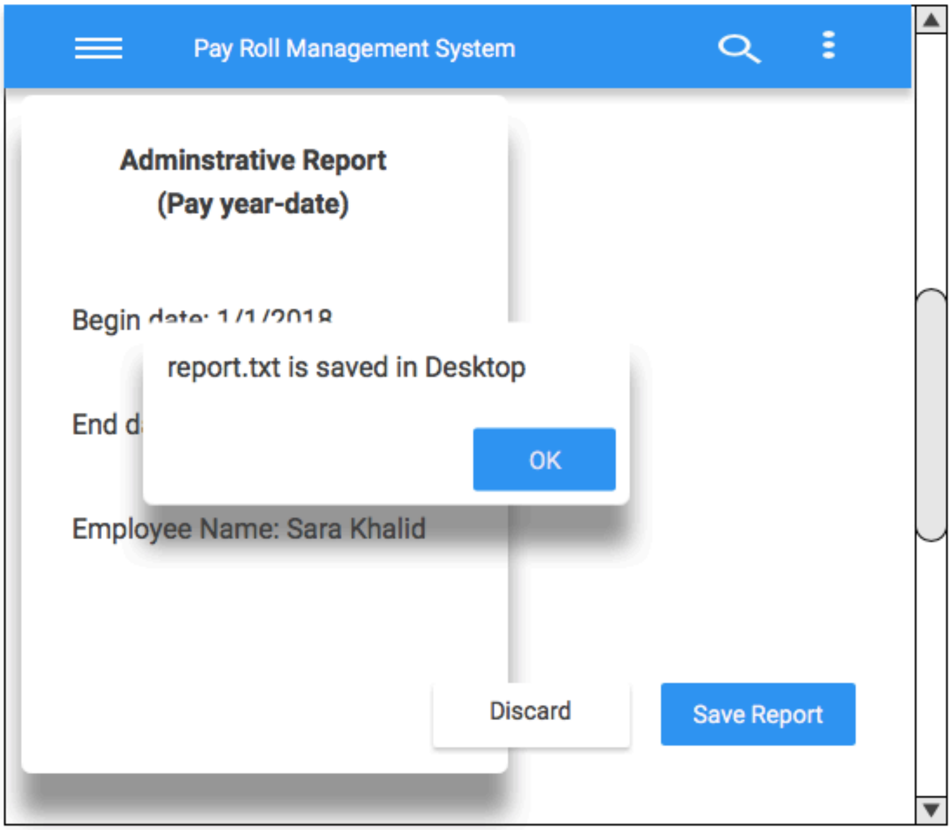
3- The Administrative Report is displayed in the screen. Payroll Administrator selects "Save Report" to save it.



4- Payroll Administrator should provide the name and location for the report to be saved, and then press "Save".

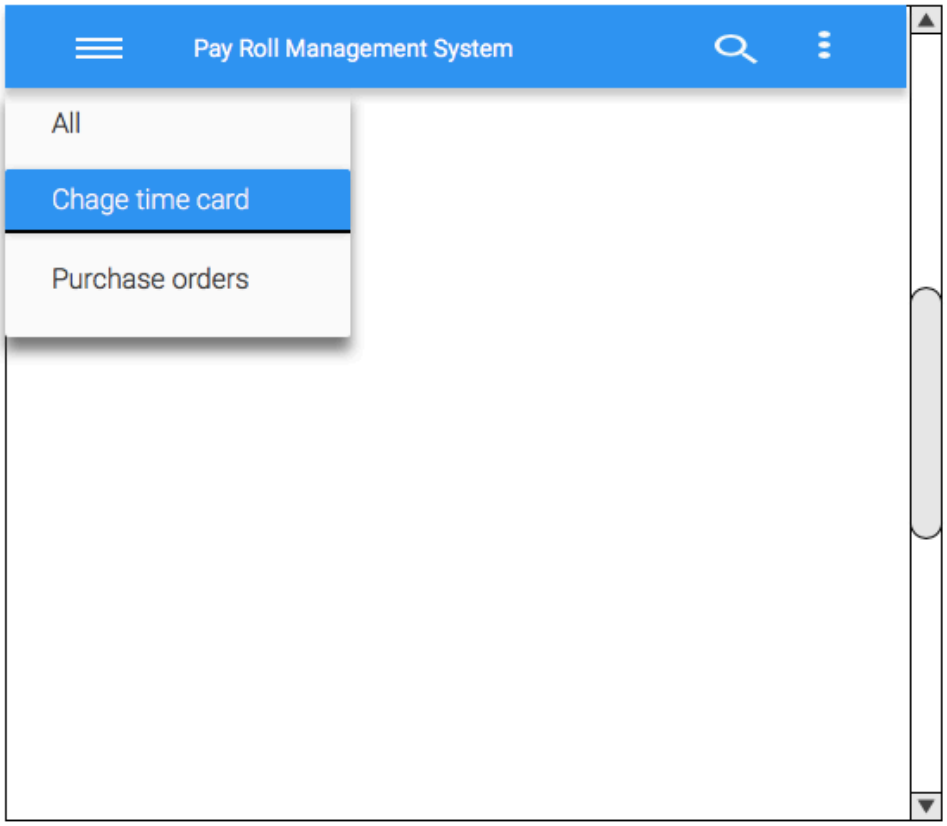

Pay Roll Management System
Adminstrative Report
(Pay year-date)
Begin dat
End date:
Name
report.txt
Location
Desktop
SAVE
Employee Name: Sara Khalid
Discard
Save Report

5- Administrative Report is saved.

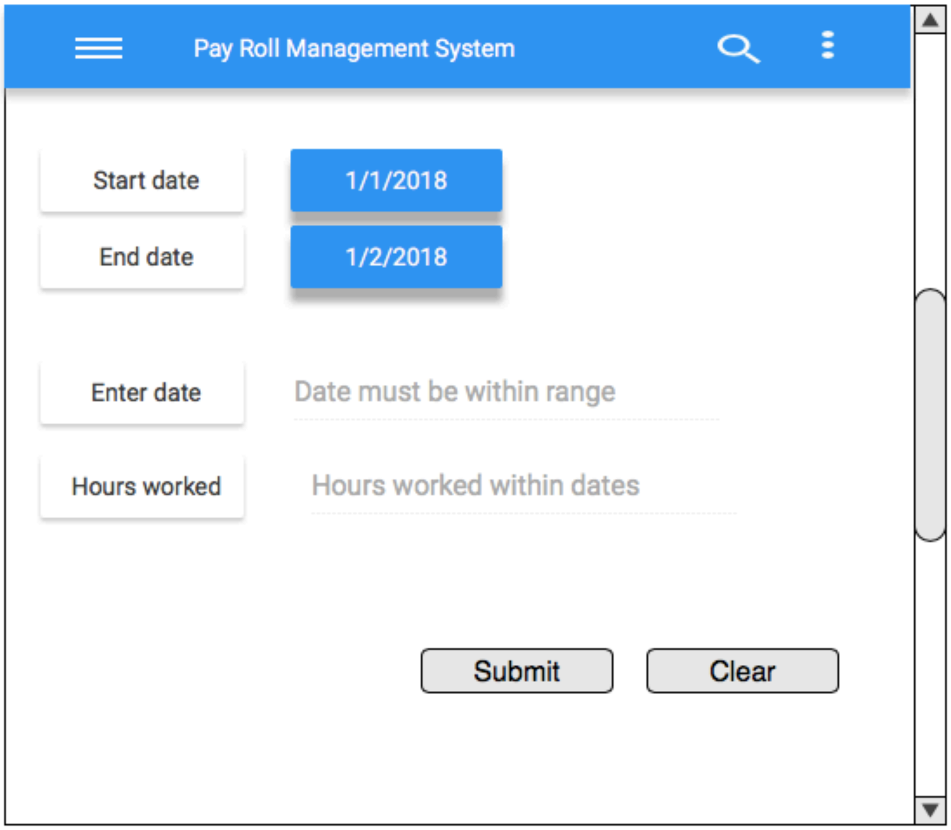


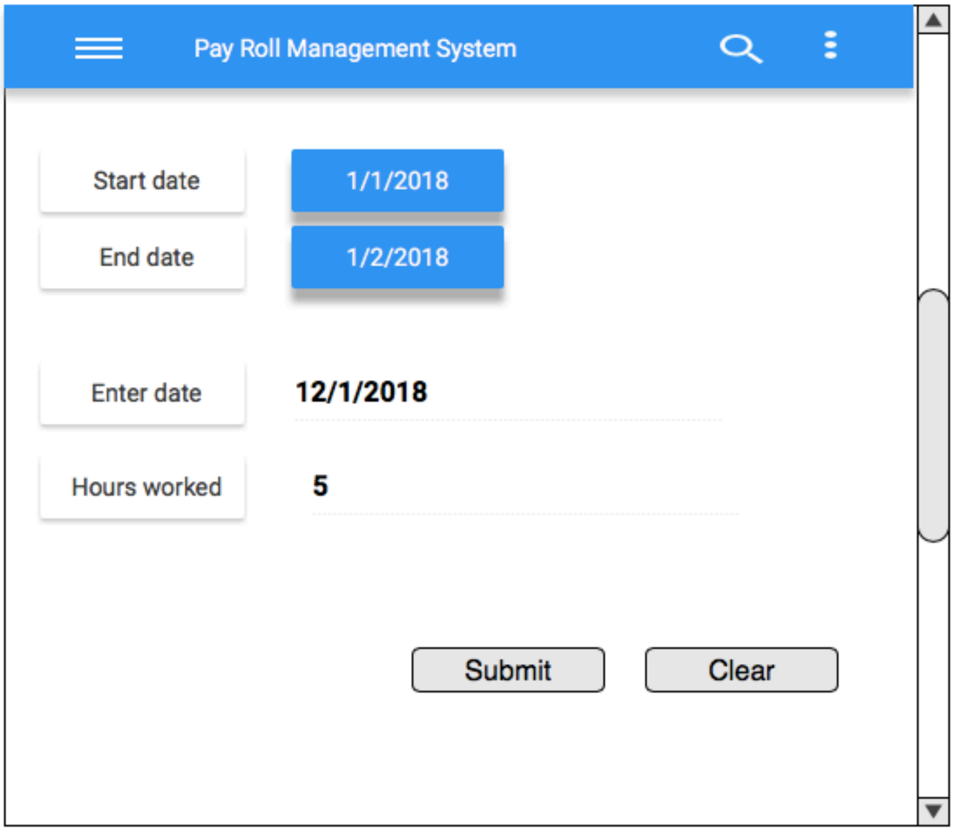
3.1.1.2 Maintain Time Card

1- Employee choose "Change time card" option from the Employee page.

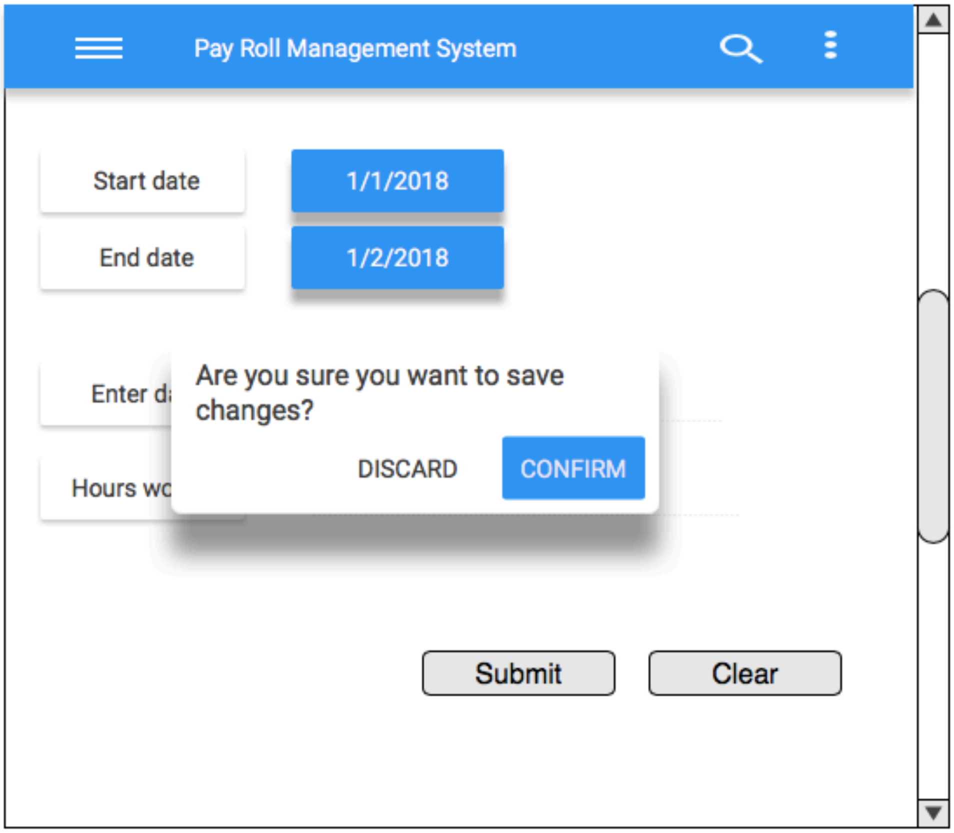


2- Employee fills in the required fields.

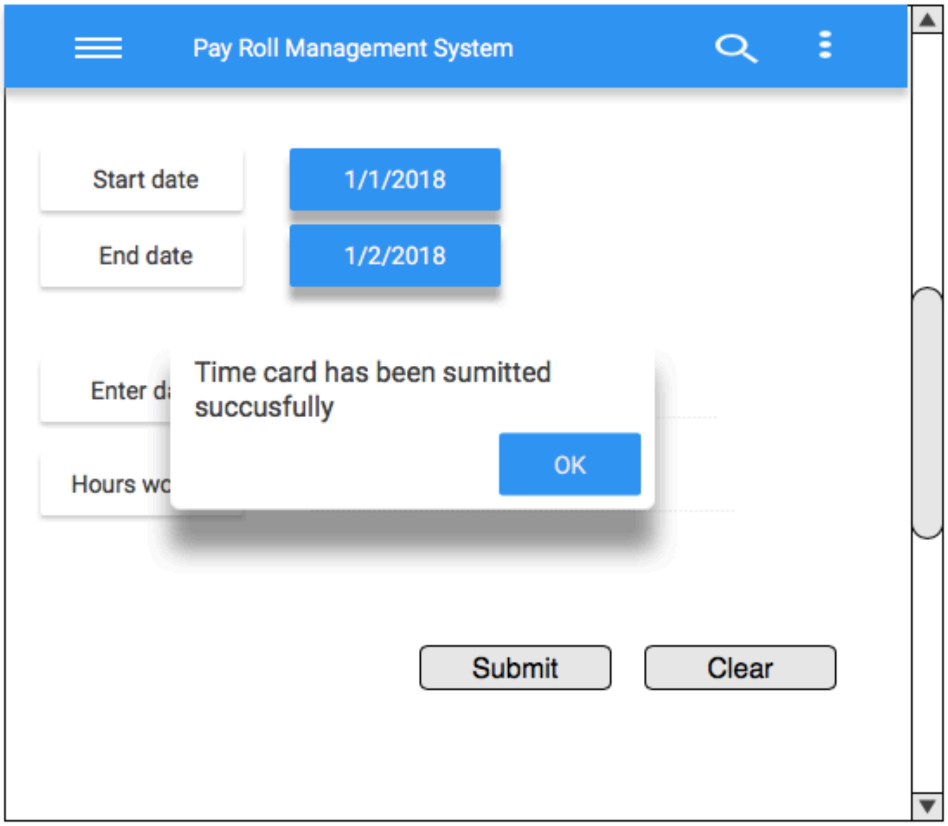



Pay Roll Management System
Start date
1/1/2018
End date
1/2/2018
Enter date
12/1/2018
Hours worked
5
Submit
Clear

3- Employee press "CONFIRM" to sumit time card



4- Time card is submitted.



3.1.2 Hardware Interfaces

3.1.3 Software Interfaces

3.2 Functional Requirements

This section describes specific features of the software project. If desired, some requirements may be specified in the use-case format and listed in the Use Cases Section.

3.2.1 <Functional Requirement or Feature #1>

3.2.1.1 Introduction (priority)
3.2.1.2 Inputs
3.2.1.3 Outputs

3.2.2 <Functional Requirement or Feature #2>

Features:

1. Maintain Purchase Orders.
2. Maintain Employee Information.
3. Submit Timecard.
4. Receive Commission Rate.

5. Create Reports.

Functional Requirement:

- **Maintain Purchase Orders:**

1. The commissioned employees and salaried employees shall be able to add purchase orders.
2. The commissioned employees and salaried employees shall be able to delete purchase orders.
3. The commissioned employees and salaried employees shall be able to change purchase orders.

- **Maintain Employee Information:**

4. The Payroll Administrator shall be able to add new employees.
5. The Payroll Administrator shall be able to delete employees.
6. The Payroll Administrator shall be able to change all employee information.

- **Submit Timecard:**

7. The system shall allow the hourly employees to submit timecards that record the date and number of hours worked for a particular charge number.
8. The system shall allow the salaried employees to submit timecards that record the date and number of hours worked for a particular charge number.

- **Create Reports:**

9. The System shall allow the employees to create various reports.
10. The Payroll Administrator shall be able to create either a total hours worked report or pay year-to-date report.
11. The Payroll Administrator shall be able to create reports by selecting the report type, employee name and begin and end dates for the report.

- **Receive Commission Rate:**

12. The salaried employees shall receive a commission rate based on their sales and is one of 10%, 15%, 25% or 35%
13. The commissioned employees shall receive a commission rate based on their sales and is one of 10%, 15%, 25% or 35%

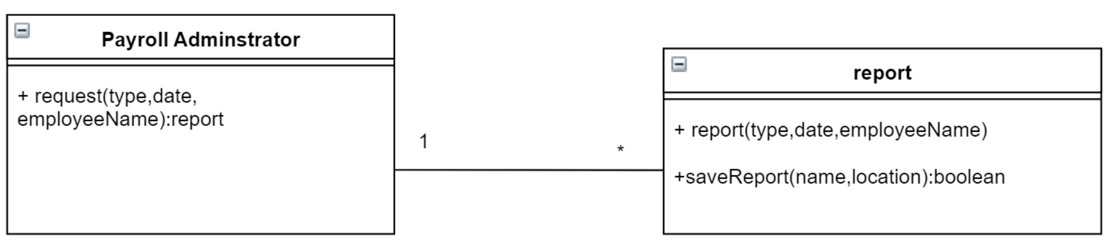
Another Functional Requirement:

14. The System shall allow the employees to enter timecard information.
15. The System shall allow the employees to enter purchase order.
16. The System shall allow the employees to change their preference.
17. The system shall allow the hourly employees to submit timecards that record the date and number of hours worked for a particular charge number.

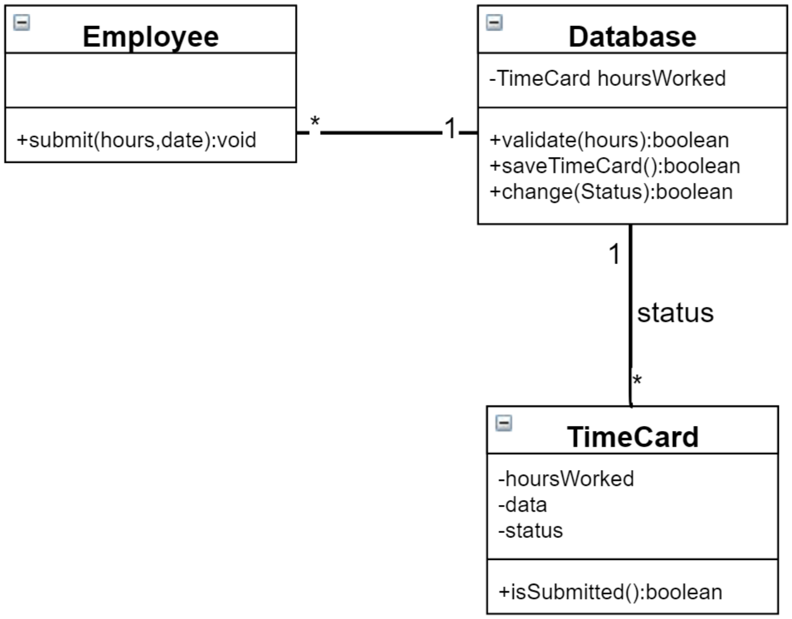
18. The system shall allow the salaried employees to submit the timecards that record the date and hours worked for a particular charge number.
19. The system shall display the current timecard for the employee.
20. The employees shall be able to choose their payment method. They can have their paychecks mailed to a postal address, direct deposit into a bank account, or pick up at the office.
21. The system shall be able to calculate the payment using entered timecards, purchase orders, employee information and all legal deductions.
22. The system shall generate payments for records from the last time the employee was paid to the specified date.
23. The employee shall be able to query the system for any information that has been entered before. (need to be reviewed again)
24. The Payroll Administrator shall be able to run administrative reports.
25. The system shall create a new timecard if a timecard does not exist for the employee for the current pay period.
26. The system shall set the start and end dates of the timecard.

3.3 Class Diagrams

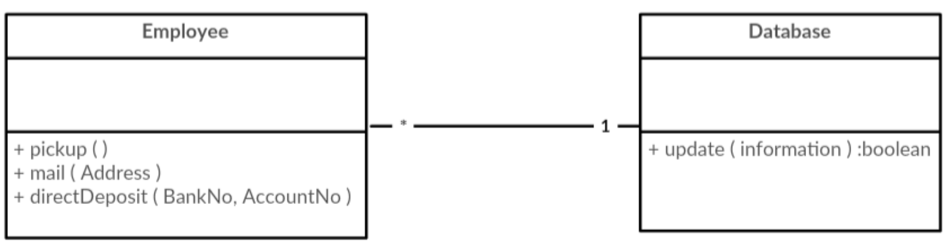
3.3.1 create admin report



3.3.2 Submit TimeCard



3.3.3 Select Payment Method



3.4 Use Cases Description

Write description for **four use cases**

3.4.1 Use Case #1

3.4.1.1 **Make Change Timecard**

3.4.1.2 This use case describes how an employee can make changes to the timecard on the Payroll Management System.

3.4.1.2 The employee must be added to the Payroll Management System.

3.4.1.3

Use case Description	
System: Payroll Management System.	
Use case name: Make Change Timecard.	
Primary Actor: Employee.	**Secondary Actor(s):** none.
Description: This use case describes how an employee can make changes to the timecard on the Payroll Management System.	
Relationships • **Includes:** none. • **Extends:** none.	
Pre-conditions: The employee must be added to the Payroll Management System.	
Post-Conditions : If the use case was successful, the Employee timecard information is saved to the system. Otherwise, the system state is unchanged.	
Steps:	
The Employee	**The System**
1.This use case begins when the Payroll Administrator click on the “Change Timecard” button. 3.The Employee will change the timecard hours and submit it. 5.The Employee selects continue. 7. The Employee will select quit.	2.The system will display the timecard information for the Employee. 4.The system will display a message that the timecard cannot be changed after submitting with an option whether he wants to continue or cancel. 6.The system will display the timecard information after updating it. 8.The system will direct the Employee to main page.

3.4.1.4

Alternative Flow: **1. The Timecard is submitted:** If the timecard is submitted already: 1. the system displays a message that the timecard has been submitted and the Employee cannot make changes on it. **2.Change the Start and End Dates of the Timecard:** If in step 3 wants to change the start and end dates of the timecard: 1. The system displays a message that he cannot change the start and end dates of the time card. 2. Step 3 will resume. **3.Employee quits:** If at any step before step 5 the Payroll Administrator selects cancel: 1. The use case ends with a failure condition. **4.The Timecard Does Not Exist:** If the timecard does not exist for the employee for the current pay period: **1.** At step 2 the system will create a new timecard and display it for the Employee. **2.** Step 3 is resumed.

3.4.2 Use Case #2

3.4.2.1 Create Reports

Use case Description	
System: Payroll Management System.	
Use case: Create Reports.	
Primary Actor: The Payroll Administrator	**Secondary Actor(s):** none.
Description: This use case describes how the Payroll Administrator can create reports on the Payroll Management System.	
Relationships: • **Includes:** none. • **Extends:** none.	
Pre-conditions: The Payroll Administrator must be logged in to the System.	
Post-Conditions: The system state is unchanged by this use case	
Steps:	

The Payroll Administrator	The System
1.This use case begins when the Payroll Administrator click on the "Create a Report" button. 3.The Payroll Administrator will fill the form with: • Employee name. • Begin and end dates for the report. And submit the form. 5.The Payroll Administrator selects desired report type. 7. The Payroll Administrator will fill the form with required information. 9.The Payroll Administrator will choose submit. 12.The Payroll Administrator will choose continue.	2.The system will display employee information form. 4.The system will display two options for the report type to the Payroll Administrator "Total Hours Worked Report" and "Pay Year-to-date Report". 6.The system will display the report form. 8.The system will display an option whether the Payroll Administrator wants to save the report or submit it. 10.The system will display a message that the report has been submit it successfully. 11.The system will display an option to the Payroll Administrator whether he wants to create a another report or to continue to main page. 13.The system will direct the Payroll Administrator to the main page.

3.4.2.4

Alternative Flow:

2. Missing Field/ Incorrect Format:

If in step 3 the Payroll Administrator misses a required field or enters a field in incorrect format then:

2. the system displays a message indicating required fields or form
3. at. 2. step 3 is resumed.

2.Create Another Report:

If in step 12 the Payroll Administrator chooses **Create Another Report**:

3. The use case will start all over from step 2.

3.Payroll Administrator quits:

If at any step before step 12 the Payroll Administrator selects cancel:

1. The use case ends with a failure condition.

3.4.3 Use Case #3

3.4.3.1 **Choose Payment**

Use case Description

System: Payroll Management System	
Use case name: Choose Payment	
Primary Actor: Employee	**Secondary Actor(s):** none
Description: This use case describes how the Employees can make payment on the Payroll Management System.	
Relationships: • **Includes:** Receives paychecks. • **Extends:** none.	
Pre-conditions: The employee must be added to the Payroll Management System and logged in.	
Post-Conditions: If the use case was successful, the payment method for the Employee is updated in the system. Otherwise, the system state is unchanged.	
Steps:	
The Employee	**The System**
1.This use case begins when the Employee click on the “Make Payment” button. 3.The Employee will choose direct deposit into a bank account 5.The Employee will fill the form with required bank account information and submit it.	2.The System displays payment method options for the Employee (mailed to a postal address, direct deposit into a bank account, and pick up at the office.) 4.The System will display a bank account information form. 6.The system will display a message that the payment method is uploaded successfully and directs the Employee to main page.

3.4.3.4

Alternative Flow: 1. **Mailed to a Postal Address:** If in step 3 the Employee chooses **Mailed to a Postal Address:** 1. The system will display a postal address form. 2. The Employee will fill the form with required postal address information and submit it. 3. Step 6 is resumed. 2. **Pick up at The Office:** If in step 3 the Employee selects **Pick up at The Office**: 1. The system will display a message that the payment method is uploaded successfully and directs the Employee to main page 3. **Employee quits:** If at any step before step 5 the Employee selects cancel: 1. The use case ends with a failure condition.

3.4.4 Use Case #4

3.3.4.1 **Submit Timecard**

Use case Description	
System: Payroll Management System.	
Use case name: Submit Timecard.	
Primary Actor: Employee	**Secondary Actor(s):** none.
Description: This use case describes how the Hourly Employee can submit timecard on the Payroll Management System.	
Relationships: • **Includes:** none. • **Extends:** Make changes to timecard.	
Pre-conditions: The employee must be added to the Payroll Management System and logged in.	
Post-Conditions: If the use case was successful, the Employee timecard information is saved to the system. Otherwise, the system state is unchanged.	
Steps:	
The Hourly Employee	**The System**

1.This use case begins when the Hourly Employee click on the "Submit Timecard" button. 3.The Hourly Employee will select continue. 5.The Hourly Employee will select quit.	2. The system will display a message that the timecard cannot be changed after submitting with an option whether he wants to continue or cancel. 4.The system will display the timecard information: • Start and end dates of the timecard. • Number of hours worked. 6. The system will direct the Hourly Employee to main page.

3.4.4.4

Alternative Flow:

1. The hours more than 8:

If in step 2 the worked hours are more than 8:

1. The system will display a message that Acme will pay them 1.5 times their normal rate for those extra hours and will display the new amount that Acme will pay them.
2. Step 3 is resumed.
3. Step 5 is resumed.

2. Hourly Employee quits:

If in step 3 the Employee selects **Cancel**:

1. The use case ends with a failure condition.

3.5 Classes / Objects

3.5.1 <Class / Object #1>

3.5.1.1 Attributes
3.5.1.2 Functions
<Reference to functional requirements and/or use cases>

3.5.2 <Class / Object #2>

…

3.6 Non-Functional Requirements

Non-functional requirements may exist for the following attributes. Often these requirements must be achieved at a system-wide level rather than at a unit level. State the requirements in the following sections in measurable terms (e.g., 95% of transaction shall be processed in less than a second, system downtime may not exceed 1 minute per day, > 30 day MTBF value, etc).

3.6.1 Performance

1. The system shall accommodate 2000 simultaneous users against the central database at any given time.
2. The system shall accommodate 2000 simultaneous users against the local servers at any one time.

3.6.2 Reliability

1. The system must pay each employee the correct amount on time.

3.6.3 Availability

1. The main system shall be available 98% of the time.

3.6.4 Security

1. The system shall allow the employees to only access and edit their own timecards.
2. The system shall allow the employees to only access and edit their own purchase orders.
3. The payroll system will only access the information stored in the project management database without updating them.
4. The system shall allow only the Payroll Administrator to change any employee information with the exception of the payment delivery method.
5. The system shall make the submitted timecards read-only.

3.6.5 Maintainability

3.6.6 Portability

1. The system shall be running on individual employee desktops throughout the entire company.

3.7 Inverse Requirements

Traceability between Use Case and Function/Feature

3.8 Design Constraints

1.The system shall work with the existing project management database(DB2) database running on an IBM mainframe.

3.9 Logical Database Requirements

Will a database be used? If so, what logical requirements exist for data formats, storage capabilities, data retention, data integrity, etc.

3.10 Other Requirements

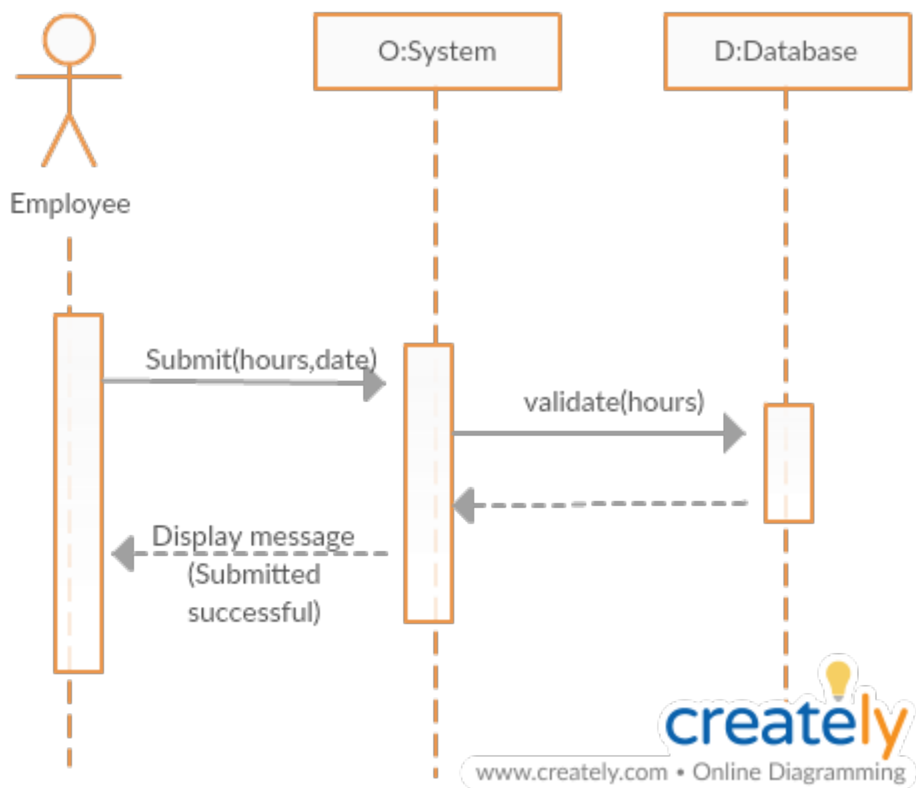
Catchall section for any additional requirements.

4. Analysis Models

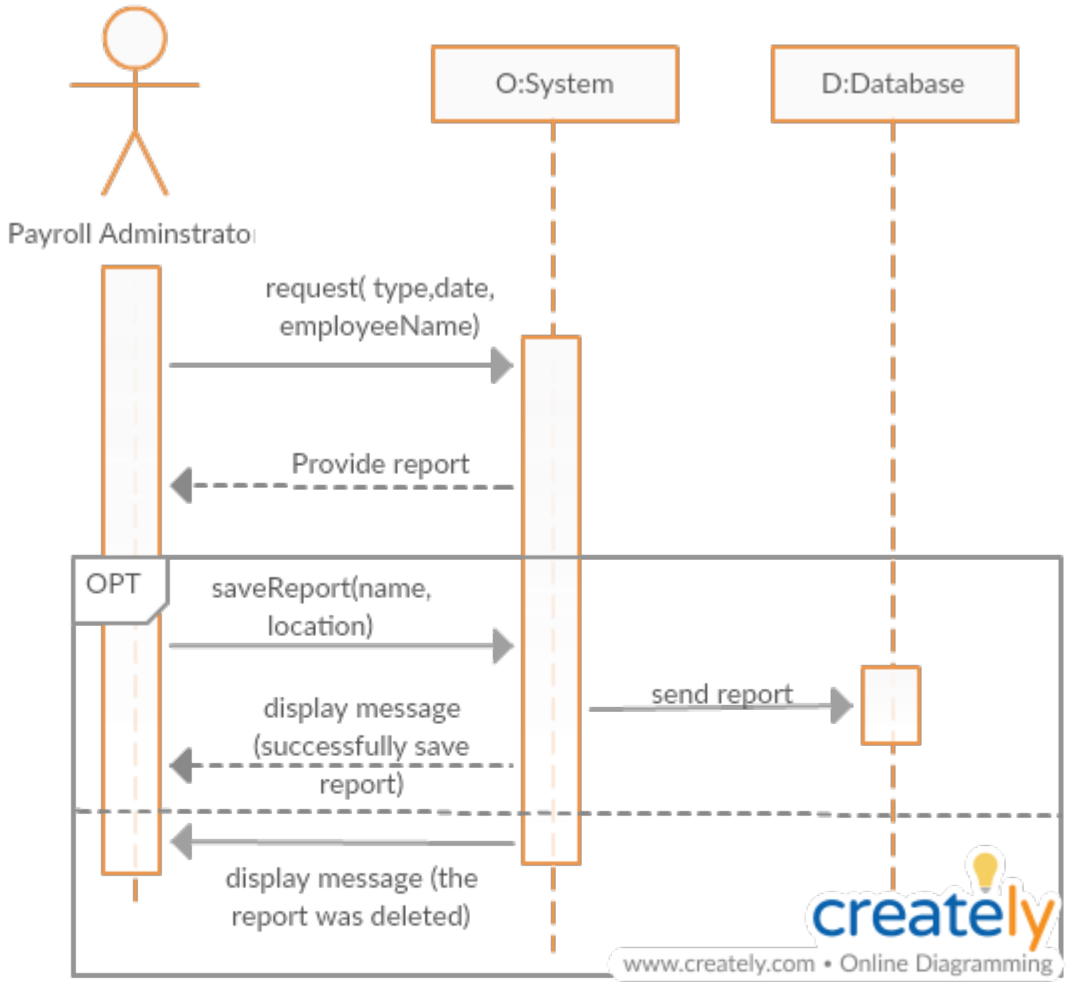
List all analysis models used in developing specific requirements previously given in this SRS. Each model should include an introduction and a narrative description. Furthermore, each model should be traceable the SRS's requirements.

4.1 Sequence Diagrams

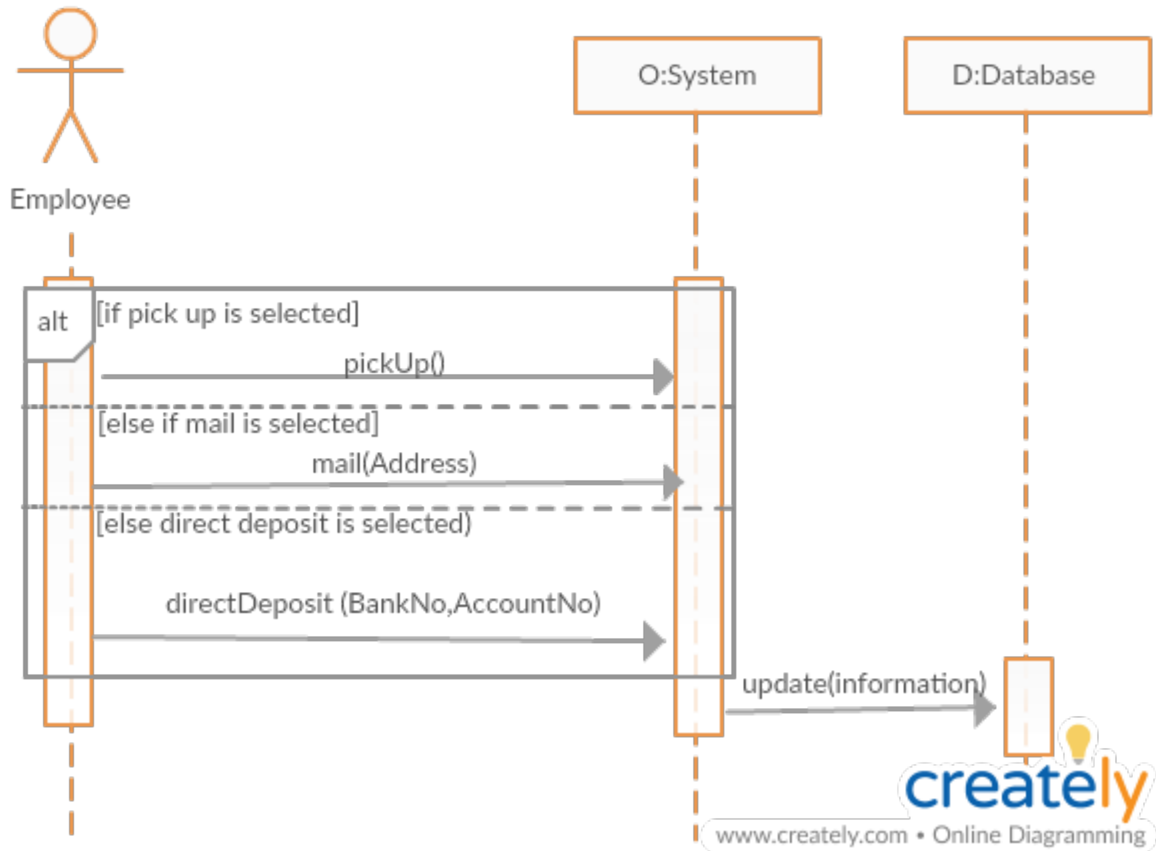
4.1.1 Submit Timecard



4.1.2 Request Report

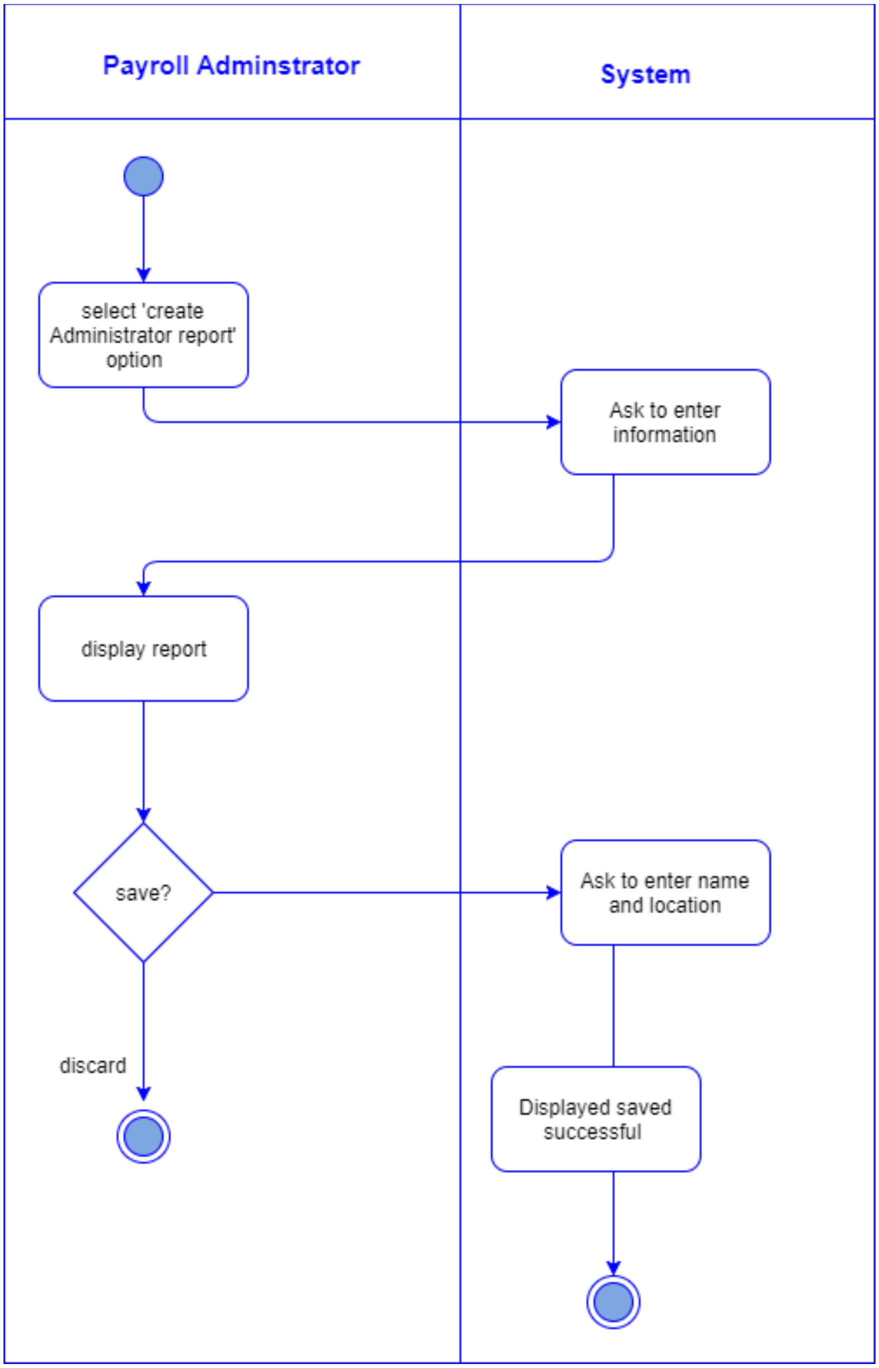


4.1.3 Select Payment Method

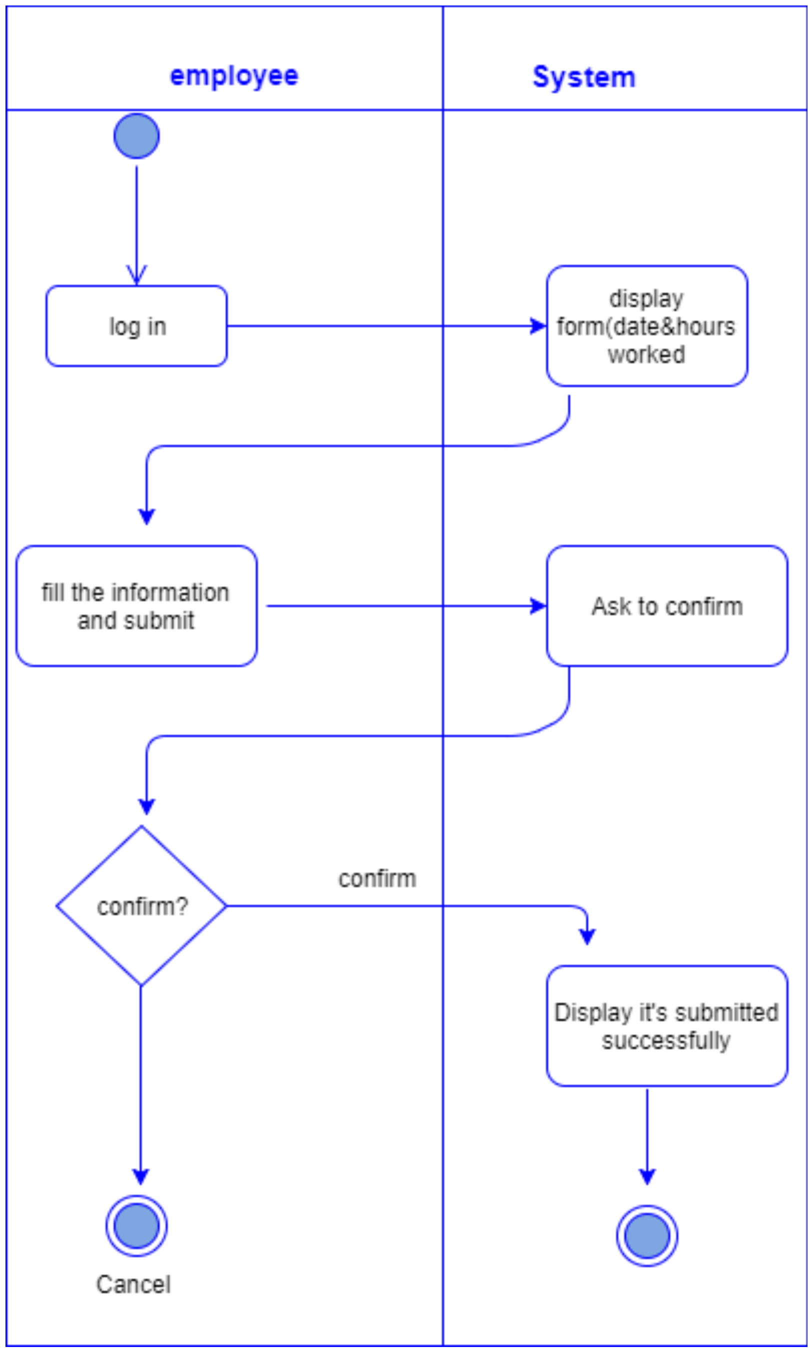


4.3 Activity Diagram

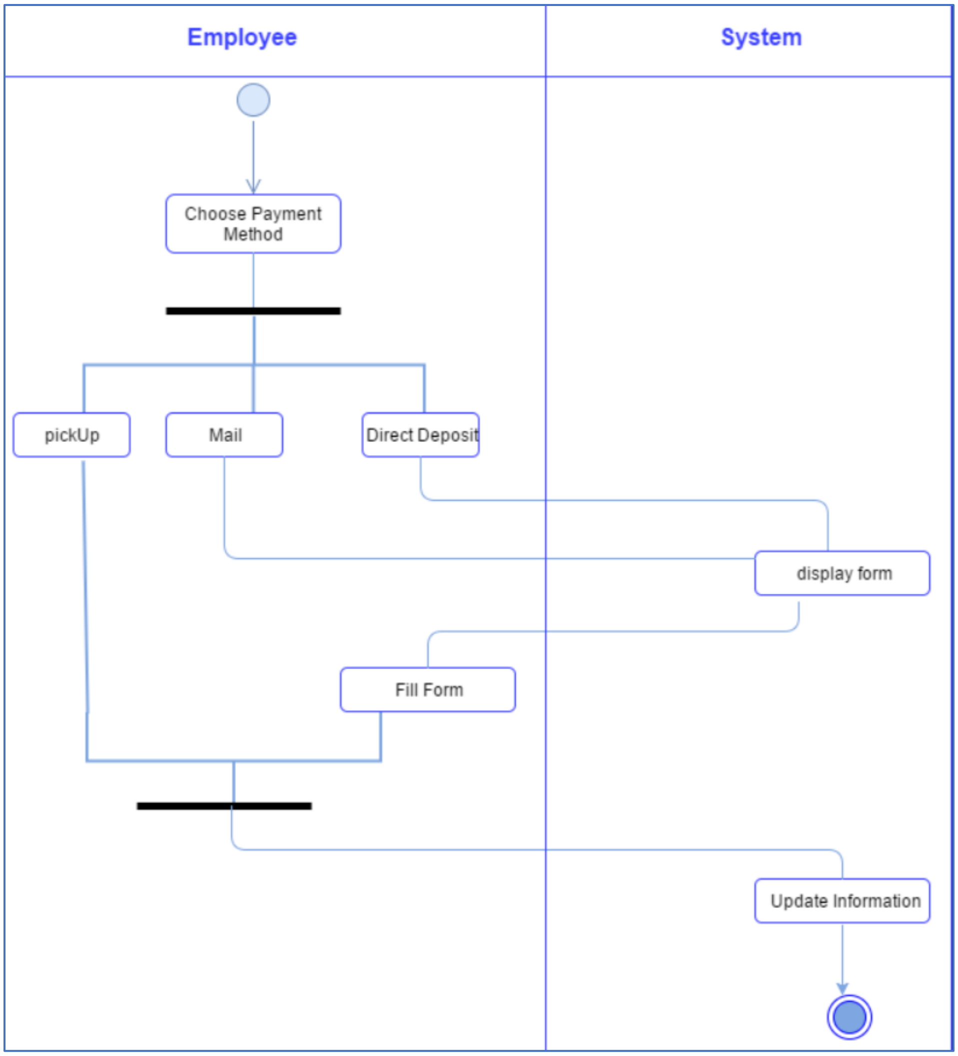
4.3.1 Create Administrator Report



4.3.2 Submit Timecard



4.3.3 Select Payment Method



5. Change Management Process

Identify and describe the process that will be used to update the SRS, as needed, when project scope or requirements change. Who can submit changes and by what means, and how will these changes be approved.

A. Appendices

Appendices may be used to provide additional (and hopefully helpful) information. If present, the SRS should explicitly state whether the information contained within an appendix is to be considered as a part of the SRS's overall set of requirements.

Example Appendices could include (initial) conceptual documents for the software project, marketing materials, minutes of meetings with the customer(s), etc.

A.1 Appendix 1

A.2 Appendix 2