System Analysis
&
Design
(SE103.3)

Client

TK Enterprises (PVT) LTD

System

Payroll Management System

Lecturer

Mrs. Dileeka Alwis

Batch

17.1-Plymouth-Computing

Group No

05

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Submission Date: 13/07/2018

Acknowledgement

We would like to thank our lecturer Mrs. Dileeka Alwis, who has provided guidance and support for our assignment, it's with your guidance and encouragement that we have been able to carry out our project.

And we extend our thanks to Mr. A.V.D.T.R. Kumara, a Managing Director at the TK Enterprises (PVT) Ltd, Site Supervisor Mr. R.P.S. Kumara & Account Assistant Miss. K.A.D.S.A.Kathriaracchi, who provided us with the details about their systems, the issues with the existing systems and what they need computerized.

We also would like to thank our friend A.V.D.S. Sanjeewa, who helped us to find the company to develop the system and for providing us a basic overview of the issues in the existing system of the company.

Table of Content

Chapter 01
(Introduction)

1. Client Overview

"**TK Enterprises Private Limited**" is a registered & certified limited liability company in Sri Lanka. They are manufacturing electricity poles for the CEB & LECO. There are more than 50 employees working in their factories.

Date of incorporation

- 26 November 2009

Directors

- A.V.D.T.R.Kumara
- J.D.A.K.Wijegunasekara

Registration number

- PV 17035

Factories

- Kiriwattuduwa (Main Factory & Office)
- Kuliyapitiya
- Kebithigollewa

Contact information

- 011 2754944, 011 3175812 (Tel)
- 011 2743143 (Fax)
- tkenterprises18@gmail.com

Address

TK Enterprises (Pvt) Ltd.

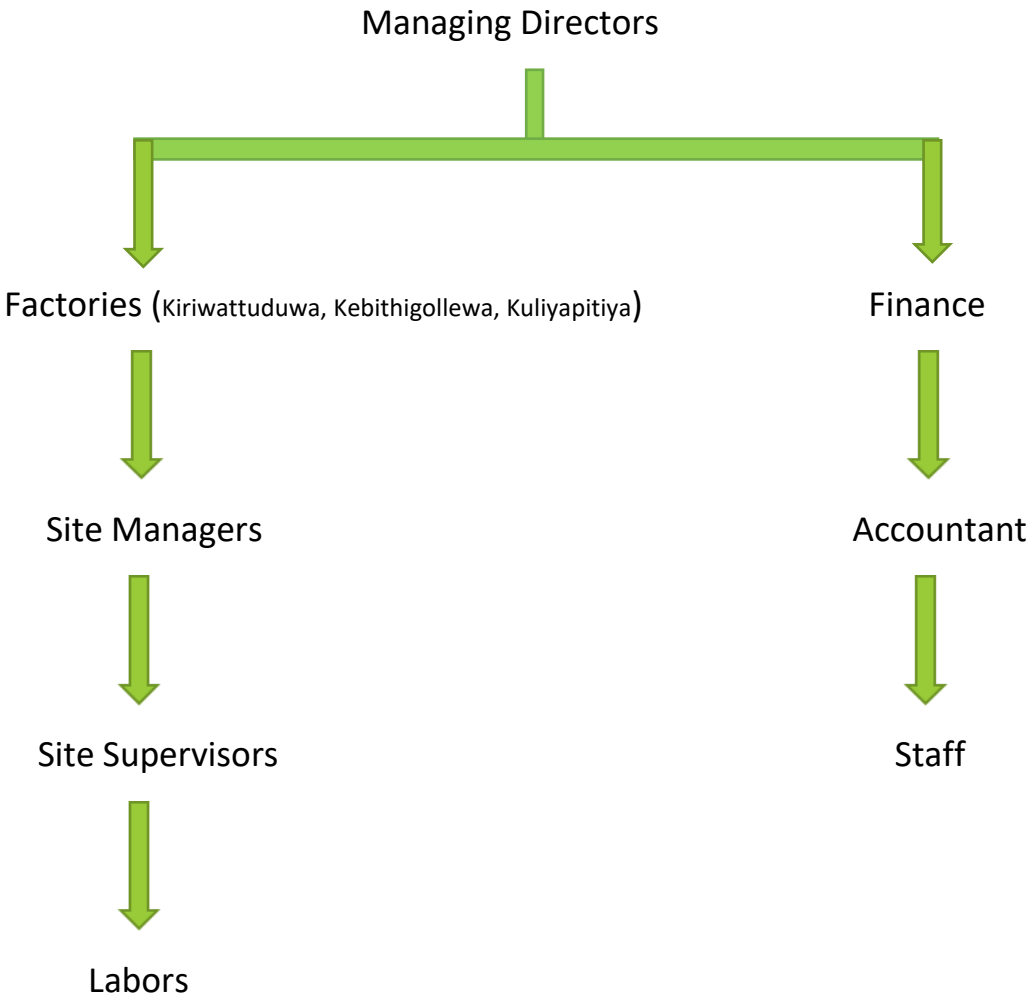
No.429/3/1,

Andiyamulla,

Kiriwattuduwa.

2. Scope of study

1. Internal Environment



2. External Environment

- Ceylon Electricity Board (CEB)
- Lanka Electricity Company (Private) Limited (LECO)

3. System boundary

- Data entry
- Data verification
- Logbook keeping
- Documentation

4. Automated boundary

Currently there is no fully automated system boundary. They are currently using “Intuit QuickBooks Enterprise Solution” system for data entries.

3. Details of the existing system

Existing Payroll system is a fully manual system.

There are different salary payment types according to the employee’s position.

Ex:

- Concrete metal mesh binders (Paying for number of meshes + OT + EPF+ETF)
- Poles makers (Paying for number of poles + OT + EPF+ETF)
- Drivers (Paying for number of driving hours + OT + EPF+ETF)
- Office staff (Monthly payments + OT + EPF+ETF)

All of the payroll calculations and salary payments are handling by the finance section. There are lots of paper works in their existing manual system.

The data is stored in log books and files which are stacked in cupboards and is manually accessed by the employees when the data need to be supplied to the directors and other required bodies.

4. Drawbacks of the existing system

The system is mostly used by operational level staff (Accountants, Managers), who get to do a lot of tiresome work so the probability of them doing mistakes when calculating, filling data and keeping log books is high. So, the data that is collected in this system can be unreliable. Generating backups of data is hard and time consuming due to having to perform the backing up manually, copying/typing the data by hand. Also, there is no security for the data. So, the data can be destroyed, misuse or misplace.

5. Details of the proposed system

The proposed system is a fully computerized “Payroll System” that handles all the payments that are handled by the existing manual system.

The system will utilize computers at the office to replace the manual work.

The system will utilize a centralized database to store all the payment data, which in the current manual system are stored in files & logbooks stacked in cupboards.

The system will take care of the paperwork that’s done throughout the existing manual system and will take out the data redundancy that occurs in the existing system with its centralized data base approach.

6. Expected benefits of the proposed system

- Minimizing the employee stress & time consume.
- Due to the centralized approach, the data redundancy is eliminated.
- Since the data is stored in a centralized system, it's much easier to review the entered data by the authorized persons.
- The safety of the data is significantly improved than in the current system.
- The ability to make data backups significantly quicker than the manual system.
- Improved upgradability of the system.

7. Resource Requirements

- Hardware
- Software
- People
- Finance resources
- Infrastructure

8. Time line

Project due date is 2nd of July 2018. We are dividing project into four main quotients for make it easy.

i. First Quotient: Introduction with project proposal

ii. Second Quotient: System analysis

iii. Third Quotient: Feasibility study

iv. Fourth Quotient: System design

Note:

We had uploaded the chapter 1 previously (before the deadline) regarding '***Rich life Dairies PVT LTD***', which was the company we were going to develop the Lab Management System for. But unfortunately, after submitting the chapter 1, the company refused to offer the support for us thus making us select a different company. The new company is '***TK Enterprises PVT LTD'*** and the late submitting chapter 1 is regarding the project associated with that company. We kindly request not to deduct our marks for the late submission.

Chapter 02

(System Analysis)


TKE
CEB

1. Fact finding methods

- With our client T. K. Enterprises (private) Limited, we done thorough investigation of current business process by using fact finding methods.

1.1. Interviews

- For gather qualitative information of the company we conducted three interviews for aiming three operational levels of the company.

I. Top management
II. Middle management
III. Operational staff

- We designed different interview questions separately for three levels. We made appointments for interview with top management and middle management.

Interview follow-up

1.1.1. Top management:

Conduct with: A.V.D.T.R. Kumara (Managing Director)

Date: 17th May 2018

Venue: Head office TK Enterprises (Pvt) Ltd, Kiriwaththuduwa.

As a managing director of TK Enterprises Private Limited Mr. A.V.D.T.R Kumara supported our team with his maximum. He acknowledged us about the requirements of the company and he directed us to the relevant persons.

1.1.2. Middle management:

Conduct with: Miss K.A.D.S.H Kathriarachchi (chief accountant)

Date: 25th May 2018

Venue: Head office TK Enterprises (Pvt) Ltd, Kiriwaththuduwa.

Miss K.A.D.S.H Kathriarachchi, who is the chief accountant of the company very kindly and passionately answered our questions.

She provided us all the information we needed related to salary calculation, special bonuses, recruiting employees and the excel sheet method that's being used currently, with the necessary documents. She also agreed to provide further assistance if required.

1.1.3. Operational staff:

Conduct with: Mr. R.P.S Kumara (Main supervisor)

Date: 25th May 2018

Venue: Operational site, Kiriwaththuduwa

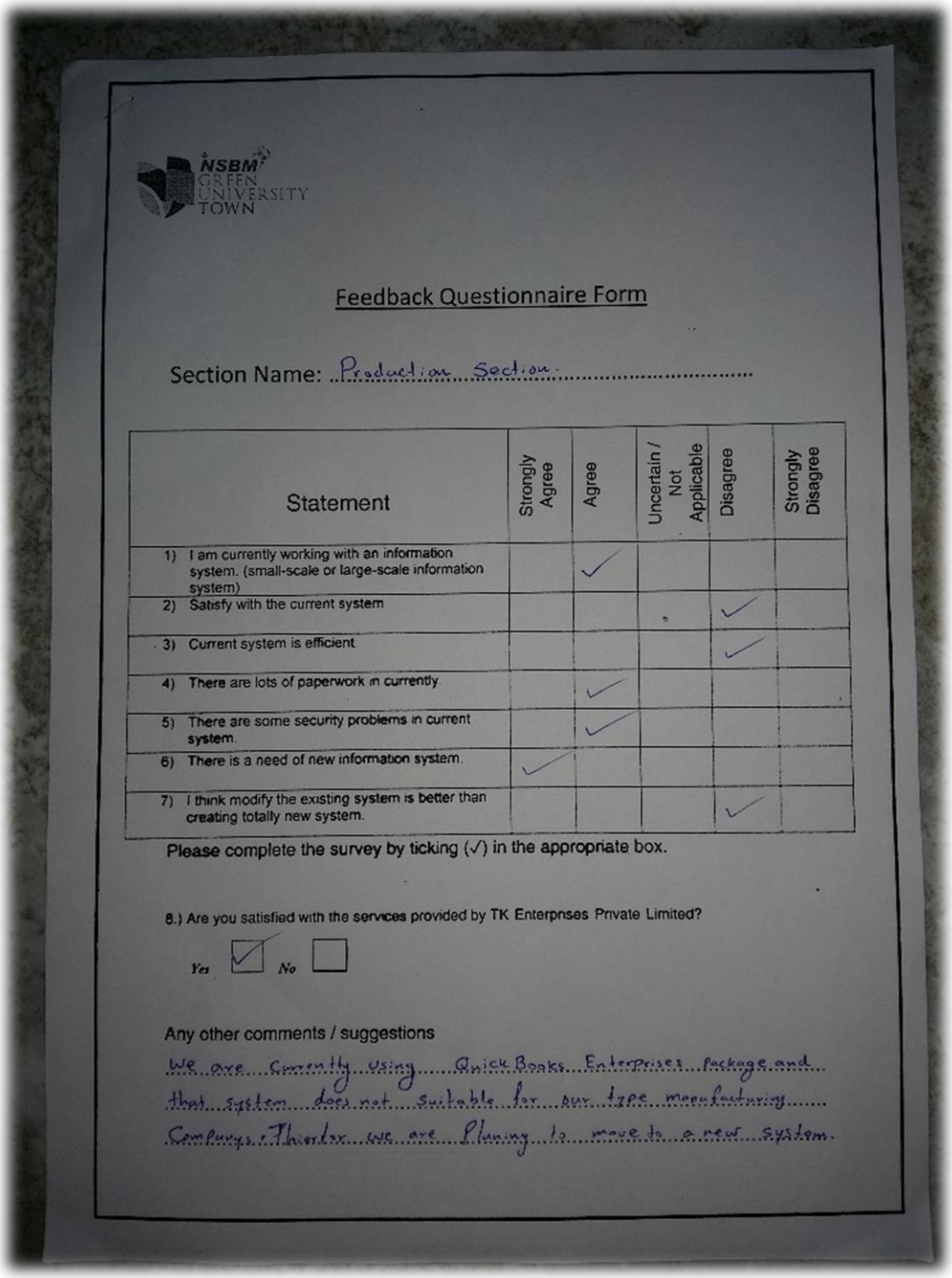
We met Mr. R.P.S Kumara, who is one of the main supervisors at the company. He too passionately engaged with the discussion, explaining us how the stuff happens in the production section with hand drawn sketches.

He provided us descriptive answers for our questions and explained us the problems that occur when using the existing system. He mentioned the need for a better system and was very interested on our project.

1.2. Questionnaires

- For bulk response, we conducted questionnaires by designing a questionnaire forms and distributing them through all staff members.

Questionnaires follow-up



NSBM GREEN UNIVERSITY TOWN

Feedback Questionnaire Form

Section Name: Production Section.

Statement	Strongly Agree	Agree	Uncertain / Not Applicable	Disagree	Strongly Disagree
1) I am currently working with an information system. (small-scale or large-scale information system)		✓			
2) Satisfy with the current system				✓	
3) Current system is efficient				✓	
4) There are lots of paperwork in currently.		✓			
5) There are some security problems in current system.		✓			
6) There is a need of new information system.	✓				
7) I think modify the existing system is better than creating totally new system.				✓	

Please complete the survey by ticking (✓) in the appropriate box.

8.) Are you satisfied with the services provided by TK Enterprises Private Limited?

Yes ☑ No ☐

Any other comments / suggestions

We are Cmently using Quick Books Enterprises Package and that system does not suitable for our type manufacturing Company's Therefor we are Planing to move to a new system.

Questionnaires Summary

We wrap up the summary of the responses to the following table.

Response type	Question 01	Question 02	Question 03	Question 04	Question 05	Question 06	Question 07
strongly agree	20%	0	0	40%	20%	60%	0
Agree	80%	20%	40%	60%	80%	40%	20%
uncertain/ not applicable	0	20%	0	0	0	0	0
Disagree	0	40%	60%	0	0	0	80%
strongly disagree	0	20%	0	0	0	0	0

1.3. Observations

- We done our observation by looking at their daily routine without any disturbances. We visited the site to get an idea by observe the manufacturing process of electricity poles.
- Roughly there are more than 30 employees working in the site addition to the office staff

1.4. Documentary review

Job descriptions

- There are different salary payment types according to the employee's position.
  - Concrete metal mesh binders (Paying for number of meshes + OT + EPF & ETF)
  - Poles makers (Paying for number of poles + OT + EPF & ETF)
  - Drivers & Helpers (Paying for number of driving hours + OT + EPF & ETF)
  - Office staff (Monthly payments + OT + EPF & ETF)

How documents handle in existing system

- Existing Payroll system is a fully manual system.
- All the payroll calculations and salary payments are handling by the finance section. There are lots of paper works in existing manual system.
- The data is stored in log books and files which are stacked in cupboards and is manually accessed by the employees when the data need to be supplied to the directors and other required bodies.

2. Functional requirements

- New system supposed to meet following mentioned functionalities and capabilities for support all user needs in the process of calculating the salary.

I. Register employees:

The process of calculating salary is varies from employee to employee. So first, we require to register employees by connecting to a database which stores the details of each employee. By using the database, we are going to calculate salaries and additional allowances separately.

II. Calculating salary:

New system calculates total salary with additional allowances (e.g.:-Over Time allowance). It must do calculations separately for each employee because some employees are working daily basis and other employees are working for monthly basis.

III. Calculate EPF & ETF:

EPF (Employees provident fund) & ETF (Employee Trust Fund) should calculate for their service using relevant percentages.

IV. Generate daily reports:

System must generate daily reports for employees that work daily basis.

V. Generate monthly reports:

System must generate monthly reports for employees that work monthly basis.

3. Non-functional requirements

- Following are behavioral or performance properties that the payroll system must have.

I. Performance

Performance should be higher than existing manual system.

II. User friendliness

Computerized system should increase user friendliness to use non-technical people.

III. Accessibility

Accessibility varies from one employee to another.
e.g. – Accountant's access rights are prohibited to some curtain level but managing director have the full access right to the databases.

IV. Flexibility

System must flexible for fulfill user's needs and further developments in future.

V. Accuracy

Since this is a payroll system, it must accurate 100% otherwise there will be lots of complains.

VI. Security

System must include security for safeness of the company.

VII. Testability

For testing purpose, we can release test version before the due date.

VIII. Maintainability

System should flexible to maintain by adding or removing feature according to the user's opinions.

IX. Portability

X. Reusability

XI. Integrity

XII. Efficiency

Chapter 03

(Feasibility Study)

01. Feasibility Study

I. Technical Feasibility

After studying their working scenario, we have identified their existing system and the technology needed for the development of the proposed system.

In their existing system, they use several computers that are running in good condition and a small server for their day to day works.

All the computers that are currently used in the system run Microsoft Windows and it's a healthy environment for our proposed system.

The proposed system does not require more advanced technologies and technical equipment. But, as we have identified, in order to make a good enough automated system, they must have to use biometric data (Finger Print Machine) for monitor their attendance (in time & out time etc.) and a tracking system to monitor their Lorries (travel time, no. of kilometers & fuel consumption etc.). In the existing system, they are maintaining books for that purpose.

II. Operational Feasibility

The existing office staff, who work with the computers, have sufficient technical knowledge to handle the proposed system provided that we demonstrate the operations of the system. So, we hope they'll get familiar with this proposed system in a short while.

Therefore, the existing staff is capable of handling the proposed system thus no requirement for new employees or special training.

III. Economic Feasibility

The proposed system doesn't cost much. Already they have all the hardware & software tools needed for the proposed system. The only additional hardware needed are the Finger Print Machine & vehicle tracking system & relevant equipment. But, it depends on their choice. Someday, if they want to use those technologies, we can link together those things with our proposed system in future. That minimizes the operational costs & time. The improved security benefits the company as a whole.

IV. Organizational Feasibility

The proposed payroll system will certainly be used if built, because it covers all the objectives of the company. There are many benefits to the financial section through this proposed system.

V. Legal Feasibility

There isn't any conflict with legal requirements. It does not violate any rules & regulations of the company. It is also familiar with the existing scenario.

VI. Financial Feasibility

The proposed system does not have any additional set up & running cost. Because, the all requirements for this system, already has completed through their existing facilities. Except the above mentioned separate equipment (Finger Print Machine, Vehicle Tracking System). There is no total estimated cost of the project. Because, this is only for getting an experience and polish our knowledge in the industry, according to our university course works.

VII. Social Feasibility

The proposed Payroll Management System is running only in the internal environment of the company. Therefore, the proposed system hasn't causing any social issues. Also, it has user friendly interfaces & very closed to standard methods used in the IT society.

VIII. Schedule Feasibility

We hope to finish this project on time without any delay. We have divided the project with our group members & they have to cover their work load on time.

After implementing the proposed system, we must test it within a specified period of time in the company environment & correct the identified problems & errors.

02.Constraints and Risk involved

When implementing this payroll system, we had to face some problems.

1. Labors' paying procedure.
2. Drivers' paying procedure.

In the labors' paying procedure, they are paying for the number of pieces. Attendance & time are not important for the laborers. Also, they don't have overtime payments. Therefore, we had a problem about this situation.

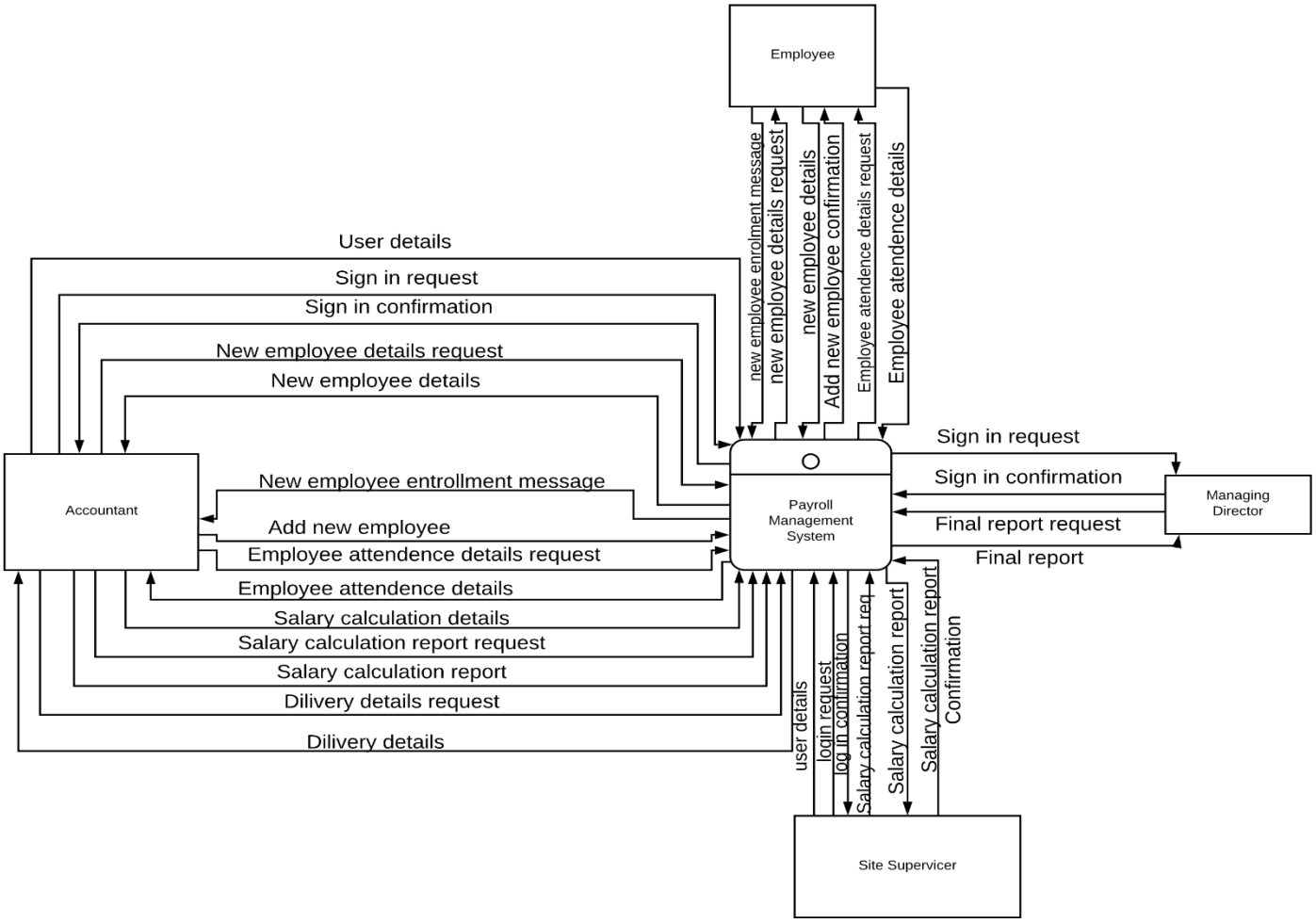
The other problem is drivers' part. Drivers' paying procedure is based on travelled distance. So, in this case, we have to use some parts of the existing manual record system and calculation methods. Therefore, these two parts are not included into the fully automated boundary.

Chapter 04

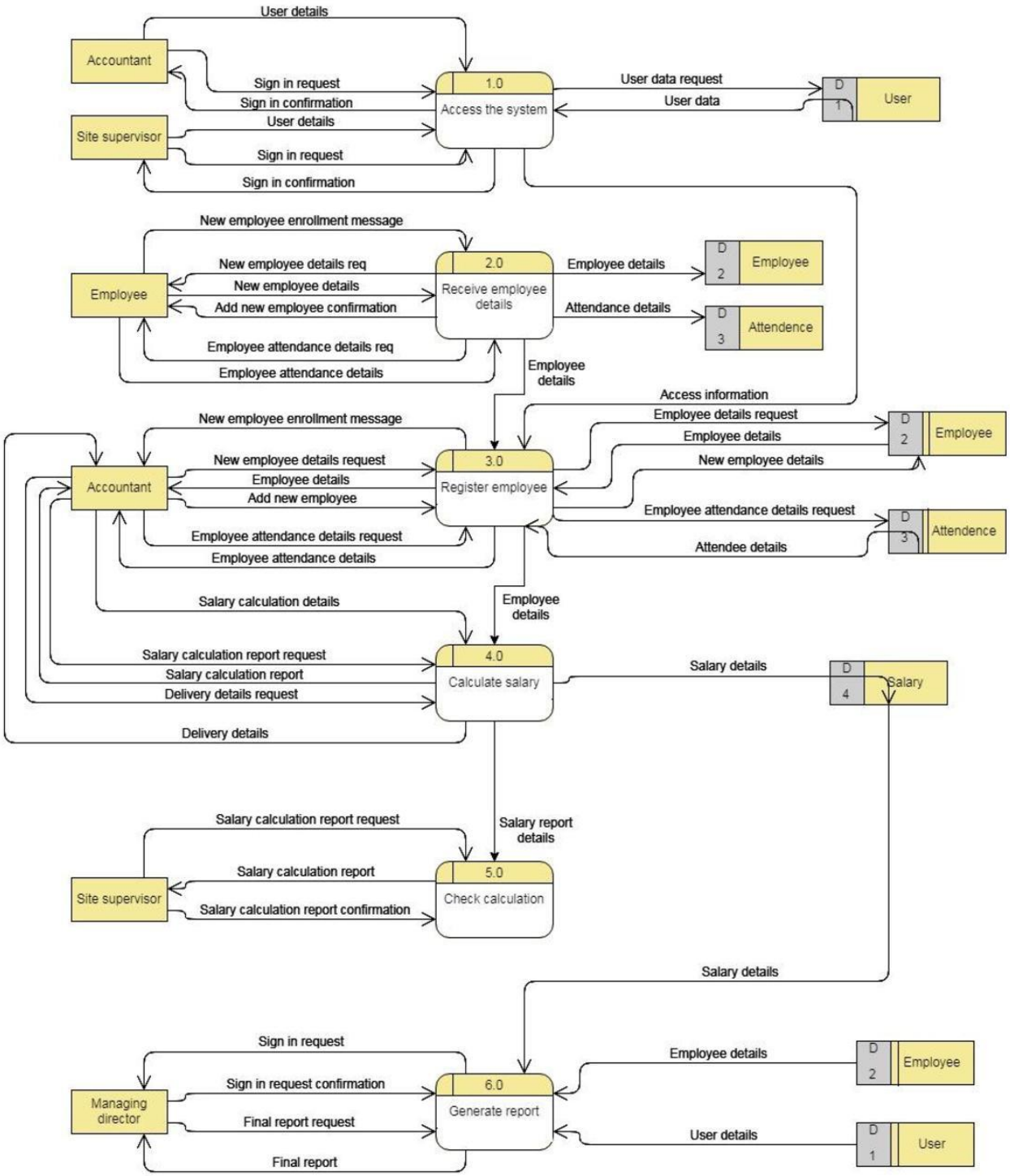
(System Design)

01. Data Flow Diagrams (DFD)

I. Context Diagram

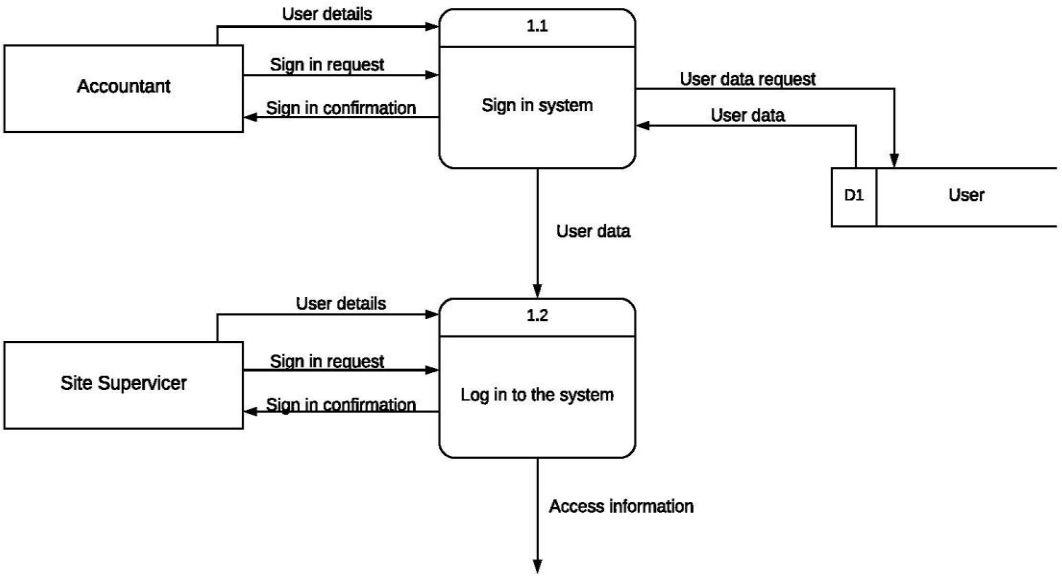


II. Level 0 Diagram

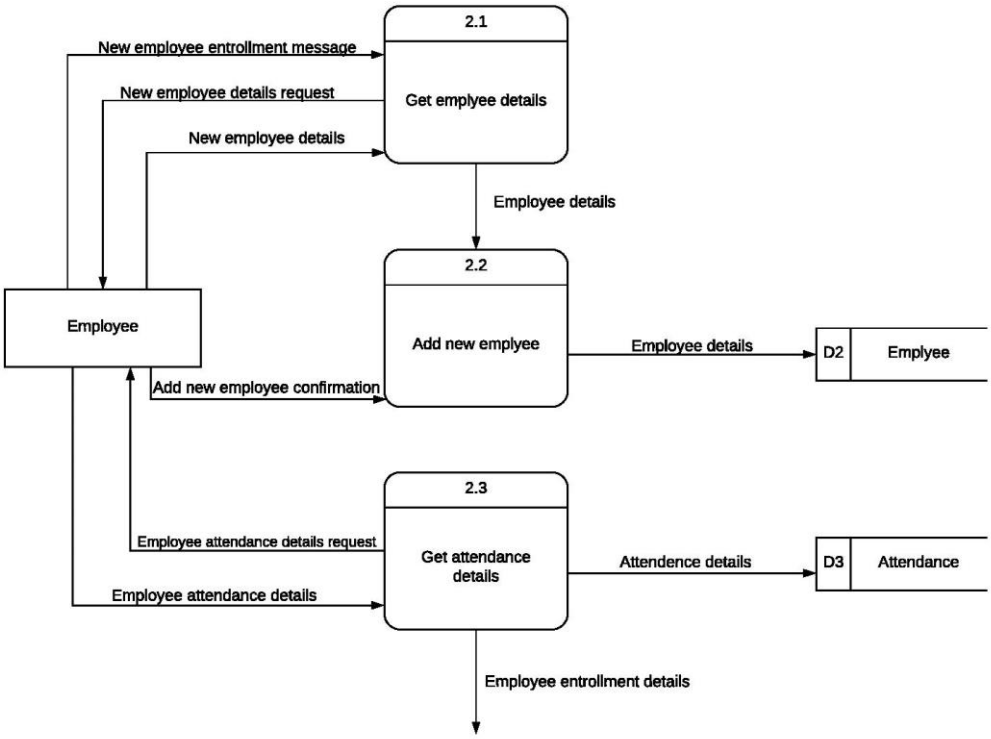


III. Level 1 Diagrams

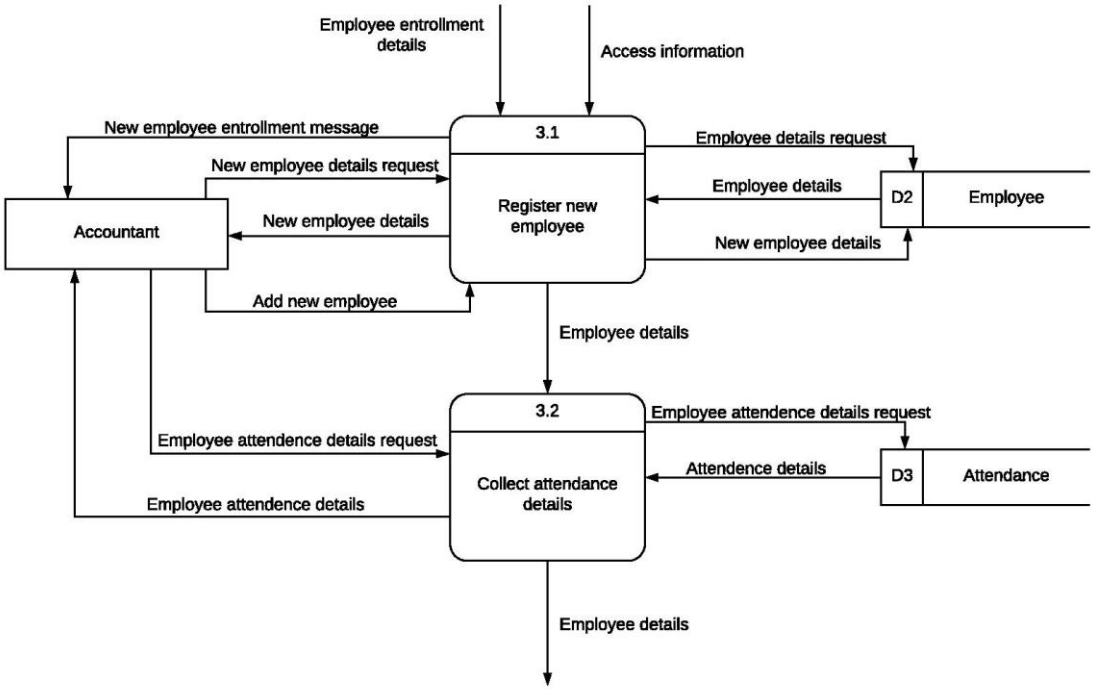
Level 1 diagram for process 1



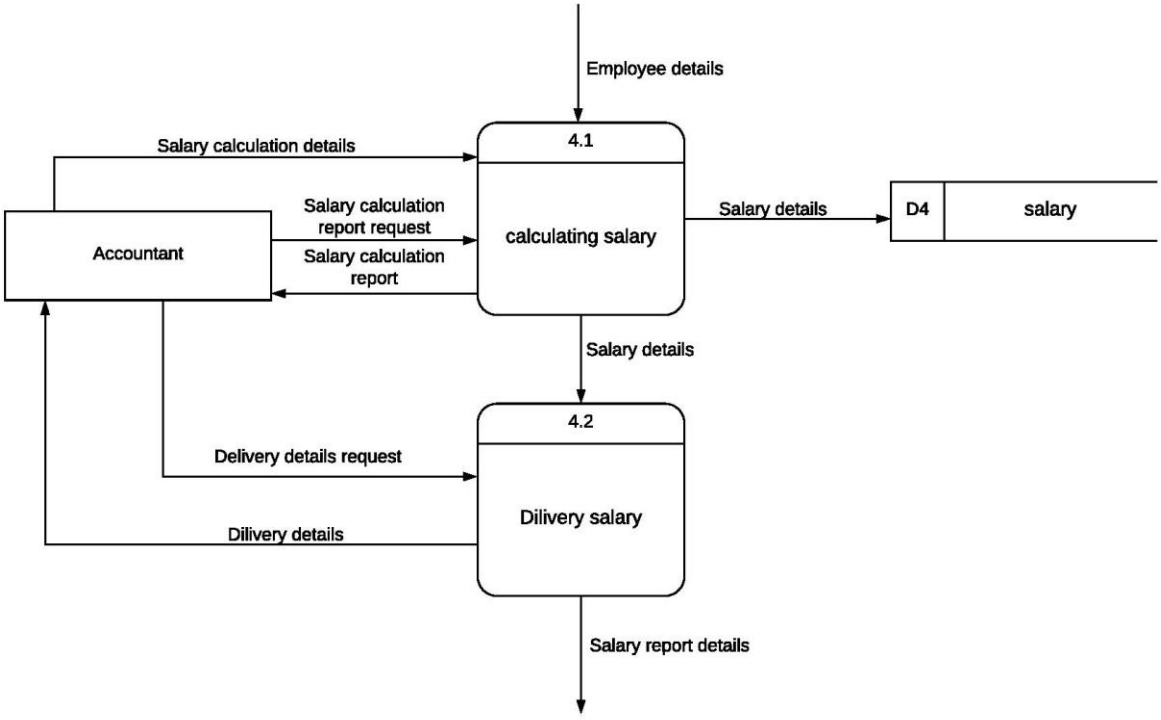
Level 1 diagram for process 2



Level 1 diagram for process 3



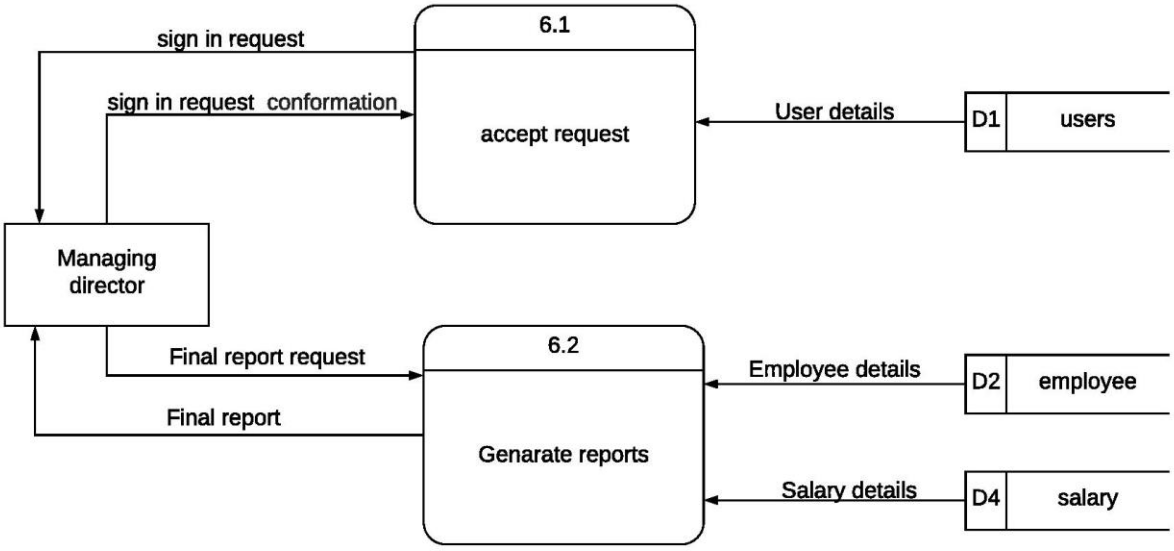
Level 1 diagram for process 4



Level 1 diagram for process 5

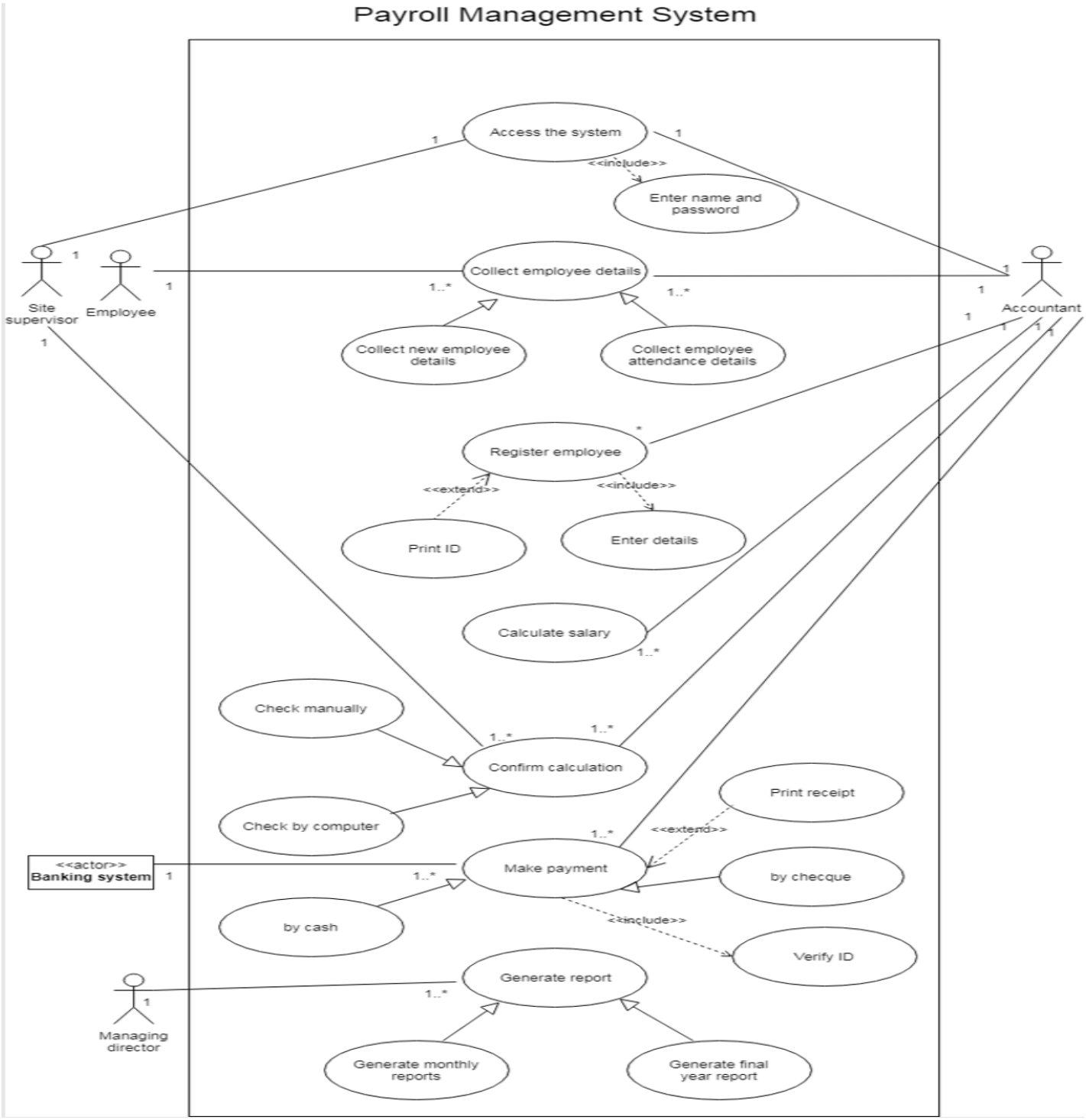
- Process 5.0 is already decomposed. So, there is no level 1 for process 5

Level 1 diagram for process 6

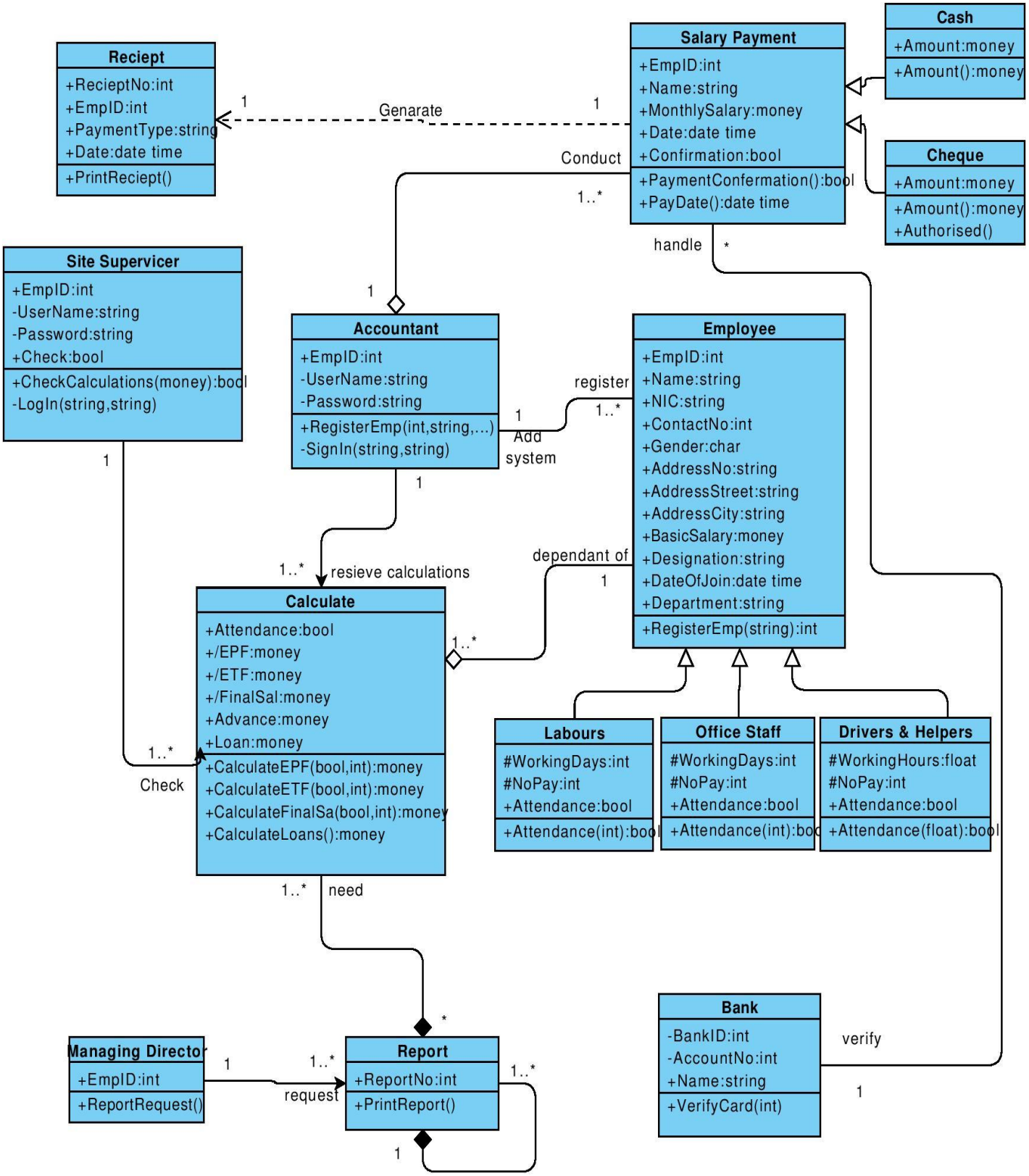


02. Unified Modeling Language (UML)

I. Use Case Diagram



II. Class Diagrams



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