Software Requirements Specification

for

Online Payroll Management System

Sri Lanka Institute of Information Technology

Software Engineering IT220 | Assignment One

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Batch Two

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Contents

[1 Introduction 2](#_Toc412734056)

[1.1 Product Introduction 2](#_Toc412734057)

[1.2 Product Purpose 3](#_Toc412734058)

[1.3 Product Scope 4](#_Toc412734059)

[1.4 Definitions, Acronyms and Abbreviations 4](#_Toc412734060)

[1.5 References 4](#_Toc412734061)

[2 Overall Description 5](#_Toc412734062)

[2.1 Users and Characteristics 5](#_Toc412734063)

[2.1.1 Users 5](#_Toc412734064)

[2.1.2 Characteristics 6](#_Toc412734065)

[2.2 Assumptions 6](#_Toc412734066)

[3 Specific Requirements 7](#_Toc412734067)

[3.1 Functional Requirements 7](#_Toc412734068)

[3.1.1 List of Functional Requirements 7](#_Toc412734069)

[3.1.2 Functional Requirements – Formal Specification 8](#_Toc412734070)

[3.2 Use Case View 13](#_Toc412734071)

[3.2.1 Use Case Diagram 13](#_Toc412734072)

[3.2.2 Use Case Scenarios 14](#_Toc412734073)

[4 Non-functional Requirements 19](#_Toc412734074)

[4.1 Reliability 19](#_Toc412734075)

[4.2 Scalability 19](#_Toc412734076)

[4.3 Flexibility 19](#_Toc412734077)

[4.4 Platform Independence 19](#_Toc412734078)

[4.5 User friendly environment 20](#_Toc412734079)

[4.6 Performance 20](#_Toc412734080)

[5 Member Contribution 21](#_Toc412734081)

# Introduction

## Product Introduction

An organization is divided in to many vital roles within. Amongst those vital departments Payroll is one of the most fragile yet important part of the whole process. Payroll as we know it today came about during the industrial revolution as the businesses bloomed rapidly, People began to move in to the cities searching for employment and within a short period of time factories were unable to cope up with managing the high number of employees. With the beginning of that mass employment, the need arose to keep accurate records of workers and their pay. Without financial documentation it would have been impossible to keep up with the capacity but later it was also not good enough as organizations began to expect much more than a manual system could provide.

In any business that employs staff needs a fluent and effective payroll system, for a larger organization, the need is much more complex and vital. As an organization becomes larger, various types of posts and departments are added, for those posts, different types of salary schemes will be implemented and their entitled allowances for different types of posts and allowed loans and various other additions to the salary will only make it unable to be managed by a manual system even with a whole department working. Having a software solution which will make the whole process effortless enables to fulfil the employer employee relationship by keeping out of the hassle of paying incorrect amounts and less allowances. It also helps in obeying to legal obligations by keeping the track of the records which helps when paying taxes.

An implementation of the payroll system as a software would result in automating most of the process done in a manual system. It will allow to calculate salary for different types of posts having different salary schemes and other related information, loan information and advances. Also if there are any issues in the salary, an employee would be able to report that from the software itself. Also an employee will be able to request any additional entitlements and information within the system itself.

An online solution goes beyond the norm and provide the access to the system from anywhere and on any device where responsible personnel can manage and do their work without being limited by any hardware or software interruption and customers.

## Product Purpose

The intention of a payroll systems is to provide the employer with a solution to the continuous process of handling salary and other payments within the system. It removes the time consuming and labour wasting manual system and eventually will simplify the process and give out more accurate results.

A software solution will enable easy adaptations of new salary schemes and other new entitlements. Payroll software will let the organization to generate pay slips, reports based on the attendance of the employees taking care of leaves, overtime, allowances, loans, advances, bonus, encashment and other standard deductions and will also give the facility for the employees to check their information within the system and will facilitate them for requesting loans, salary advances and other entitlements.

A computer program can maintain accurate and consistent databases, resulting in an accelerated performance and stability. Program efficiency can be increased significantly by including automatic calculations and fast data retrieval capabilities. Also a computer system will provide easy adjusting to the fast changing corporate world where even the smallest of aspects change rapidly.

## Product Scope

Application will be used by general employees as well the managerial staff to make necessary changes to the salary making process.

Users can be categorized and provided with capped functionality based on their position.

Implementing changes will be a hassle free process. For example changing of the interest of the employee loans.

Also it will provide concurrent access to multiple users through an online system on different devices and platforms.

## Definitions, Acronyms and Abbreviations

SRS - Software Requirements Specification.

**EPM** - Employee Payroll Management.

**OT** - Overtime.

**ETF** - Employee Trust Fund.

**EPF** - Employee Provident Fund

## References

Writing Effective Use Cases by Alistair Cockburn.

IEEE Template for System Requirement Specification documents.

# Overall Description

## Users and Characteristics

### Users

**Employee**

An employee is the most common user of the system where they are using the system to view their salary information and to report any issues.

**Accountant**

An Accountant who is accessing the system will be able to calculate salary for the employees and the allow ability of employee requests to loans and other entitlements.

**Payroll Manager**

Payroll manager is the person who is approving the employee requests. He can view employee information and generate reports based on various criteria.

**HR System**

Human Resources system will be providing the Payroll system with the employee information.

### Characteristics

All the human actors of the system are expected to have basic understanding of using the computer.

Users who want to access the system outside of the office will need to have an internet connection.

## Assumptions

As all the functions of the system are confidential and are not public, anyone who wants to access the system will need a login to do the intended functions. As no function can be done without logging in to the system, login function is assumed to have among everyone who uses the system.

Calculated salaries for employees will be saved in the employee database after calculating with all the additional information.

Human Resource is an outside system and in the payroll system, it is functioning as an actor.

Human resource system will update their details depending on the changes made to the payroll system of a particular employee.

# Specific Requirements

## Functional Requirements

### List of Functional Requirements

1. **Calculate Salary**

1.1 Check over time

1.2 Calculate general salary

1.3 Check loans

1.4 Check salary advances

1.5 Check allowances

1.6 Check EPF

1.7 Check ETF

1. **Generate reports**

2.1 Generate employee specific salary report

2.2 Generate monthly allowances report

2.3 Generate monthly salary report

1. **View employee details**

3.1 View salary information

3.2 View loan information

3.3 View allowance information

3.4 View over time information

3.5 Print pay slip

1. **Request salary additions**

4.1Request for loans

4.2 Request for salary advances

1. **Report Salary issues**

5.1Report basic salary issues

5.2 Report loan issues

5.3 Report allowance issues

5.4 Report over time issues

### Functional Requirements – Formal Specification

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| --- | --- |
| **F1.1** | Check over time |
| Input | Employee\_ID, month |
| Output | Total pay for the overtime hours, number of overtime hours and their time and dates of the employee for the month |
| Process | Validate ID and search for the overtime hours and dates of the employee from the employee database for the respective month and calculate overtime pay amount. |

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| **F1.2** | Calculate basic salary |
| Input | Employee\_ID |
| Output | Basic salary for the employee. |
| Process | Validate ID and get post details and attendance information and calculate the basic salary. |

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| **F1.3** | Check loans |
| Input | Employee\_ID |
| Output | Loan amount and installments remaining. |
| Process | Validate ID and search for any loans for that ID, if there is a loan, retrieve loan details from the database. |

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| **F1.4** | Check salary advances |
| Input | Employee\_ID |
| Output | Salary advance amount |
| Process | Validate ID and search for any salary advancements for that ID and retrieve the amount if available. |

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| **F1.5** | Check allowances |
| Input | Employee\_ID |
| Output | Allowance amount |
| Process | Validate ID and retrieve the employee details and check the allowed allowance amount for the employee. |

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| **F1.6** | Check EPF |
| Input | Employee\_ID |
| Output | EPF amount |
| Process | Validate ID and retrieve the employee details and take the EPF amount of the particular employee |

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| **F1.7** | Check ETF |
| Input | Employee\_ID |
| Output | ETF amount |
| Process | Validate ID and retrieve the employee details and retrieve the ETF amount of the employee. |

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| **F2.1** | Generate employee specific salary report |
| Input | Employee\_ID and month |
| Output | Salary report for the particular employee. |
| Process | Employee\_ID will be validated and system will retrieve the information relating to that employee regarding the salary for the specified month. |

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| **F2.2** | Generate monthly allowances report |
| Input | Allowance\_type and month. |
| Output | Allowance report for the month |
| Process | When allowance type is entered, system will retrieve the information about that specific allowance entitled employees and their information with net allowance expenditure for the specified month. |

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| **F2.3** | Generate monthly salary report |
| Input | Month |
| Output | Monthly salary report. |
| Process | Retrieve employee salary details for the specified month. |

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| **F3.1** | View salary information |
| Input | Employee\_ID |
| Output | Employee basic salary, loan information, OT information and allowance information. |
| Process | Validate ID and retrieve the employee details from the database and check the general salary, Loan information & OT information. |

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| **F3.2** | View loan information |
| Input | Employee\_ID |
| Output | Loan amount, loan installments, amount yet to pay. |
| Process | Validate ID and retrieve the employee details and check any ongoing loans, if available retrieve the loan details. |

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| **F3.3** | View allowance information |
| Input | Employee\_ID |
| Output | Allowance amount and allowance type. |
| Process | Validate ID and retrieve the employee details from the database and retrieve the allowed allowance information. |

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| **F3.4** | View overtime information |
| Input | Employee\_ID |
| Output | Overtime hours and dates. |
| Process | Validate ID and retrieve the employee details from the database and check the overtime hours & the date of the overtime work has taken placed. |

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| **F3.5** | View pay slip |
| Input | Employee\_ID |
| Output | Pay slip. |
| Process | Validate ID and retrieve the salary information of the current month for the employee. |

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| **F5.1** | Report general salary issues |
| Input | Employee\_ID |
| Output | Report of the issue and Issue\_ID |
| Process | Employee will report his issue in the system and it will be forwarded to the appropriate administrator with an Issue\_ID. |

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| **F5.2** | Report loan issues |
| Input | Employee\_ID |
| Output | Report of the issue and Issue\_ID |
| Process | Employee will report his issue about the loan in the system and it will be forwarded to the appropriate administrator with an Issue\_ID. |

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| **F5.3** | Report allowance issues |
| Input | Employee\_ID |
| Output | Report of the issue and Issue\_ID |
| Process | Employee will report his issue in the system and it will be forwarded to the appropriate administrator with an Issue\_ID. |

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| **F5.4** | Report overtime issues |
| Input | Employee\_ID |
| Output | Report of the issue and Issue\_ID |
| Process | Employee will report his issue in the system and it will be forwarded to the appropriate administrator with an Issue\_ID. |

## Use Case View

### Use Case Diagram

### Use Case Scenarios

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| --- | --- | --- |
| Use case ID | UC1a | |
| Use case name | Calculate basic salary. | |
| Goal in context | Deduct employee EPF amount from employee’s basic salary. | |
| Pre-conditions | 1. Accountant has login information to a successful login to the system. 2. Employee is registered in the human resource system’s employee details | |
| Primary actor | Accountant | |
| Main success scenario | Step | Action |
| 1 | User logs in to the system by entering username and password. |
| 2 | Credentials are verified and user is logged in to the system. |
| 3 | Enters the ID of the employee whose salary is calculated. |
| 4 | Employee ID is verified and accepted by the system. |
| 5 | System retrieves and displays data related to the employee. |
| 6 | Employee’s post details are retrieved. |
| 7 | Employee’s basic salary amount is calculated. |
| Post-conditions | Employee’s basic salary is calculated. | |

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| Use case ID | UC1b | |
| Use case name | Deduct EPF | |
| Goal in context | Deduct employee EPF amount from employee’s basic salary. | |
| Pre-conditions | 1. Accountant has login information to a successful login to the system. 2. Employee is registered in the human resource system’s employee details | |
| Primary actor | Accountant | |
| Main success scenario | Step | Action |
| 1 | User logs in to the system by entering username and password. |
| 2 | Credentials are verified and user is logged in to the system. |
| 3 | Enters the ID of the employee whose salary is calculated. |
| 4 | Employee ID is verified and accepted by the system. |
| 5 | System retrieves and displays data related to the employee. |
| 6 | Employee’s post details are retrieved. |
| 7 | Employee’s basic salary is retrieved. |
| 8 | Employee’s EPF rate is retrieved and calculated. |
| 9 | Employee’s Provident Fund amount is deducted. |
| Post-conditions | Employee’s EPF is deducted from the salary. | |

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| Use case ID | UC1c | |
| Use case name | Deduct ETF | |
| Goal in context | Deduct employee ETF amount from employee’s basic salary. | |
| Pre-conditions | 1. Accountant has login information to a successful login to the system. 2. Employee is registered in the human resource system’s employee details | |
| Primary actor | Accountant | |
| Main success scenario | Step | Action |
| 1 | User logs in to the system by entering username and password. |
| 2 | Credentials are verified and user is logged in to the system. |
| 3 | Enters the ID of the employee whose salary is calculated. |
| 4 | Employee ID is verified and accepted by the system. |
| 5 | System retrieves and displays data related to the employee. |
| 6 | Employee’s post details are retrieved. |
| 7 | Employee’s basic salary is retrieved. |
| 8 | Employee’s ETF rate is retrieved and calculated. |
| 9 | Employee’s ETF amount is deducted. |
| Post-conditions | Employee’s ETF is deducted from the salary. | |

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| Use case ID | UC1 | |
| Use case name | Calculate salary | |
| Goal in context | Calculate employee salary at the end of the month and saved in the database. | |
| Pre-conditions | 1. Accountant has login information to a successful login to the system. 2. Employee is registered in the human resource system’s employee details | |
| Primary actor | Accountant | |
| Main success scenario | Step | Action |
| 1 | Include :: (Calculate basic salary). |
| 2 | Include :: (Deduct EPF). |
| 3 | Include :: (Deduct ETF). |
| 4 | User logs in to the system by entering username and password. |
| 5 | Credentials are verified and user is logged in to the system. |
| 6 | Enters the ID of the employee whose salary is calculated. |
| 7 | Employee ID is verified and accepted by the system. |
| 8 | System retrieves and displays data related to the employee. |
| 9 | Employee’s post details are retrieved. |
| 10 | Employee’s basic salary is calculated. |
| 11 | Get attendance details for the specific employee from the HR system. |
| 12 | Checks whether leaves are remaining for the employee with no no-pay days or not. |
| 13 | Deduct for no-pay days if any. |
| 14 | Check for other deductions (14a, 14b, 14c, 14d) |
| 15 | Salary information is sent to the employee database to be saved. |
| Extensions | 14a | If the employee has taken any salary advances in that month, they are deducted. |
| 14b | If the employee has done any over time during the month, his overtime details are retrieved from the system and then added to the salary. |
| 14c | If the employee has taken any loans from the company, his loan information is retrieved and installment is deducted. |
| 14d | If the employee is entitled to any allowances, allowance amount is retrieved and added to the salary. |
| Post-conditions | Employee salary is calculated successfully and saved in the database. | |

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| Use case ID | UC2 | |
| Use case name | Generate Reports | |
| Goal in context | Generate reports based on the given criteria. | |
| Pre-conditions | 1. Employee has login information to a successful login to the system. 2. Employee is registered in the human resource system’s employee details | |
| Primary actor | Payroll Manager | |
| Main success scenario4 | Step | Action |
| 1 | User logs in to the system by entering username and password. |
| 2 | Credentials are verified and user is logged in to the system. |
| 3 | Calculated monthly salary details for each of every employee is retrieved from the database. |
| 4 | Employee specific salary report is generated. |
| 6 | From the employee salary details, total monthly salary for all the employees in the particular department is calculated. |
| 7 | Report of monthly salary details of the department is generated. |
| 8 | From the employee salary allowance details, the total salary allowance of a department is calculated. |
| 9 | Report of monthly allowance details of a department is generated. |
| Post-conditions | Employee specific salary report, monthly salary, monthly allowance reports of a department are successfully generated. | |

# Non-functional Requirements

## Reliability

For any system, a main priority of the users would be its reliability and it’s no different to a payroll system. Users expect the payroll system to be reliable and trustworthy. Information must not loose from the system after they are entered. Accuracy is part of the reliability, payroll checks and reports must be mathematically correct, including calculations as payroll system is one of the core functions in any organization. Backing up data is another part of a reliable system because one never knows when an electronic system will crash. If there are no backups ready, it would be an organizational nightmare.

## Scalability

System should be flexible and expendable for future use because an organization will not stay the same in its life time, adding new employees, departments, company acquisitions and many other things would increase the scale of the payroll system. Because of that system must be scalable to any future use without having to go through a sophisticated process.

## Flexibility

A payroll system must be swift enough to allow for easy changes while running. Flexibility is an important nonfunctional requirement of a payroll program as payroll rules, regulations and calculations are tend to change rapidly from time to time. Organization may increase the salary or allowances and system must be able to incorporate that without any hassle and quickly. Deductions like tax, loans and interests too change rapid and the system should provide easy functionality to change those.

## Platform Independence

As this is an online system, it should be capable to work in any environment irrespective of thing like Operating system, browser or the internet connection. It must be able to work even with fairly slow bandwidth as they change from time to time. Also it must not give any hassle to work in different operating systems because a large organization cannot keep track of its users all devices.

## User friendly environment

A company incorporates different types of employees and not all of them are capable of adapting to new technologies rapidly or some even may not like to change the things they are used to over the years. So the system interface should be simple and user friendly, easy enough to understand even to the most technology repelling employee.

## Performance

Performance of system should be adequate and fast enough to handle even a larger organizational structure to handle thousands of employees because with the time, a small company may evolve to be the biggest. Also while accessing from various types of devices, system must be able to give out the same performance throughout all the systems to give a pleasing experience. Also it must not take very long time to calculate salaries and other calculations as time is one of the most non-renewable resources in an organization.

# Member Contribution

|  |  |
| --- | --- |
| M.F. Shazna. | Overall description. |
| Use case UC2. |
| Use case diagram. |
| Functional Requirements and formal specification. |
| Non-functional: User friendly environment, Platform Independence and Flexibility. |
| Rajapaksha R.P.D.S. | Introduction. |
| Use case scenario UC1 |
| Use case diagram. |
| Functional Requirements and formal specification. |
| Non-functional: Reliability, Scalability and Performance |