

**Software Requirements Specification**  
**For**  
**Facial Recognition Time Sheet Application**

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# 1. Introduction

The Facial Recognition Time Sheet Application is a system designed to manage the work hours of employees, which will be produced by clocking in and out through a web based facial recognition software. It will allow employees to clock in and out, with an extra level of security provided by the ability to identify and verify the employee through face detection. It will also support functionality to approve time sheets, allow administrators to overwrite employee hours, and provide a printable version of the hours worked by employees during the week.

## 1.1 Purpose

The purpose of this Software Requirements Specification report is to examine the functionalities in terms of requirements of the Facial Recognition Time Sheet Application.

## 1.2 Scope

The Facial Recognition Time Sheet Application is a web-based application that will allow for the management of employee time sheets. Workers will be able to clock in and out, utilizing a facial identification process and easy-to-use interface. They will also be able to view their own time sheets, while administrators will be able to override worked hour values and easily generate, print, or export reports of employee clock in and clock out data.

## 1.3 Definitions, Acronyms and Abbreviations

TERM	DEFINITION
Admin	User with administrative rights.
API	Application Programming Interface
IEEE	Institute of Electrical and Electronics Engineers
Facial Recognition	A facial recognition algorithm detects and recognizes a set of input images to produce an accurate verification of an individual.
GUI	Graphical User Interface
I/O	Input/Output
JavaScript	An object-based computer language commonly used to create interactive effects within web browsers

MySQL	A relational database management system (RDBMS) based on SQL (Structured Query Language)
OS	Operating System
PHP	A script language and interpreter that is freely available and used primarily on Linux Web servers. PHP, originally derived from Personal Home Page Tools, now stands for PHP: Hypertext Preprocessor, which the PHP FAQ describes as a "recursive acronym."
SDD	Software Design Document
SDO	Standards Development Organization
SRS	Software Requirements Specification
Timesheet	A timesheet is a listing of the days and hours worked by a given employee. This can be either the final paper listing turned into Accounting or any list of hours worked versus the day the work was done on.
Timestamp	A sequence of characters or encoded information identifying when a certain event occurred, usually giving date and time of day, sometimes accurate to a small fraction of a second.

## 1.4 References

The documents referenced by this SRS are listed below.

“IEEE Recommended Practice for Software Design Descriptions”, IEEE Std 1016-1998.  
Available from the Institute of Electrical and Electronics Engineers.

“KeyLemon – Face Recognition Technology”. Designed to Authenticate. (n.d.). Retrieved March 5, 2015, from <https://www.keylemon.com>

## 1.5 Overview

This SRS is made up of three sections, appendices and an index. Section 1, “Introduction”, provides an overview of the entire SRS. Section 2, noted as the “General Description”, provides background information and the user needs for the requirements defined in the subsequent section. Section 3 defines the specific requirements for the Facial Recognition Time Sheet Application.



## **2. General Description**

This section provides the description of user needs for the Facial Recognition Time Sheet Application. It includes sections on “Product Perspective”; “Product Functions”; “User Characteristics”; “Constraints”; and “Assumptions and Dependencies”.

### **2.1 Product Perspective**

This system is as a web-based system that will operate on a linux server running PHP and MySQL. The system is expected to evolve over various releases, ultimately allowing for complete streamlining of the employee timesheet system, payroll process, and other features.

### **2.2 Product Functions**

- Captures image of employee utilizing the KeyLemon facial recognition API and creates a timestamp when the employee selects to clock in or out for the day ~~or lunch~~.
- Updates an online database of hours worked using the recorded timestamp.
- Administrators can override the time values that are in the database.
- Users can finalize their timesheets and get an overview of time worked.
- Administrators can generate, export, or print the data for time worked by an employee.

### **2.3 User Characteristics**

There are two user groups for the Facial Recognition Time Sheet Application:

Administrators can:

- Override timesheet values
- View timesheet values
- Add/Remove Employees
- Update database with values.
- Can disable the clock in/out features.
- Can export the timesheet for each individual employee under their access into an excel spreadsheet

Employees can:

- View timesheet values
- Finalize time worked
- Clock in and clock out
- Report errors

### **2.4 General Constraints**

The system must react within a reasonable amount of time. The device accessing the timesheet website must have a camera or image capture device installed. It is required that the API accurately identifies the employee accessing the system. Employees must be able to confirm that the system has accurately identified themselves.

### **2.5 Assumptions and Dependencies**

Software requirements for this project include, requires, a linux server with PHP 5.0+ and MySQL database installed. It also requires hardware to capture an employee’s image, desirably supported by the KeyLemon API for identification.

### 3. Specific Requirements

#### 3.1 External Interface Requirements

The interface for the Facial Recognition Time Sheet Application will be split among the user groups.

Administrators will be able to log in and have a screen that allows them to:

- Override timesheet values
- View timesheet values
- Add/Remove Employees
- Update database with values.
- Can disable the clock in/out features.

Employees will be able to log in and view a screen that allows them to:

- View timesheet values
- Finalize time worked
- Clock in and clock out
- Report errors

Each ability of the user group will have a separate page dedicated to providing that service.

#### 3.2 Functional Requirements

##### TS - Admin – 1.1 - Override Time Sheet Values

**Input** The admin selects an employee for whom they want to override the current time sheet value, then the admin selects a specific shift they wish to edit.

**Action** The system will prompt the admin for new time values for this shift, and will update the database to reflect these new values.

**Output** The system will return to the screen that shows the list of shifts worked by the selected employee.

**Notes**

**Priority** Essential

##### TS - Admin – 1.2 - Add Employees

**Input** The administrator is on the add user screen and inputs the employee's basic user information (name, email, employee id, etc) and selects the add option.

**Action** The system will add the user to the user listing, adding the inputted values into the database.

**Output** The system will return to the add user screen.

**Notes**

**Priority** Essential

### **TS - Admin – 1.3 - Remove Employees**

**Input** The administrator will be on the remove employee's screen and selects an employee to remove, and selects the remove option.

**Action** The system will remove the user from the database and all related shift information to that user.

**Output** The system will return to the remove user screen.

**Notes**

**Priority** Essential

### **TS - Admin – 1.4 – Update Database Values**

**Input** The admin selects to update the timesheet database.

**Action** The system will access a file generated by system to populate the database with the most recent clock in/out information.

**Output** The system will display a confirmation message upon successful update or an error message upon failed update.

**Notes**

**Priority** Essential

### **TS - Admin – 1.5 – Disable Clock In/Out Features**

**Input** The admin selects to disable the clock in/out features

**Action** The system will no longer allow employees to use the web interface to clock in and out.

**Output** The system will display a confirmation message upon successful update or an error message upon failed update.

**Notes**

**Priority** Essential



### **TS - Admin – 1.6 – Enable Clock In/Out Features**

- Input** The admin selects to enable the clock in/out features
- Action** The system will allow employees to use the web interface to clock in and out.
- Output** The system will display a confirmation message upon successful update or an error message upon failed update.

#### **Notes**

**Priority** Essential

### **TS - Employee – 2.1 – Finalize Timesheet**

- Input** The employee selects to finalize their time worked for the pay period.
- Action** The system will prevent any additional working time to be added to the employee's time sheet.
- Output** The system will display the time worked in timesheet format.
- Notes** The user will then be able to print it off from the web browser.
- Priority** Essential

### **TS - Employee – 2.2 – Clock In/Out**

- Input** The employee's image is captured, processed, and identified by the system and selects to clock in/out.
- Action** The system adds a database entry indicating the current user id and time.
- Output** The system will display a confirmation message upon successful clocking in/out or an error message upon failed clocking in/out.

#### **Notes**

**Priority** Essential

### **TS - Both – 3.1 – View Time Sheet**

- Input** The user selects to view a timesheet
- Action** The system will retrieve database values for the selected time sheet and will create a table representing the time worked.

**Output** The system will display a table of time worked.

**Notes** Administrators will be able to select from all employees' time sheets. Employees will only be able to view their own time sheet.

**Priority** Essential

### **TS - Both – 3.2 – Log In**

**Input** The user inputs his/her user name and password and selects to log in.

**Action** The system will verify the user information with the database.

**Output** The system will redirect the user to the appropriate menu page

**Notes** The user login information may or may not conform to database system.

**Priority** Essential

## **3.3 Use Cases**

### **3.3.1 Employee Gets Registered**

1. Human Resource Admin adds position title for the user
2. Admin adds payroll information (pay rate)
3. Admin sets password for employee and sets up face image.
4. Employee is created.

### **3.3.2 Employee Logs In**

1. Employee carries out Employee Registers
2. Employee selects Login.
3. The system requests input for a username and password.
4. Employee inputs their username and password and clicks the login button and optionally checks a "Remember Me" checkbox.
5. The system validates the Employee's credentials and brings them to the main dashboard.

#### **3.3.2.1 Variation #1**

1. Start at Step 4
2. The system cannot find any Employee with the username specified and outputs "Invalid Login Credentials".

#### **3.3.2.2 Variation #2**

1. Start at Step 4
2. The system found that the username is valid but the password is not and outputs "Invalid Login Credentials".

### **3.3.2 Employee Times In**

1. Employee carries out Employee Logs In.
2. Employee selects Time In from the main dashboard.
3. The system verifies that the Employee has either not timed in or has previously timed out within the last 24 hours.
4. The system prompts for facial recognition authentication.
5. Employee follows the facial recognition authentication process and is Timed In with the current date time stamp.
6. The system displays confirmation that the Employee has timed in.

#### **3.3.2.1 Variation #1**

1. Start at Step 4.
2. Employee fails facial recognition process.
3. The system allows the Employee to retry the facial recognition authentication or cancel their attempt to Time In.

### **3.3.3 Employee Times Out**

1. Employee carries out Employee Logs In.
2. Employee selects Time Out from the main dashboard.
3. The system verifies that the Employee has previously timed in within the last 24 hours.
4. The system prompts for facial recognition authentication.
5. Employee follows the facial recognition authentication process and is Timed Out with the current data time stamp.
6. The system displays confirmation that the Employee has timed out.

#### **3.3.3.1 Variation #1**

1. Start at Step 4.
2. Employee fails facial recognition process.
3. The system allows the Employee to retry the facial recognition authentication or cancel their attempt to Time Out.

### **3.3.4 Employee Views Timesheet Report (hours worked)**

1. Employee carries out Employee Logs In.
2. Employee selects Timesheet Report from the main dashboard.
3. The system generates and displays a report showing the times and sum of the total hours worked by that the employee worked by day, week, or month.

### **3.3.5 Employee Changes Password**

1. Employee carries out Employee Logs In.
2. Employee selects Account Settings from the main dashboard.
3. Employee selects Change Password from the Account Settings display.
4. The system prompts the Employee to input their current password and new password.
5. Employee inputs their current password and new password.
6. The system verifies the current password and changes it to the new given password.

#### **3.3.5.1 Variation #1**

1. Start at Step 4.

2. Employee enters wrong current password.
3. The system rejects the new password and redisplay the Change Password form to the Employee.

### **3.4 Non-Functional Requirements**

#### **3.4.1 Reliability**

The system shall recognize the employee over 90% of the time.

#### **3.4.2 Availability**

The system shall be available for most major operating systems including Mac OS, Windows, and Linux and support major browsers including Chrome, Internet Explorer, Firefox and Safari.

#### **3.4.3 Security**

The system shall use the bcrypt cryptographic algorithm with true random salts for securely storing user credentials.

### **3.5 Design Constraints**

The only design constraint identified is interfacing the KeyLemon API with MySQL and PHP, through the web based interface.

### **3.6 Logical Database Requirements**

MySQL Database

PHP enabled web host

### **3.7 Other Requirements**

Internet Access

Basic Web Browser supporting JavaScript

Camera for image capture and facial recognition

## 4. Appendices

### 4.1 Appendix 1 - UML

