**PO4\_DGELV\_DIGITAL ELEVATOR**

**SRS DOCUMENT**

**Version 1.8**

**Document Status**

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**Revision History**

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| Initial Release, specifying software used functions. | Mira Mousa | 1/24/2020 | 1.0 | Draft |
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| Review SRS and expand the requirements to atomic requirements | Mostafa Sayed | 2/26/2020 | 1.8 | Proposed |

**Reference History**

|  |  |  |
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**Table of Contents**

Table of Contents

[1.Introduction 4](#_Toc33768273)

[1.1 Purpose 4](#_Toc33768274)

[1.2 Specification Objectives 4](#_Toc33768275)

[1.3 Project Description 4](#_Toc33768276)

[2. System Overview 4](#_Toc33768277)

[2.1 Definition 4](#_Toc33768278)

[2.2 Software Requirement 5](#_Toc33768279)

[2.2.1 Logging system 5](#_Toc33768280)

[2.2.2 First calling 5](#_Toc33768281)

[2.2.3 Logining In 6](#_Toc33768282)

[2.2.4 Elevator movement 9](#_Toc33768283)

[2.2.5 System On/Off 10](#_Toc33768284)

[2.2.6 System Reset 10](#_Toc33768285)

[3.Context Switching 11](#_Toc33768286)

# 

# 1.Introduction

This section introduces the software requirements specification (SRS) for Digital Elevator project with locking system.

## 1.1 Purpose

This SRS the software functional and nonfunctional requirements.

## 1.2 Specification Objectives

The objectives of this system are to:

* Provide a Software system overview for a digital Elevator with lock system.
* Specify the software requirement to control the hardware for the user interface.
* Specify the software requirement to control the movements of the digital Elevator.

## 1.3 Project Description

The major feature of the digital elevator as listed below:

* Check if the user is signed in/up or not.
* Check the limit number of users (maximum number of users is 10).
* Display the status using a user-friendly interface.
* Require the password and userID.
* Two buttons to control the system:

1. Button for up movement.
2. Button for down movement.
3. Pushing Two Buttons together resets the system.

# 2. System Overview

## 2.1 Definition

The digital Elevator has a lock system with 10 users storing capability that can be configured and edited by the user with high security sequence to ensure that only approved users can use the elevator.

The system controls the movement of the motors and user interface features of the elevator.

## 2.2 Software Requirement

### 2.2.1 Logging system

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_01\_V1\_8 | | |
| **Author** | Mostafa Sayed | **Date** | 2/3/2020 |
| **Description** | * This software shall accept users from 0 to NumberOfUsers, NumberOfUsers = 10. | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_01\_V1\_4 | | |
| **Input** | UserNum as userID from 0 to NumberOfUsers | | |
| **Output** | Status (OK/NOK) | | |
| **Test Scope** | VTD | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_02\_V1\_8 | | |
| **Author** | Mostafa Sayed | **Date** | 2/3/2020 |
| **Description** | * When UserNum is more than NumberOfUsers then the system will reject it. | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_01\_V1\_4 | | |
| **Input** | UserNum as userID from 0 to NumberOfUsers | | |
| **Output** | Status (UserNumAccepted/UserNumRejected) | | |
| **Test Scope** | VTD | | |

### 2.2.2 First calling

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_03\_V1\_8 | | |
| **Author** | Mostafa Sayed | **Date** | 2/3/2020 |
| **Description** | * Software shall ask the user for NewID with limitation of 10 characters. | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_02\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_08\_V1\_3 | | |
| **Input** | NewID | | |
| **Output** | Status (NewID Accepted/ NewID Rejected). | | |
| **Test Scope** | ITD | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_04\_V1\_8 | | |
| **Author** | Mostafa Sayed | **Date** | 2/3/2020 |
| **Description** | * Software shall ask the user for NewPassword with limitation of 4 digits. | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_02\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_08\_V1\_3 | | |
| **Input** | NewPassword | | |
| **Output** | Status (NewPassword Accepted/ NewPassword Rejected). | | |
| **Test Scope** | ITD | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_05\_V1\_8 | | |
| **Author** | Mostafa Sayed | **Date** | 2/3/2020 |
| **Description** | * Status can be ValidSignUp. If the NewID and NewPassword are correct or InvalidSignUp for otherwise. | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_02\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_08\_V1\_3 | | |
| **Input** | NewID, NewPassword | | |
| **Output** | Status (SignUpAccepted/ SignUpRefused). | | |
| **Test Scope** | ITD | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_06\_V1\_8 | | |
| **Author** | Mostafa Sayed | **Date** | 2/3/2020 |
| **Description** | * Software shall check if NewID is already taken, the software asks for another one. | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_09\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_08\_V1\_3 | | |
| **Input** | NewID | | |
| **Output** | Status (NewIDNotToken/NewIDToken) | | |
| **Test Scope** | ITD | | |

### 2.2.3 Logining In

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_07\_V1\_8 | | |
| **Author** | Mostafa Sayed | **Date** | 2/3/2020 |
| **Description** | * Software shall ask the user for UserID | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_08\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_08\_V1\_3 | | |
| **Input** | UserID. | | |
| **Output** | Status (UserIDAccepted/UserIDRejected) | | |
| **Test Scope** | ITD | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_08\_V1\_8 | | |
| **Author** | Mostafa Sayed | **Date** | 2/3/2020 |
| **Description** | * Software shall ask the user for UserPassword. | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_08\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_08\_V1\_3 | | |
| **Input** | UserID, UserPassword. | | |
| **Output** | Status (UserPasswordAccepted/UserPasswordRejected) | | |
| **Test Scope** | ITD | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_09\_V1\_8 | | |
| **Author** | Mostafa Sayed | **Date** | 2/3/2020 |
| **Description** | * Software shall check for the entered UserID and UserPassword are correct, then return LoginCorrect. | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_08\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_08\_V1\_3 | | |
| **Input** | UserID, UserPass. | | |
| **Output** | Status (LoginCorrect/LoginWrong) | | |
| **Test Scope** | ITD | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_10\_V1\_8 | | |
| **Author** | Mostafa Sayed | **Date** | 2/10/2020 |
| **Description** | * Software displays Ok on LCD (LCDOK\_Signal) in case of the user entered the correct UserID and UserPassword. | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_08\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_07\_V1\_3 | | |
| **Input** | Status (LoginCorrect) | | |
| **Output** | LCDOK\_Signal | | |
| **Test Scope** | VTD | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_11\_V1\_8 | | |
| **Author** | Mostafa Sayed | **Date** | 2/10/2020 |
| **Description** | * Software shall check status is LoggedIn, it displays Ok on LCD (LCDOK\_Signal). | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_08\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_07\_V1\_3 | | |
| **Input** | Status | | |
| **Output** | LCD\_OK\_Signal | | |
| **Test Scope** | VTD | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_12\_V1\_8 | | |
| **Author** | Mostafa Sayed | **Date** | 2/10/2020 |
| **Description** | * Software shall check status if LoginError, it displays not Ok on LCD (LCDNOK\_Signal). | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_08\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_07\_V1\_3 | | |
| **Input** | Status | | |
| **Output** | LCDNOK\_Signal | | |
| **Test Scope** | VTD | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_13\_V1\_8 | | |
| **Author** | Mostafa Sayed | **Date** | 2/10/2020 |
| **Description** | * Software shall check AcceptedTrialNumbers equals the 0, it enables buzzer sound (BUZZERON\_Signal). | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_03\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_06\_V1\_3 | | |
| **Input** | Status | | |
| **Output** | BUZZERON\_Signal | | |
| **Test Scope** | VTD | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_14\_V1\_8 | | |
| **Author** | Mostafa Sayed | **Date** | 2/10/2020 |
| **Description** | * Software shall check status if LoginError, the AcceptedTrialNumbers decreases by one. | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_04\_V1\_4 | | |
| **Input** | LoginError Status | | |
| **Output** | None | | |
| **Test Scope** | VTD | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_15\_V1\_5 | | |
| **Author** | Mostafa Sayed | **Date** | 2/10/2020 |
| **Description** | * Software shall check if AcceptedTrialNumbers is TempBlocked then the system will be blocked for 3 seconds. | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_04\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_04\_V1\_3 | | |
| **Input** | AcceptedTrialNumbers | | |
| **Output** | None | | |
| **Test Scope** | VTD | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_16\_V1\_5 | | |
| **Author** | Mostafa Sayed | **Date** | 2/10/2020 |
| **Description** | * Software shall check if the AcceptedTrialNumbers equals 0, then make AcceptedTrialNmbers equals NumOfTrials(3). | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_04\_V1\_4 | | |
| **Input** | AcceptedTrialNumbers | | |
| **Output** | None | | |
| **Test Scope** | ITD | | |

### 2.2.4 Elevator movement

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_17\_V1\_5 | | |
| **Author** | Mostafa Sayed | **Date** | 2/3/2020 |
| **Description** | * Software shall read the Up/Down switches signal to control the movement then return Status = MoveUp or Status = MoveDown. | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_05\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_03\_V1\_3 | | |
| **Input** | MoveUp/Down\_Status | | |
| **Output** | MoveUp/Down Status | | |
| **Test Scope** | ITD | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_18\_V1\_5 | | |
| **Author** | Mostafa Sayed | **Date** | 2/10/2020 |
| **Description** | * Software shall check Status of MoveDown, the signal moves the elevator down. | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_06\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_02\_V1\_3 | | |
| **Input** | MoveDown Status | | |
| **Output** | SignalDown. | | |
| **Test Scope** | ITD | | |

### 

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_19\_V1\_5 | | |
| **Author** | Mostafa Sayed | **Date** | 2/10/2020 |
| **Description** | * Software shall check Status of MoveDown, the signal moves the elevator down. | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_06\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_02\_V1\_3 | | |
| **Input** | MoveDown Status | | |
| **Output** | SignalDown. | | |
| **Test Scope** | ITD | | |

### 2.2.5 System On/Off

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_20\_V1\_5 | | |
| **Author** | Mostafa Sayed | **Date** | 2/3/2020 |
| **Description** | * The software shall read the On/Off\_Switch, then return the status of the switch. | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_07\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_04\_V1\_3 | | |
| **Input** | On/Off\_Switch, Sw\_Pressed\_Status | | |
| **Output** | System\_Turns\_on and Systaem flag=0 | | |
| **Test Scope** | VTD | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_21\_V1\_5 | | |
| **Author** | Mostafa Sayed | **Date** | 2/3/2020 |
| **Description** | * The software shall check if the on/Off\_Switch equals Sw\_Pressed\_Status value, and System\_flag equal System\_On, then system turns off | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_07\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_04\_V1\_3 | | |
| **Input** | On/Off\_Switch, Sw\_Pressed\_Status | | |
| **Output** | System\_Turns\_off and Systaem flag=1 | | |
| **Test Scope** | VTD | | |

### 2.2.6 System Reset

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_22\_V1\_5 | | |
| **Author** | Mostafa Sayed | **Date** | 2/3/2020 |
| **Description** | * This software shall detect if the on/off push button are pressed together for 2 sec and change the Status to reset. | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_07\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_04\_V1\_3 | | |
| **Input** | None | | |
| **Output** | System\_Reset\_Signal | | |
| **Test Scope** | VTD | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **REQ\_ID** | REQ\_ PO4\_DGELV \_SRS\_23\_V1\_5 | | |
| **Author** | Mostafa Sayed | **Date** | 2/3/2020 |
| **Description** | * This software shall detect if System\_Reset\_Signal is set, System will be cleared and the status returned NotsignedIn. | | |
| **Coverage** | REQ\_ PO4\_DGELV \_CYRS\_07\_V1\_4  REQ\_ PO4\_DGELV \_HSI\_04\_V1\_3 | | |
| **Input** | System\_Reset\_Signal | | |
| **Output** | NotsignedIn | | |
| **Test Scope** | VTD | | |

# 3.Context Switching

