PO1_DGC Calculator

Draft

By:

May Abdelsalam

Moamen Ahmed

January 2020

Contents

List of Figures

List of Tables

Chapter 1

Project History

Table 1.1: Project History Table

Version	Author	Date	Change
v1.0	May Abdelsalam	21/1/2020	Initial Creation
v1.1	Moamen Ahmed	22/1/2020	Created index and improved formatting for CYRS document

Chapter 2

Project Description

2.1 Hardware

- Microcontroller AVR.

- Keypad 4x4.

- Character LCD 16x2.

- Buzzer.

2.2 Software

- Digital calculator that can be turned on/off using a button from the keypad.

- 10 buttons from the keypad are for the numbers(0-9).

- A button from the keypad will be for the assignment operation.

- 4 buttons are for mathematical operations.

- The calculator supports the following mathematical operations:

  - Addition.

  - Subtraction.

  - Multiplication.

  - Division.

- The numbers, operations and results will appear on the CLCD.

- The mathematical operation will not be erased after pressing the assignment operation button.

- Each button on the keypad will have a corresponding note played on the buzzer.

Chapter 3

Features

Table 3.1: Project History Table

Requirement Name	Requirement Description
Req_PO1_DGC_CYRS_001_v1.0 Imp#HW	Hardware shall turn the calculator on/off when the button is pressed.
Req_PO1_DGC_CYRS_002_v1.0 Imp#SW	Software shall assign a number (0-9) or operation(+,-,*,/,=) to each key on the keypad.
Req_PO1_DGC_CYRS_003_v1.0 Imp#SW	Software shall display a number (0-9) when its corresponding key is pressed.
Req_PO1_DGC_CYRS_004_v1.0 Imp#SW	Software shall display an operation(+,-,*,/) on the display when its corresponding key is pressed.
Req_PO1_DGC_CYRS_005_v1.0 Imp#SW	Software shall allow multiplication or division only when there is a number already displayed on the LCD before it. Software won't display the multiplication or division signs if there is nothing on the screen or if there is already an operand.
Req_PO1_DGC_CYRS_006_v1.0 Imp#SW	Software shall display the result on the display when the assignment (=) key is pressed.
Req_PO1_DGC_CYRS_007_v1.0 Imp#SW	Software shall play a different tune for each button when pressed.