PO1\_DGC Calculator

Draft

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History Table

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| --- | --- | --- | --- |
| Version | Author | Date | Change |
| 1.0 | May Abdelelsalam | 21/1/2020 | Initial creation |
|  |  |  |  |

Project Description:

* Hardware:
  1. Microcontroller AVR.
  2. Keypad 4x4.
  3. Character LCD 16x2.
  4. Buzzer.
* 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:
  1. Addition.
  2. Subtraction.
  3. Multiplication.
  4. 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.

Features:

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| --- | --- |
| 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. |