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# SOFTWARE DESIGN REPORT

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**SPRINTS**

# INTRODUCTION

This Report Contain Three Tasks

- 1 - Design Lcd Driver Depend On Non-blocking Theory
- 2 - Design Keypad Driver Depend On Non-blocking Theory
- 3- Write Pseudo Code For Lcd & Keypad Drivers

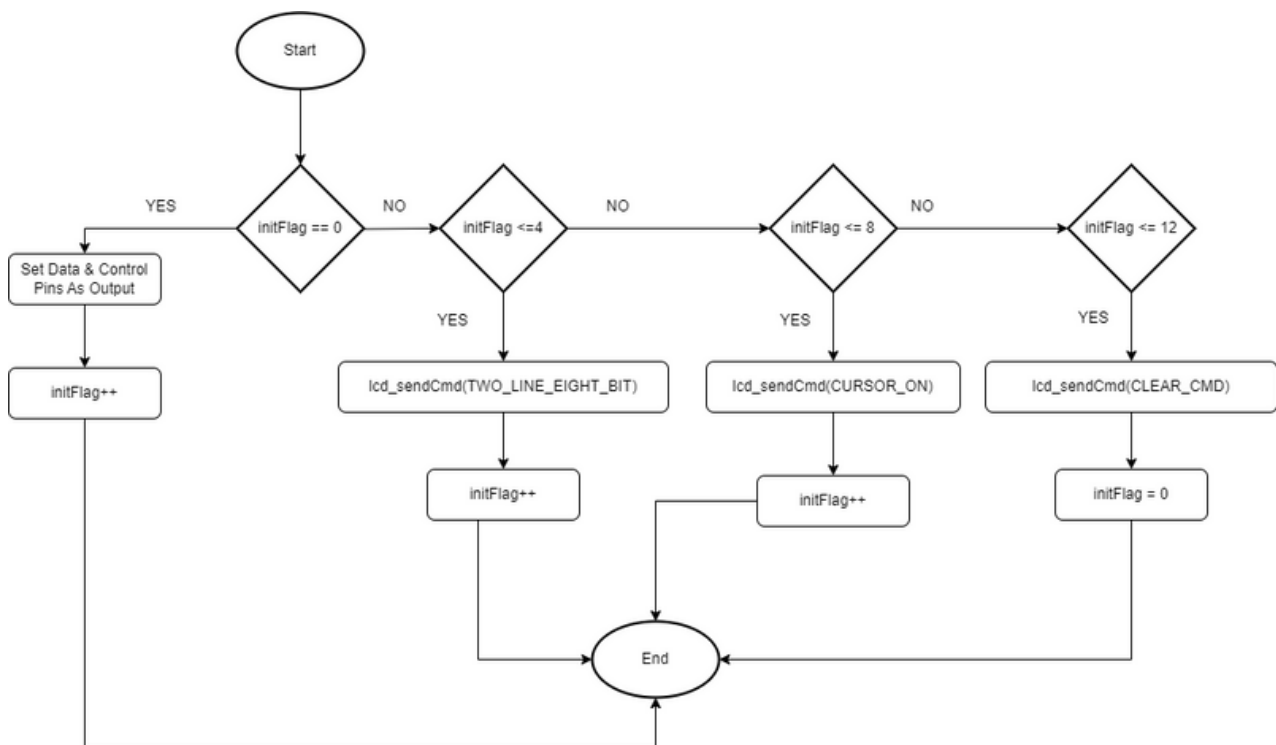
# LCD DRIVER APIS

1 - void LCD\_vInit(void)

1.1 - Description : This Function Initialize lcd With Its Configuration According To Its Data Sheet To Be Ready For Use

1.2 - Arguments : void

1.3 - Return : void



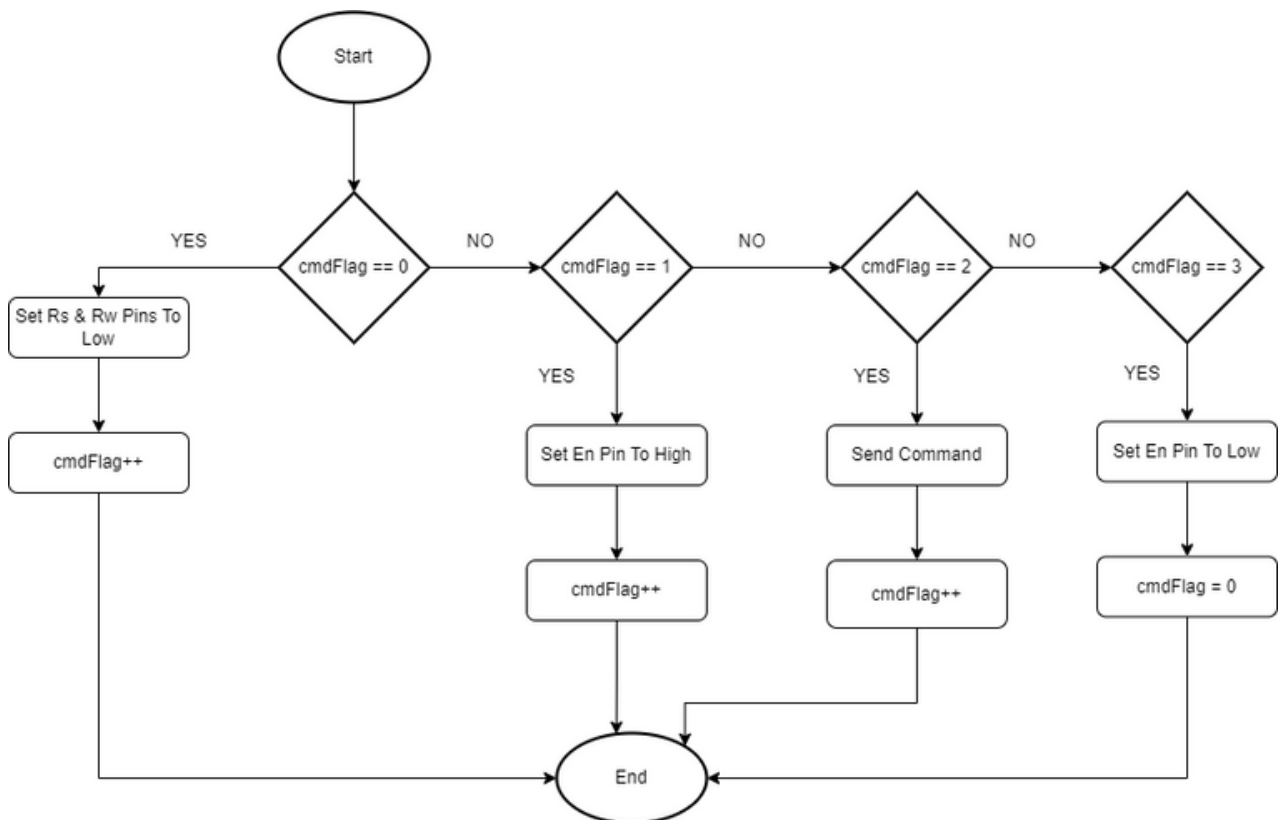
# LCD DRIVER APIS

2 - void LCD\_vSendCmd(Uchar8\_t Command)

2.1 - Description : This Function Send Command On Data Pins

2.2 - Arguments : Uchar8\_t Command

2.3 - Return : void



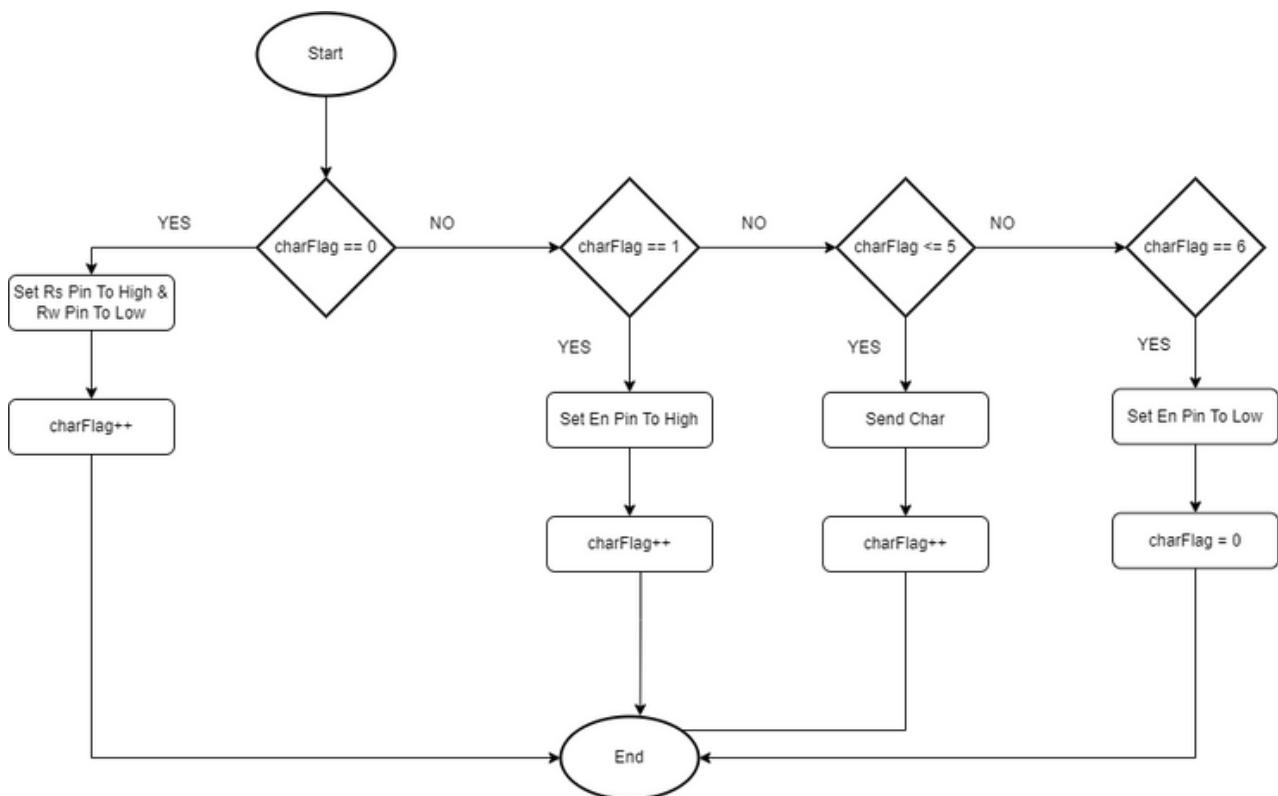
# LCD DRIVER APIS

3 - void LCD\_vDisplayChar(Uchar8\_t Char)

3.1 - Description : This Function Send Cahr On Data Pins

3.2 - Arguments : Uchar8\_t Char

3.3 - Return : void



# LCD DRIVER APIS

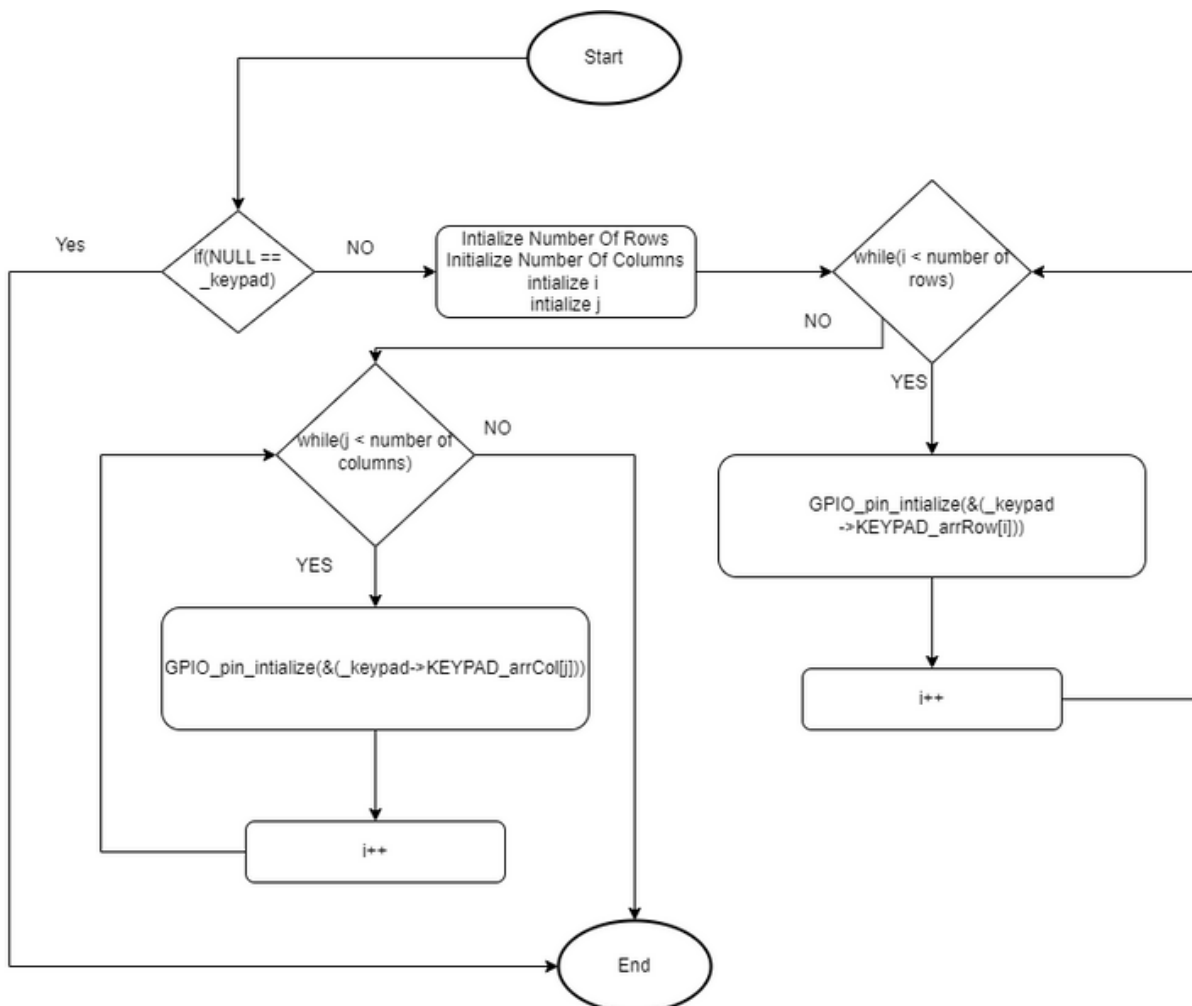
4 - void LCD\_vMainFlow(void)

4.1 - Description : This Function Call After Every Timer Trigger To Handle Flow Of Lcd

4.2 - Arguments : void

4.3 - Return : void

5 - ISR Of Timer()



**Note : If You Want To Send Char Only Without Initialize Lcd Set timerFlag To Be = 14**

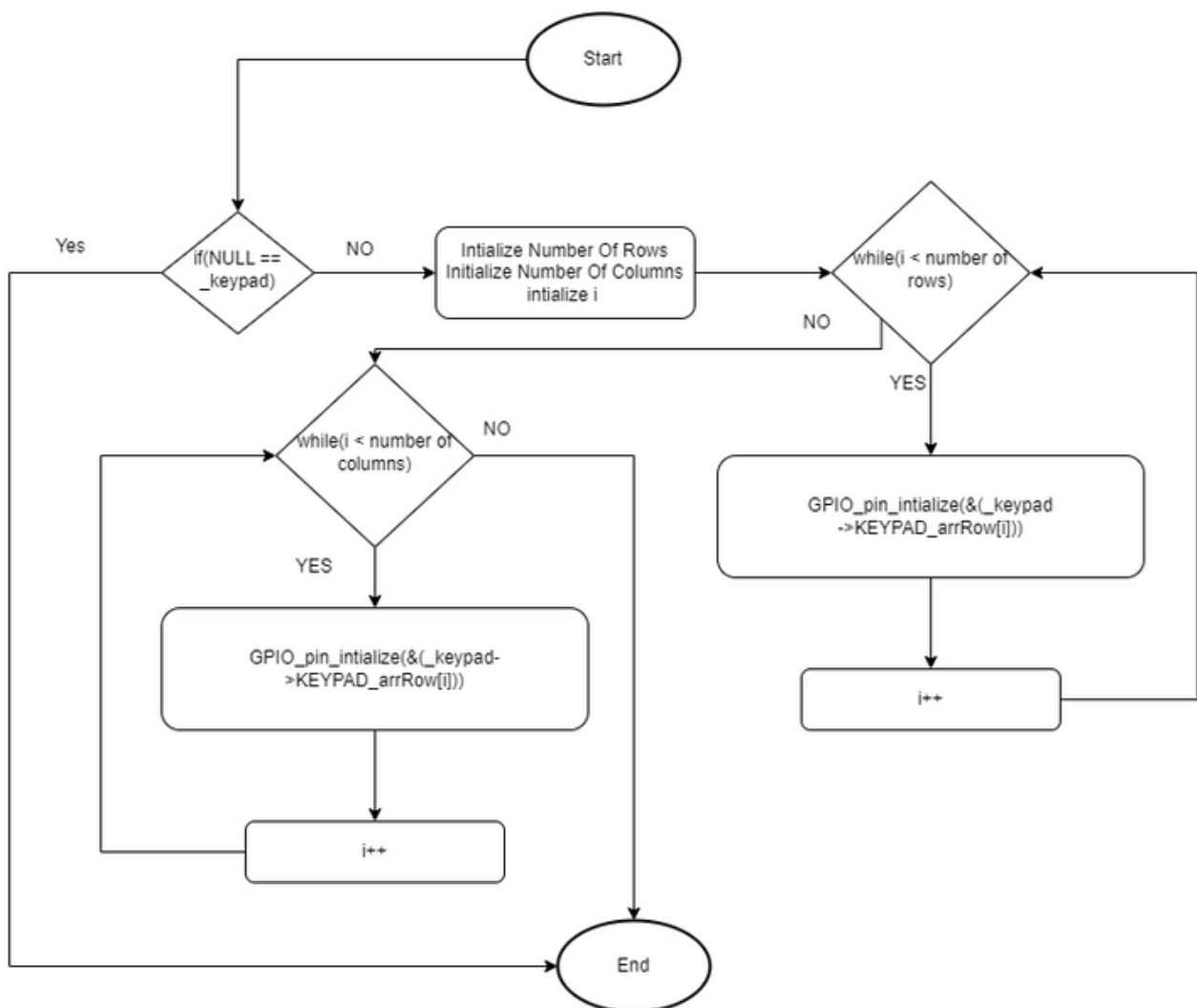
# KEYPAD DRIVER APIS

1 - void KEYPAD\_init(ST\_KEYPAD\_cfg\_t \*\_keypad)

1.1 - Description : This Function Call To Initialize Keypad Pins

1.2 - Arguments : ST\_KEYPAD\_cfg\_t \*\_keypad Struct Of Keypad CFG

1.3 - Return : void



# KEYPAD DRIVER APIS

2 - void KEYPAD\_scanningPressedBtn(ST\_KEYPAD\_cfg\_t \*\_keypad, Uchar8\_t \*pressedBtnVal)

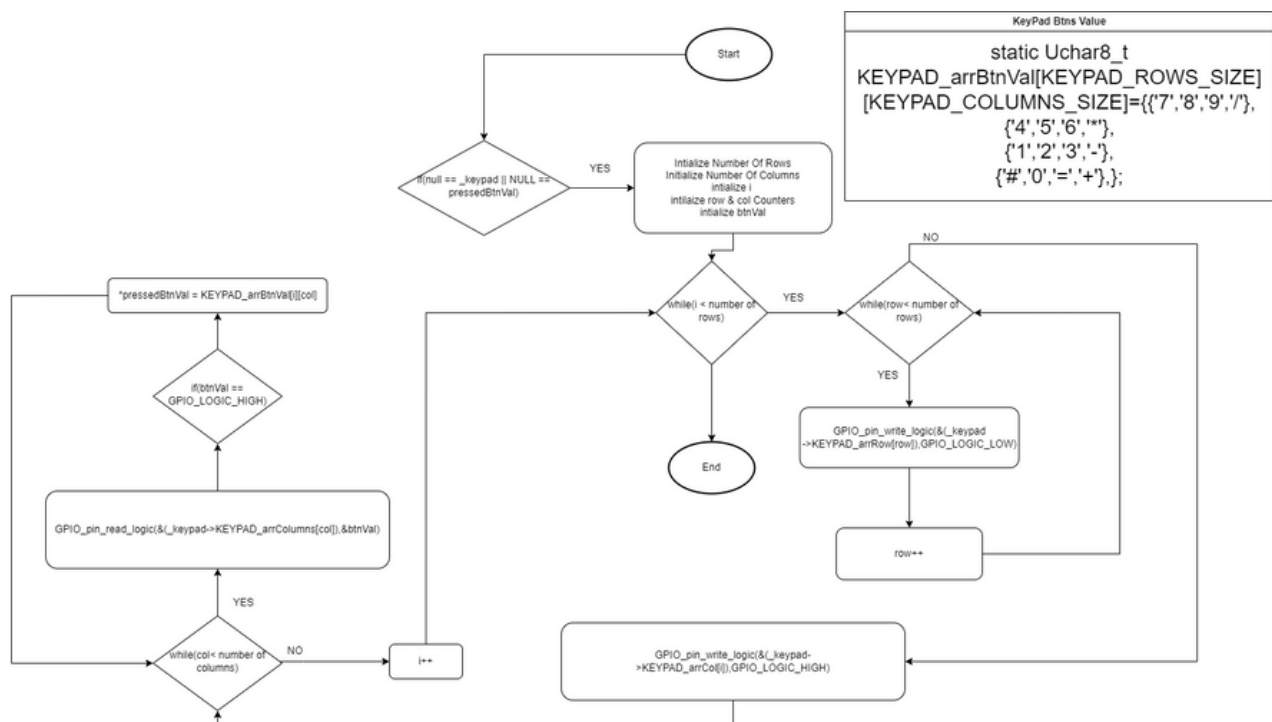
1.1 - Description : This Function Call To Get The Value Of Pressed Button In The Keypad

1.2 - Arguments :

1.2.1 - ST\_KEYPAD\_cfg\_t \*\_keypad : Struct Of Keypad Config

1.2.2 - Uchar8\_t \*pressedBtnVal : Variable Will Return In It The Value Of The Pressed Button In The Keypad

1.3 - Return : void





# KEYPAD DRIVER APIS

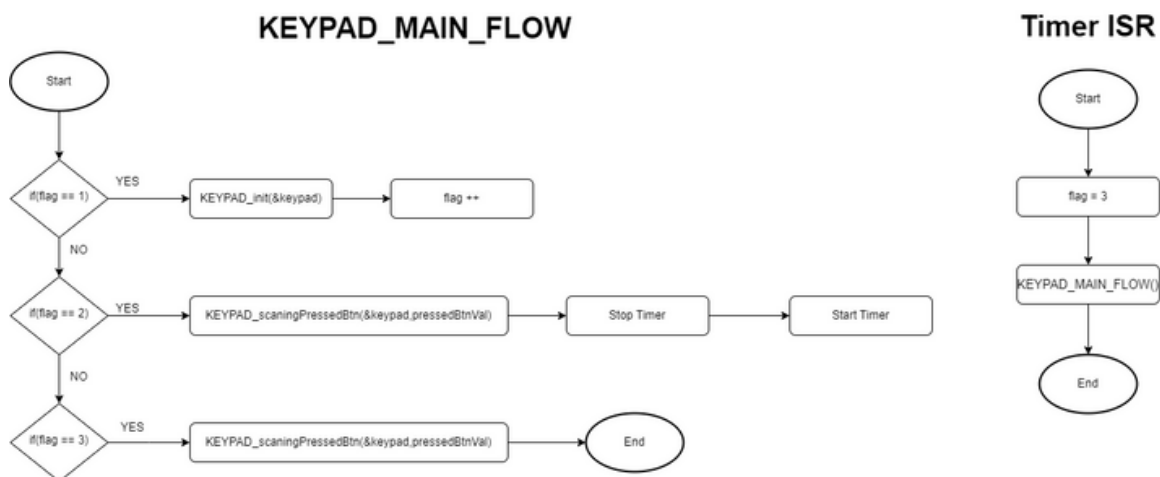
3 - void KEYPAD\_MainFlow(void)

1.1 - Description : This Function Handle The Flow Of Keypad States

1.2 - Arguments : void

1.3 - Return : void

4 - Timer ISR()



**Add Note : If You Want To Scan Button Value Only  
Without Initialize Keypad Set flag To Be = 2**

# KEYPAD DRIVER CONFIG

```
typedef struct
{
    ST_pin_config_t
    KEYPAD_arrRow[KEYPAD_ROWS_SIZE];
    ST_pin_config_t
    KEYPAD_arrColumns[KEYPAD_COLUMNS_SIZE];
}ST_KEYPAD_cfg_t;
```

Description : This Is Struct Have Two Array Of Element From Type Of ST\_PIN\_config\_t To Initialize Keypad Pins In Simple Way

```
typedef struct
{
    Uchar8_t port : 3;
    Uchar8_t pin : 3;
    Uchar8_t direction : 1;
    Uchar8_t logic : 1;
}ST_pin_config_t;
```

Description : This Struct Contain Pin Data Like Port ,Pin,Direction and Logic Of The Pin To Make It Easy To Control This Pin