Flow Chart for

Non-Blocking Driver for Keypad

(Ahmed Maged)

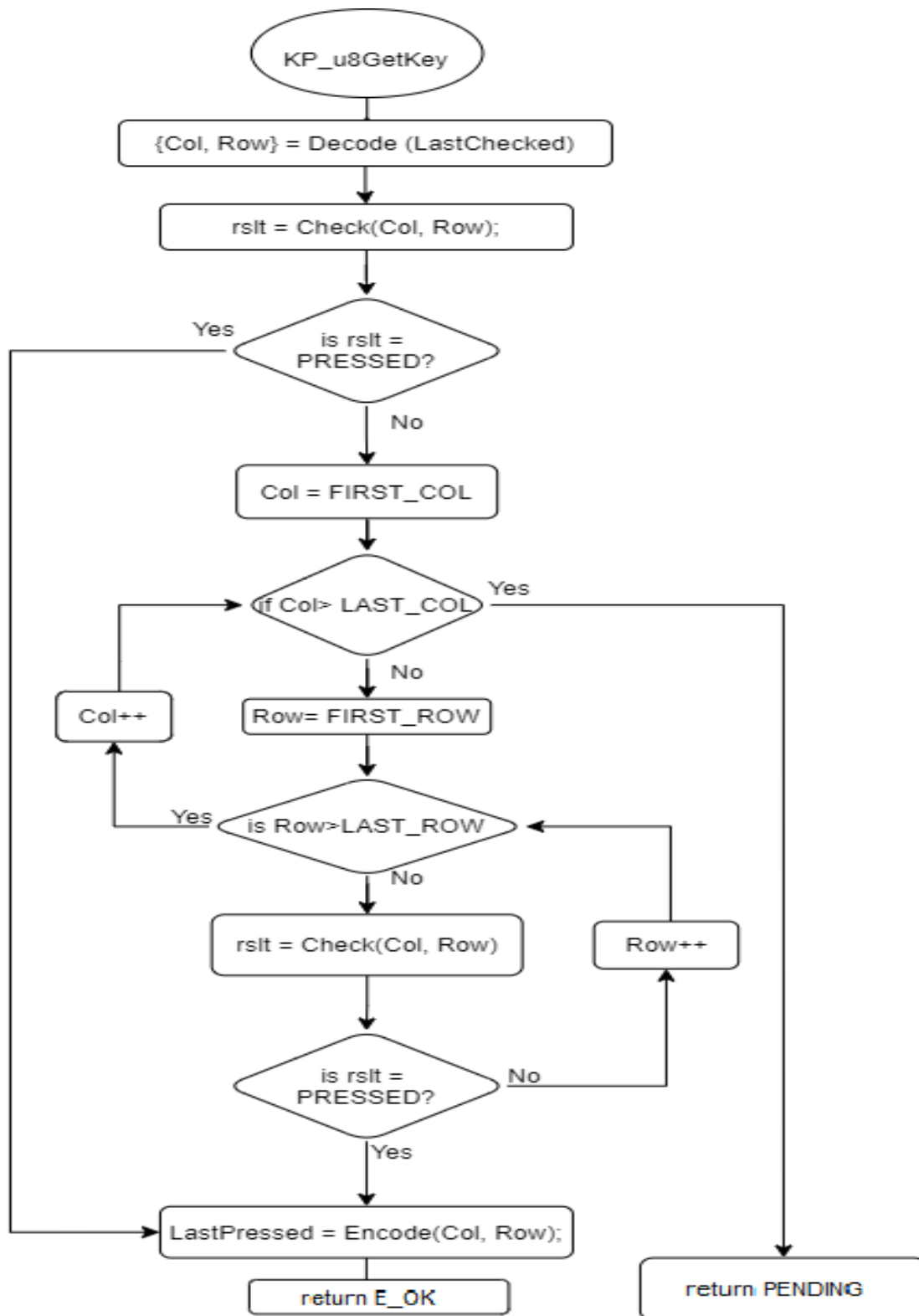# KP_eGetKey API

Function Name	KP_eKey(u8* u8KeyID)		
Arguments	inputs	N/A	
		description:	
	outputs	u8KeyID	u8*
		description: enum {0,...,15}	
	input/output	N/A	
		description:	
Return	E_OK	0	
	E_NOK	1	
	PENDING	2	
Description	used to get the pressed key		

Name	u8KeyID
Type	u8*
Range	{ 0:15}
Description	from 0 to 15 are Keys IDs u8 is defined in common/STD_TYPES.h

Name	RETURN
Type	ERROR_t
Range	{ 0:2}
Description	PENDING for no pressed Key, E_OK indicate a key pressed ERROR_t is defined in common/STD_TYPES.h

KP_eGetKey API flow chart

```
          KP_u8GetKey

  {Col, Row} = Decode (LastChecked)

      rslt = Check(Col, Row);

            is rslt =          Yes
            PRESSED?  ─────────────►
                │
                │ No
                ▼
         Col = FIRST_COL
                │
                ▼
        if Col> LAST_COL        Yes
  ┌───►                   ──────────►
  │             │ No
  │             ▼
Col++     Row= FIRST_ROW
  │             │
  │             ▼
  │  Yes   is Row>LAST_ROW ◄───────┐
  └──────                           │
                │ No                │
                ▼                   │
      rslt = Check(Col, Row)     Row++
                │                   │
                ▼                   │
            is rslt =     No        │
            PRESSED?  ──────────────┘
                │
                │ Yes
                ▼
  LastPressed = Encode(Col, Row);

         return E_OK          return PENDING
```

Private function Check(Col, Row)

Function Name		Check(Col, Row)	
Arguments	inputs	Col	const u8
		description: the column number	
		Row	const u8
		description: the row number	
	outputs	N/A	
		description:	
	input/output	N/A	
		description:	
Return	E_OK	0	
	E_NOK	1	
Description		used to get the pressed key	

Name	Col
Type	u8
Range	{ 0, ..., 3}
Description	the Column pins

Name	Row
Type	u8
Range	{ 4, ..., 7}
Description	the Column pins

```
                        ┌─────────────────┐
                        │  Check(Row, Col) │
                        └─────────────────┘
                                 │
                                 ▼
                    No    ◇ is Row value =    Yes
          ┌───────────────◇      LOW      ◇───────────────┐
          │                                               │
          ▼                                               ▼
  ◇ state[Col][Row] =                          ◇ state[Col][Row] =
  ◇   PRE_RELESED    ◇                          ◇   PRE_PRESSED    ◇  No
  ◇        ?         ◇                          ◇        ?         ◇──────┐
    No │         │ Yes                            Yes │        │          │
       │         │                                   │        │          │
       │         ▼                                   ▼        │          ▼
       │  ◇ is Count[Col][Row]  NO      NO  ◇ is Count[Col][Row]   ◇ state[Col][Row]  Yes
       │  ◇    >= LIMIT ?     ◇────┬────◇    >= LIMIT ?     ◇      ◇  = PRESSED       ◇──────┐
       │          │                │            │                  ◇        ?         ◇      │
       │      YES │                ▼        Yes │                      No │                  │
       │          │          ┌──────────┐       │                        │                  │
       │          │          │ Count++  │       │                        │                  │
       │          │          └──────────┘       │                        │                  │
       ▼          ▼                             ▼                        ▼                  │
 state[Col][Row] = state[Col][Row] =     state[Col][Row] =        state[Col][Row] =         │
 PRE_RELESED        RELESED               PRESSED                  PRE_PRESSED               │
       │            │                         │                        │                    │
       │            ▼                         ▼                        │                    │
       │    Count[Col][Row] = 0       Count[Col][Row] = 0              │                    │
       │            │                         │                        │                    │
       │            ▼                         ▼                        │                    │
       └──▶ return NotPressed ◀────┘    return Pressed ◀───────────────┴────────────────────┘
```