Set the MSB of PORTD to 1

Column = 0

NO

Column   
<= 2?

NO

NO

YES

YES

Return ascii\_val

Shift PORTD to the left by 1 (lsl)

Return null (‘\0’)

Ascii\_val = 0x2A?

Ascii\_val ≠ null?

YES

Rowpress(column)

UNSIGNED CHAR KEYIN(VOID) FUNCTION FLOWCHART

PORTGbits.R12 = 0?

YES

Debounce(DEBOUNCE\_TIME)

Return char\_map[0][column]

NO

YES

PORTGbits.R13 = 0?

Debounce(DEBOUNCE\_TIME)

Return char\_map[1][column]

NO

UNSIGNED CHAR ROWPRESS(INT COLUMN) FUNCTION FLOWCHART

NO

Return char\_map[3][column]

YES

YES

NO

PORTGbits.R15 = 0?

Return char\_map[3][column]

Debounce(DEBOUNCE\_TIME)

PORTGbits.R14 = 0?

Debounce(DEBOUNCE\_TIME)

Return char\_map[2][column]