

## Lab 6: Pre-Lab Assignment (10 points)

Student Name: **SOLUTION**

### 1. Enable the clock of GPIO Port A (for the columns), and Port E (for the rows).

Register	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
AHB2ENR														RNGEN		AESEN			ADCEN	OTGFSEN						GPIOHEN	GPIOGEN	GPIOFEN	GPIOEEN	GPIODEN	GPIOCEN	GPIOBEN	GPIOAEN
Mask (Set)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	
Desired bit output	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

RCC->AHB2ENR Register MASK (Bitwise set) Value = 0x**00000011** (in HEX)

### 1. Configure Port E: Pin 10, 11, 12, and 13 as Digital Output

GPIO Mode: Digital Input (00), Digital Output (01), Alternative Function (10), Analog (11)

Register	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
MODER	MODER15[1:0]		MODER14[1:0]		MODER13[1:0]		MODER12[1:0]		MODER11[1:0]		MODER10[1:0]		MODER9[1:0]		MODER8[1:0]		MODER7[1:0]		MODER6[1:0]		MODER5[1:0]		MODER4[1:0]		MODER3[1:0]		MODER2[1:0]		MODER1[1:0]		MODER0[1:0]	
MASK (Clear)	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MASK (Clear) Alternative	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MASK (Set)	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DESIRED BIT OUTPUT	-	-	-	-	0	1	0	1	0	1	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

GPIOA Mode Register MASK (Clear) Value (**Alternative solution**) = 0x**0AA00000**(in HEX)

GPIOA Mode Register MASK (Clear) Value = 0x**0FF00000** (in HEX)

GPIOA Mode Register MASK (Set) Value = 0x**05500000** (in HEX)

### 2. Configure Port A: Pin 1, 2, 3, and 5 as Digital Input

GPIO Mode: Digital Input (00), Digital Output (01), Alternative Function (10), Analog (11)

Register	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
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MODER	MODER15[1:0]		MODER14[1:0]		MODER13[1:0]		MODER12[1:0]		MODER11[1:0]		MODER10[1:0]		MODER9[1:0]		MODER8[1:0]		MODER7[1:0]		MODER6[1:0]		MODER5[1:0]		MODER4[1:0]		MODER3[1:0]		MODER2[1:0]		MODER1[1:0]		MODER0[1:0]	
MASK (Clear)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	1	1	0	0
DESIRED BIT OUTPUT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	-	-	0	0	0	0	0	0	-	-	

GPIOB Mode Register MASK (Clear) Value = 0x**0000CFC** (in HEX)