**ASSIGNMENT – 2**

Q. A finite-state machine (FSM) or finite-state automaton (FSA, plural: automata), finite automaton, or simply a state machine, is a mathematical model of computation.

Write a program for FSM using button and LED.

Challenge: Each button press should make changes in LED ON/OFF as following states -

1. First press put the LED1 into on/off state with 1 second delay.

2. Second press put the LED2 on/off state with 1 second delay.

3. Third press put both LED1 and LED2 into constant HIGH state.

4. Fourth press put both LED1 and LED2 into constant LOW state.

5. Fifth press goes back to state 1

**Answer:**

main.c file

int c=0;  
while (1)  
{  
 /\* USER CODE END WHILE \*/

/\* USER CODE BEGIN 3 \*/

if (HAL\_GPIO\_ReadPin(sw2\_GPIO\_Port, GPIO\_PIN\_2) == 0)  
 {  
 c++;  
 printf("Reading pin status\n");  
 }

printf("count=%d\n",c);

switch(c)  
 {  
 case 1:  
 {  
 printf("In case 1\n");  
 HAL\_GPIO\_WritePin(LED5\_GPIO\_Port, GPIO\_PIN\_5,1);  
 HAL\_Delay(1000);  
 HAL\_GPIO\_WritePin(LED5\_GPIO\_Port, GPIO\_PIN\_5,0);  
 HAL\_Delay(1000);  
 break;  
 }

case 2:  
 {  
 printf("In case 2\n");  
 HAL\_GPIO\_WritePin(LED14\_GPIO\_Port, GPIO\_PIN\_14,1);  
 HAL\_Delay(1000);  
 HAL\_GPIO\_WritePin(LED14\_GPIO\_Port, GPIO\_PIN\_14,0);  
 HAL\_Delay(1000);  
 // HAL\_GPIO\_WritePin(LED5\_GPIO\_Port, GPIO\_PIN\_5,0);  
 break;  
 }

case 3:  
 {  
 printf("In case 3\n");  
 HAL\_GPIO\_WritePin(LED14\_GPIO\_Port, GPIO\_PIN\_14,1);  
 HAL\_GPIO\_WritePin(LED5\_GPIO\_Port, GPIO\_PIN\_5,1);  
 break;  
 }  
 case 4:  
 {  
 printf("In case 4\n");  
 HAL\_GPIO\_WritePin(LED14\_GPIO\_Port, GPIO\_PIN\_14,0);  
 HAL\_GPIO\_WritePin(LED5\_GPIO\_Port, GPIO\_PIN\_5,0);  
 break;  
 }  
 case 5:  
 {  
 c=1;  
 break;  
 }

default :  
 {  
 HAL\_GPIO\_WritePin(LED14\_GPIO\_Port, GPIO\_PIN\_14,0);  
 HAL\_GPIO\_WritePin(LED5\_GPIO\_Port, GPIO\_PIN\_5,0);  
 }

}  
}  
/\* USER CODE END 3 \*/