

# **Assignment-1 Digital Alarm clock**

**COS 10004**

**Tuesday ATC-627 2:30 P.M**

**Name: Nur E Siam**

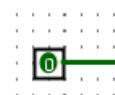
**Student ID: 103842784**

## **Description of the circuit**

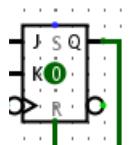
The logic circuit is a Digital Alarm Clock. The whole circuit is consisted of 4 parts and divided into 4 circuits and connected with 4 switches. If we turn on the switch-1 and switch-2, in the circuit the minutes starts to count with the switch one it counts till 9 and with switch-2 it counts till 5. So, when in switch-1 circuit hits 9 switch-2 circuit switches to 1 and continue counts to 5, when both circuit counts to 59 which is an hour then circuit 3 starts working and starts to count till 0 to 9 which indicates hours, when the circuit 3 goes to 9<sup>th</sup> hour to make it 10<sup>th</sup> hour the circuit-4 starts working only gives us 0 and 1. Circuit-4 remains 0 up until circuit-3 counts 9, when the counts on circuit-3 hits 0 again that moment circuit-4 gives count 1 to give us the 10<sup>th</sup> hour and the moment the whole circuit gives us the 12<sup>th</sup> hour it all resets to 00 hour to give us A.M and P.M.



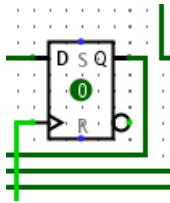
AM/PM



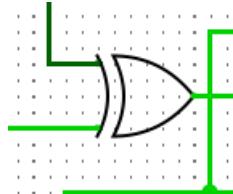
Switch



J-K flipflop



D-flipflop



XOR- Gate



AND gate

## An Outline of the design

To make this digital alarm clock logic circuit I had to use 3 basic types of gates those are AND Gates, OR Gate and XOR Gates. And, to build this circuit I had to use 2 types of memories, those are D- FLIPFLOP and J-K FLIPFLOP and to indicate the A.M and P.M I had to use LED as outputs. Also, To show the time I used HEX digits. Moreover, I used a D-flipflop and an AND gate to connect circuit-3 and circuit-4, And the whole is connected with an OR gate, an AND gate and with an XOR gate for setting time and also the clock is connected there too.

### Assumption

How all the gates work was shown in the lecture videos. So, I have made the clock with no assumptions as far my knowledge goes.

## UNSOLVED PROBLEMS

My set-alarm is not working properly, and I could not able to connect my P.M to LED as it was mentioned in the assignment outline that I must switch color.

## SCREENSHOT OF THE CIRCUIT

**COS 10004 Assignment 1 Digital Alarm Clock**

Switches for the clock

NAME: Nur E Siam  
STUDENT ID: 103942784

