Operation Coding: The µp & µc Challenge

**Microprocessors & microcontrollers play a major role in industrial applications. *8085*, *8086* & *8051* finds its place in the regular areas of interest of many college students. It finds its application in various minor & major project implementations. Therefore AOT is providing a great platform for showcasing one’s talent in microprocessor & microcontroller programming.**

**Event Type: It will be a team event consisting of *2* members.**

**Round 1** (Elimination Round):

**No. of questions ->*40* (MCQ type). Each question carries *2* marks & a negative marking of *0.5* for each wrong answer. An OMR sheet will be provided to the teams to answer the questions.**

**Sample question:**

*In an 8085 microprocessor based system, the contents of* ***SP*** *are* ***1000H****,* ***PUSH B*** *instruction will transfer the contents of*

*registers* ***C*** *&* ***B*** *respectively for memory locations:*

|  |  |  |  |
| --- | --- | --- | --- |
| (A) **0FFFH & 0FFEH** | (B) **0FFEH & 0FFFH** | (C) **1000H & 0FFFH** | (D) **0FFFH & 1000H** |

**Round 2** (Elimination Round):

**It will be a coding round based on *8085/8086* microprocessor. This round will consist of *2* coding questions. Maximum time allotted for this event is *90* min.**

**Sample question:**

*A kerosene Oil Dealer serves kerosene in packaged bottles of varied sizes. The possible size of the bottles are {1, 7 and 10} litres. He wants to supply desired quantity using as less bottles as possible irrespective of the size. Your objective is to help him find the minimum number of bottles required to supply the given demand of kerosene.*

*Input:-  
A positive integer N which corresponds to the demand of kerosene in litres in the memory location 8085H.   
Output:-*

*The minimum number of bottles required to fulfill the demand in the memory location 8086H.*

*Explanation:*

*Suppose the given value of N is 68L. So the least no of bottles that is to be used to fulfill the demand is 10L\*6=60L, 7L\*1=7L & 1L\*1=1L, which sums to 68L desirably. Therefore, total no. of bottles will be 3.*

**Round 3** (Final Round):

**This round will consist of *2* coding questions. Both the questions will be simulation based problem from *8051* microcontroller.**

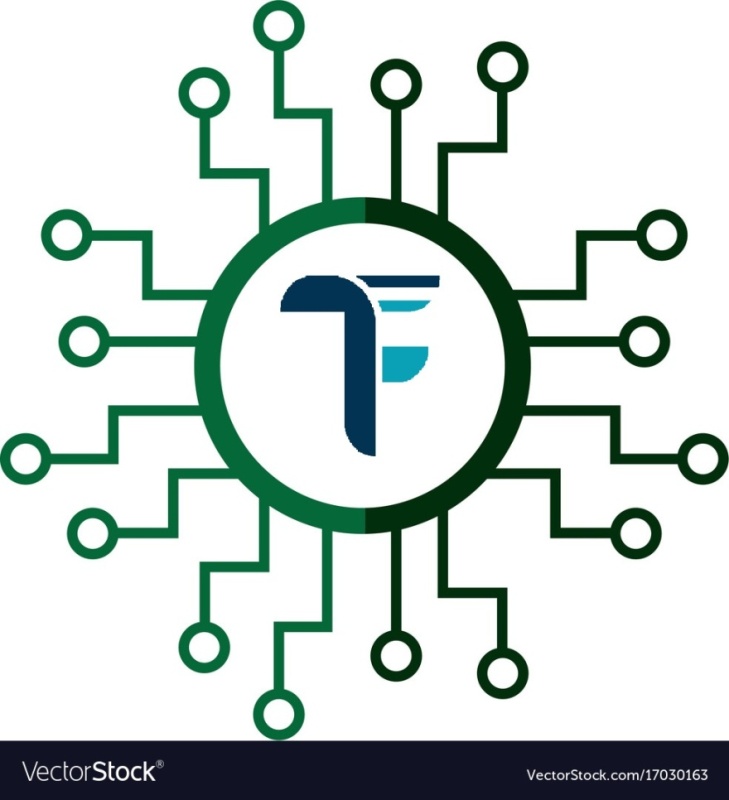
**Maximum time allotted for this event is *90* min.**

**Sample question:**

*Write a 8051 µc simulation program to control a two-way traffic signal system which must satisfy the required conditions:*

* *When there will be a red signal for one way, there will be a green signal for another one & vice versa for 1 min*
* *The yellow signal should blink for 10 seconds with a time period of 2 seconds before every green signal on either ways*

**Note : *In case of a tie-break, less execution time will be preferred. Special credits will be provided for less code size in terms of bytes. It will be the team’s choice whether they will implement the given problem using 8085 or 8086 microprocessor.***

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