UDYAM'23

ANNUAL TECHNICAL FEST OF ELECTRONICS ENGINEERING SOCIETY

ROUND-1

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The government launched the smart city mission with a vision to transform 100 cities across India into smart cities making them citizen friendly and sustainable. And the beloved city of lord Shiva, Varanasi is one of them. Public security at the crowded ghats of Kashi is one of the most challenging tasks for the government.

They want a system that can be used by the officers at the police station or security center for sending messages to the guards posted at the ghats, if they notice any trouble from the CCTV surveillance. For this, they asked the students of IIT BHU to come up with smart ideas which can be implemented at a minimal cost.

The students of the department of Electronics Engineering want to design a system which will display a unique signal for every unique message received by the guards. They are using morse code to send the message and a particular colour LED will glow for a particular message received. To check if the system will work properly, a circuit for only one message is being designed for testing. You need to help them in making the circuits by performing the given tasks.

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TASK:

Create a circuit that verifies that the word received is “HELP” in morse code.
The morse code used is different from the standard morse code and is given as:

H : ..
E : _
L : _.
P : ._

To validate the message received, create a circuit using a LED that glows up when the code entered is correct i.e “.._ _.._“ .

- (dot): binary 1

_ (dash): binary 0

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Components to be used:

Components	Weightage
Quadruple 2-Input Positive-AND Gates [74HC08]	10
Quad 2-input positive-OR gates [74HC32]	10
Quadruple 2-Input Exclusive-OR Gates [74HC86]	10
Triple 3-Input OR Gates[74HC4075]	15
Triple 3-Input Positive-AND Gates [74HC11]	15
Hex Inverters [74HC04]	15
Dual Positive-Edge-Triggered D-Type Flip-Flops With Clear And Preset [74HC74]	20
Dual JK Flip-Flops With Set And Reset [74HC76]	20
Synchronous 4-Bit Binary Counters[74HC163]	25
8-Bit Shift Registers With Tristate Output Registers[74HC595]	25
1-of-8 Data Selectors/Multiplexers[74HC151]	20
Resistor	5
Push Button	5
LED	5

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Submission guidelines:

- Every team should consist of maximum 2 members and only one submission per team is required.
- You have to simulate the circuit on proteus and submit the proteus file.
- Submit a pdf file explaining your approach to design the circuit.

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