Circuit-X

KRITI 2019

IIT GUWAHATI

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Secretary
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PROBLEM STATEMENT

The project aims to develop a system which analyses the image of a given digital (combinational) circuit and return the truth table for the same. You will be given a PNG image of a Digital Circuit generated from Multisim Online simulator(https://www.multisim.com/) as an input.

TASKS

1. Identification of type and number of gates in the circuit. (50 points).

2. Marking the start and the endpoints of the wire connecting the gates. (50 points)

3. Report for any discrepancy in the circuit (if present). For eg: broken connections. (100 points)

4. Predict the Truth table of the Circuit. (400 points)

5. The participating Hostels have to give a short PPT before the event, describing the Algorithms used. Hostels failing to give a PPT will not be awarded with any participation points.

JUDGING CRITERIA

1. Partial marks would be provided for task 1, 2 and 3, provided none of the predictions are incorrect.

2. For task 4, NO marks would be provided for partially correct truth table.

3. For the task 4 above, we will be testing it for 5 different circuits, with complexity of the circuit increasing with each correct prediction. (25+50+75+100+150 points)

SPECIFICATIONS

1. The circuit will contain at most 3 different external inputs, with each input marked with different colored dots.
   - 1st Input: RED
   - 2nd Input: GREEN (If present)
   - 3rd Input: BLUE   (If present)

2. There would be only 1 Output in the circuit, which would be marked with a YELLOW Dot.

3. The circuit would consist of only 2-input gates or 1-input gates.

4. The maximum number of gates present in a single circuit would be limited to 6 (six).

5. The shape and size of the gates would be the same as that of the PNG image generated from Multisim.

Sample test images have been uploaded on the following link for your reference. (tiny.cc/kriti_2k19_circuitx)

For any Queries related to problem statement, feel free to contact:

- Devashish Taneja (9654404275)
- Utkarsh Jaiswal (9565595642)

The following people are a part of Organizing team, hence cannot participate in the event in any form:

- Sri Harsha Vadathya   (Barak Hostel)
- Devashish Taneja   (Umiam Hostel)
- Utkarsh Jaiswal   (Umiam Hostel)
- Guining Pertin   (Kameng Hostel)
- Bipin Kumar   (Umiam Hostel)

Any Hostel found involving any of the above mentioned persons in the event in any form would directly be DISQUALIFIED from the event.