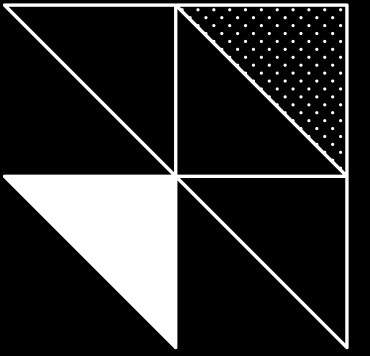




prastuti'22

DEPARTMENT OF ELECTRICAL ENGINEERING, IIT(BHU) VARANASI

15-17 APRIL



CONSILIUM PROBLEM STATEMENT-II

Register at : www.prastuti.in

@prastuti.iitbhu





Greetings to all Participants from Team Consilium!

First of all, Congratulations to our Sophomores on coming back to Campus. As for the Freshers, you might be aware that the Infrastructure Problem IIT-BHU faces is beyond comparison. The Number of Students that are being admitted via JEE is Increasing and the Number of Hostel Facilities to accommodate them are not keeping up with this Increasing Demand. While we welcome this change as Quality Education is a must and extending this to More Students is a Boon, the fact that this Education should be provided in a Placid Environment is a Must.



The Student Parliament has identified the Land behind Vishwakarma Hostel as being Apt for the Development of a New Aryabhata Hostel for Incoming Students of the College. For those unaware, almost all hostels in the College are related to the Unlucky Number of the Chinese - the Number '4'. Either the Hostels have 4 Gardens within or they have 4 Blocks or they have both. Your Mission should you choose to accept it (but don't worry this Message won't Self-Destruct in 15 seconds) is to Calculate the Area of the Square Piece of Land on which the New Hostel is to be built and also Determine the Area of each Block within the Hostel.



Task Description

- For any Number between 1-15, the Circuit should be able to Calculate and Output the Value of both the Area of the Land itself and the Area of each Block.
- Multipliers are generally frowned upon whilst using in the Circuit since they are both Costly and Inefficient Devices and can get really Cumbersome when being used for Large Binary Numbers.
- You need to be able to develop a certain Algorithm so that this Operation can be performed Efficiently without the need of a Multiplier.



Task for Round-2

- Implementing the Said Algorithm with the use of Combinational and Sequential Circuits.
- Representing the Output Binary Number(s) and for Bonus Points, display using a BCD.
- Design an Algorithmic State Machine (Flow chart and Next State Algorithm) for the Calculation of Area of Land.
- Design a State Diagram for the ASM and thus Represent the Values using a State Table.
- Simulate the Circuit in Proteus



General Rules

- Any Participant with Plagiarised Content will be Disqualified immediately without any Hesitation.
- Any One Participant can Participate through only One Team, otherwise the Participant and the Teams in which he/she is Present will be Disqualified.
- Submissions will be Accepted till **11:59 AM, 13-04-2022.**
- Any Changes in the Rules, Timings, Marking Schemes, etc. will be Notified.
- The Organizers reserve the Right to Change the Rules.
- All the Decisions Taken by the Organizers are Final and Binding.

Submissions



- The Answers must be Handwritten on Neat White Paper and Submitted as a Single PDF File.
- Every Team's allowed Only One Submission, which can be submitted by Any One of the Team Members.
- The PDF Name must be in the Following Format. Eg: If a Participant or Member of Team is Ayush Vatsa with Roll Number 19085105, studying in Electrical Department, submitting for Round-1, then the File should be Named as "19085105-R1-Ayush_Vatsa-Electrical".
- The Teams are required to submit their Solutions through the Google Form



For queries

ASHUTOSH PANDEY

+91 74893 99334

AADHAR SRIVASTAVA

+91 79824 10231

ATUL KUMAR

+91 62948 38787

L N SAASWATH

+91 70941 72606



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