UNIVERSAL ENGINEERING COLLEGE

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

ACTIVITY BASED LEARNING

EET206: DIGITAL ELECTRONICS

Semester:	**IV**	**Programme period:**	**2019-2023**
Faculty :	**Sreetha P S**	**Academic Year :**	**2020-2021**

Activity title	:	Chart Making
Location	:	A101
Date	:	06/03/2022
Participants	:	S4 EEE

Purpose of the Activity

The Chart Making of Flip-Flops activity aimed to help students understand the core concepts of flip-flops in digital electronics. Flip-flops are fundamental building blocks of sequential circuits, and mastering their operation is crucial for students pursuing careers in digital systems design. This activity was designed to provide students with a hands-on experience in creating visual aids such as charts and models to represent different types of flip-flops, their logic diagrams, and truth tables. The goal was to make abstract concepts like sequential logic and timing diagrams more tangible and easier to understand through visual representation.

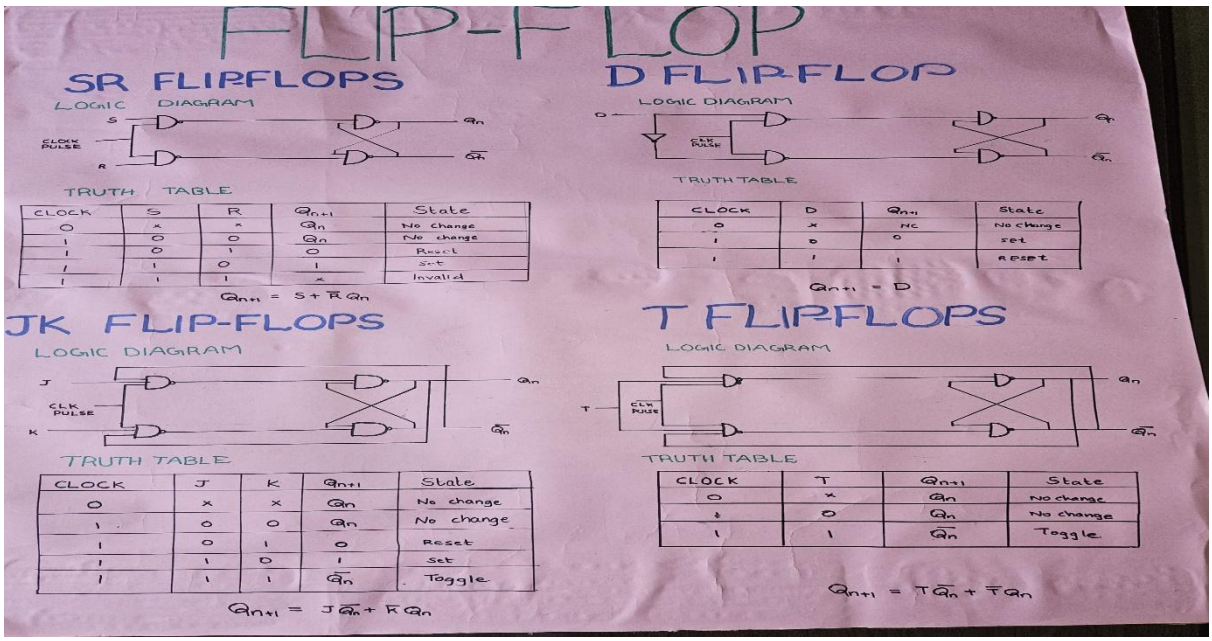
Activity Description

In this activity, students were tasked with creating charts that illustrated the four basic types of flip-flops: SR, D, JK, and T flip-flops. They worked in groups to construct charts that included:

- **Logic Diagrams**: The visual representation of the flip-flops, showing the interconnected logic gates (AND, OR, NOT gates) and how they form the flip-flop circuit.
- **Truth Tables**: The charts displayed the truth tables for each flip-flop, showing how the outputs (Q and Q') change based on different clock pulses and input combinations.

For each type of flip-flop, students constructed the logic diagram and the corresponding truth table:

- **SR Flip-Flop**: The students represented the set and reset operation, indicating how the output changes with different inputs.
- **D Flip-Flop**: Students visualized the input D, explaining how the output Q follows the input D with respect to the clock pulse.
- **JK Flip-Flop**: This flip-flop was represented with its more complex behavior, showing how both inputs J and K control the output state based on the clock pulse.
- **T Flip-Flop**: Students represented the toggle operation, demonstrating how the output toggles between 0 and 1 when the T input is high.



By creating these charts and models, students not only strengthened their understanding of the logic behind each flip-flop but also gained practical experience in designing and representing sequential circuits.

Conclusion

he Chart Making of Flip-Flops activity was an engaging and informative experience for students in EET 206: Digital Electronics. By physically creating the logic diagrams and truth tables, students were able to visualize and better understand the workings of flip-flops and their role in digital circuits. This hands-on approach helped solidify their knowledge of sequential logic and gave them the confidence to design more complex digital systems. Overall, this exercise proved to be a valuable tool in making the abstract concepts of digital electronics more accessible and practical.

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