

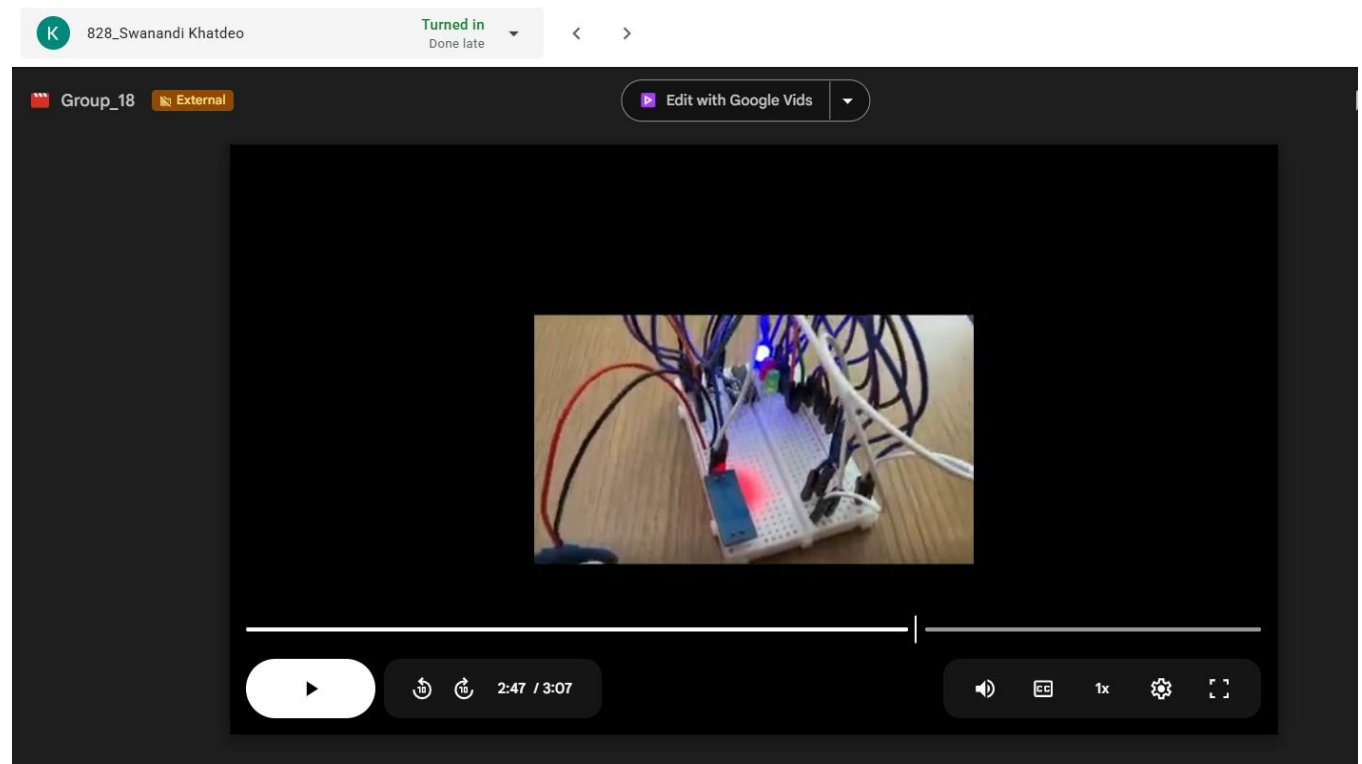
23 PCIT 303 Digital Electronics and Computer Architecture

Project-Based Learning (PBL) for DECA

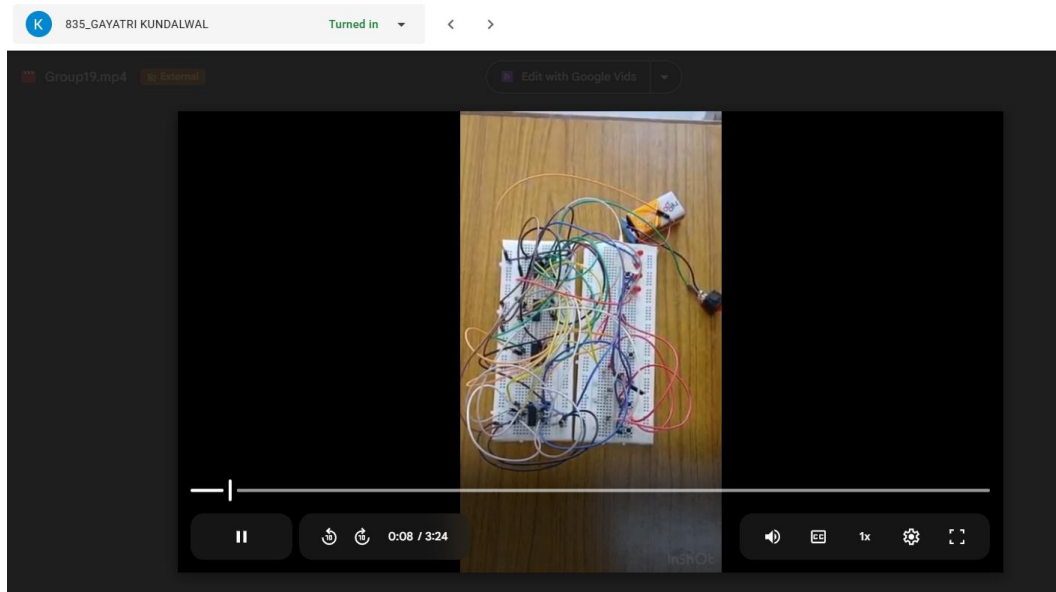
Description: Activity involves students working in groups to apply theoretical concepts learned in class to real-world Digital electronics solutions. In this pedagogy technique, students form small teams, brainstorm, and select a small practical Digital electronics project idea. Each team is tasked with designing, developing, and implementing a Digital electronics system, such as one bit comparator, binary multiplier, flip-flop lighting, BCD to seven segment display etc. This hands-on approach fosters collaboration, critical thinking, and problem-solving, enabling students to understand the practical applications of Digital electronics technologies and reinforcing their theoretical knowledge through experiential learning.

Students were asked to upload videos of their project demonstration in the Google classroom. Sample screenshots are shared below.

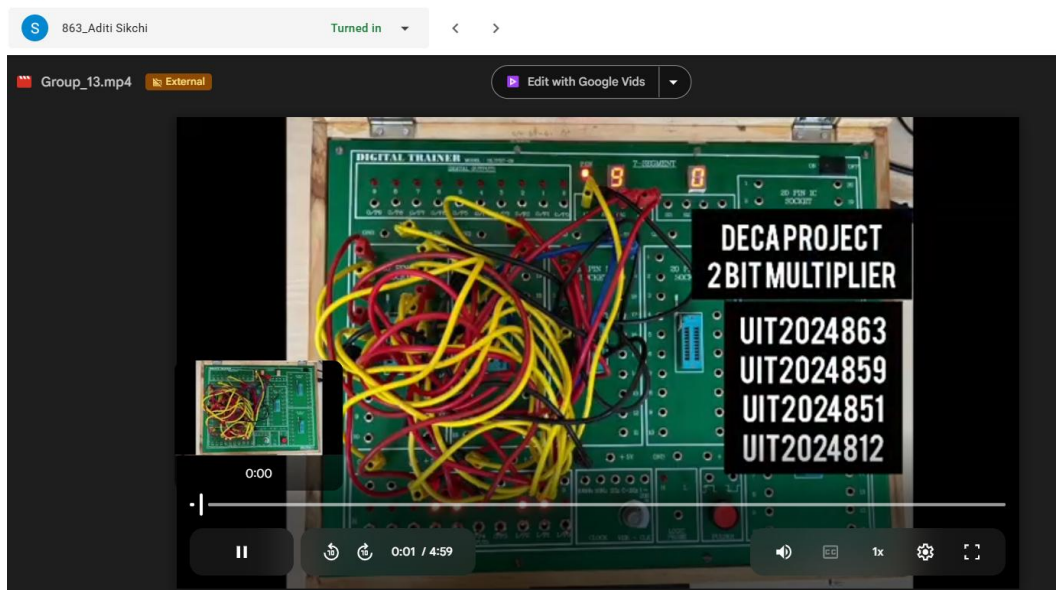
Project demonstration



Project demonstration



Project demonstration



Objective: The objective of this activity is to enable students to apply Digital electronics concepts in real-world projects, enhancing their technical and problem-solving skills. It fosters teamwork, innovation, and the practical integration of theory into hands-on IoT system development.

Impact: Students liked this new way of learning. The feedback was taken. It highlights a positive impact on students' learning experience. Students gained exposure to Digital electronics technologies. The hands-on nature of the project provided practical knowledge of integrating different electronic components, hardware, design, giving them valuable technical expertise. It

helps them to understand the importance of hardware and electronic system designing. This approach fostered a deeper connection between theoretical concepts and real-world applications.

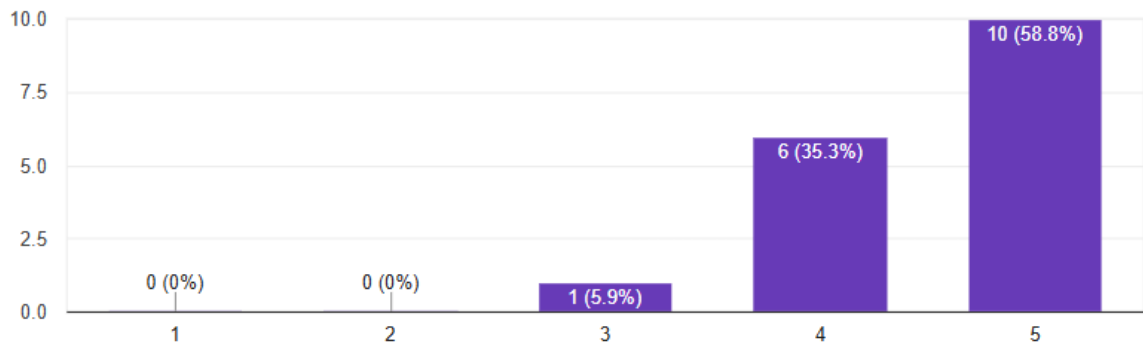
Feedback from students:

Section-I Course outcome

To what extent did the project help you in achieving Course Outcome;
Solve problems using basic binary arithmetic operations and codes

 [Copy chart](#)

17 responses

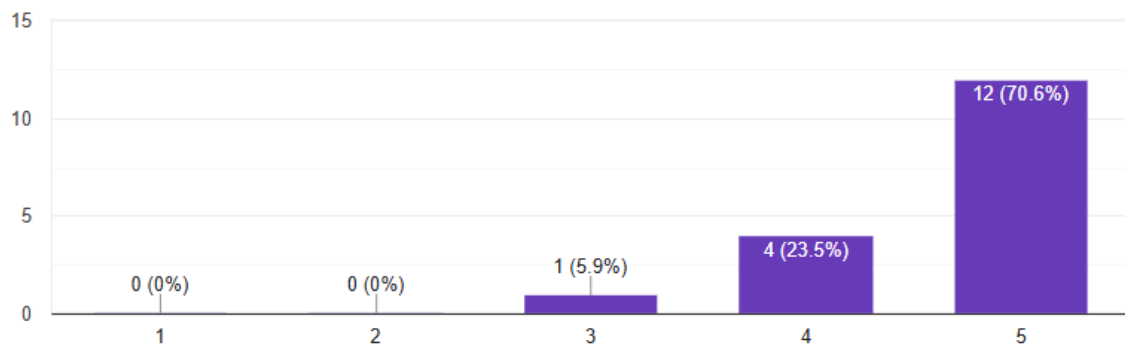


Section-II Activity Specific Feedback

How effective was the project in enhancing your understanding of Digital Electronics concepts?

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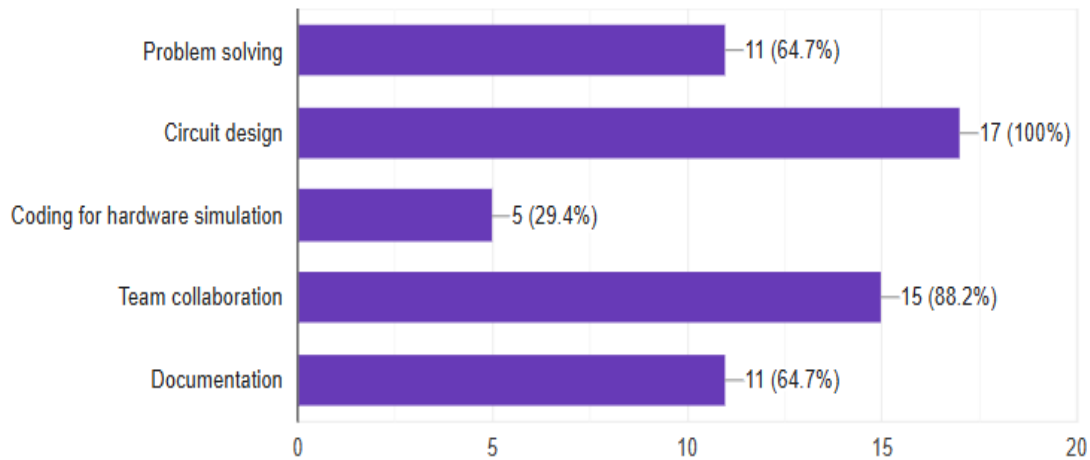
17 responses



Did the activity improve your skills in any of the following? (Select all that apply):

 [Copy chart](#)

17 responses



Which part of the project did you find most challenging? Why?

17 responses

The most challenging part was designing accurate timing intervals using the 555 timer IC and ensuring proper sequencing of the traffic lights. Selecting correct resistor and capacitor values to achieve stable and consistent delays required careful calculation and testing.

Circuit design

Finding the right components since they were unavailable at some of the stores.

Connecting LED's to proper location so that they blink properly

The most challenging part was setting the 555 timer to generate accurate 1-second pulses and connecting the CD4026 counters properly so the count moved correctly from 00 to 59.

When one connection goes wrong, the entire circuit fails from giving correct output. It becomes difficult to find the exact mistake or logical error.

The most challenging part of the project was achieving reliable touch detection without false triggering. Since the circuit depends on the very small electrical conductivity of the human body, even minor