CS224: Assignment 1

Weightage: 5%

Date of Demonstration: 21st January 2025 Lab Timing (2PM-5PM)

Problem Statement:

Implement the following Boolean function using Breadboard, ICs and Hookup Wires. You are allowed to any gate ICs.

1. $F(A, B, C, D) = \sum (0, 2, 3, 5, 7, 8, 9, 10, 11, 13, 15)$ using only 2-input NAND gates for Groups 1 to 8
2. $F(A, B, C, D) = \sum (0, 2, 3, 5, 7, 8, 9, 10, 11, 13, 15)$ using only 2-input NOR gates for Groups 9 to 16
3. $F(A, B, C, D) = \sum (0, 2, 3, 5, 7, 8, 9, 10, 11, 13, 15)$ using SUM of Product implementation for Groups 17 to 24
4. $F(A, B, C, D) = \sum (0, 2, 3, 5, 7, 8, 9, 10, 11, 13, 15)$ using Product of SUM implementation for Groups 25 to 31

Guidelines:

- All the member of the group need to be present at the time of Demonstration of the assignment. All the absent members will be awarded 0 marks for the assignment. Please show your ID card at the time of demonstration (as it is difficult to remember faces of all the 123 students of your batch).
- Grading will be based on (a) Correctness, (b) Quality of design, (c) Wire optimization, (d) Optimum number of chip used, (e) Cleanliness in design (Wire and Chips should be organized to look good), (f) Use of proper Comment/Naming/Labeling of the wires and (g) Questionnaire and explanation.
- Please show a clear diagram of your design to the Tas.

Support:

- Breadboard and required ICs will be issued my Mr. Hemanta Nath (Hardware Lab in Charge). You are not allowed to take Breadboard out of the Hardware Lab. You have to carry out the entire Breadboard Assignment in the Lab.

Upload:

Upload a report (i) describing the process to obtained the design, (ii) a clear diagram of the design (hand drawn is fine) (ii) a picture of the circuit in the breadboard that you have done. Submit is as a single PDF file.