1. In hospitals, babies sometimes need to be kept warm in incubators for a period of time after birth. Temperature is measured numerically with binary output of 4 bits (0 to 15). Design a system that will sound an alarm if the incubator gets too cold; less than 10 degree

2. Polycarp, omkar and alice are three miners in a blockchain system. For each of the query the compute some data and try to match with each other if the query is right or wrong. The majority of matches always wins. Design a system that will output majority result

3. Casimir has a string 's' which consists of capital Latin letters 'A', 'B', and 'C' only. But he has two crushes, Alicia and camelia. He can pip on one of the crushes at a time, according to the string given. Ie : if position A is true then he will pip into Alicia's window. Now he wants your help to decide for if it possible for him to see any if the crushes or not.

4. In a simple copy machine, a stop signal, S, is to be generated to stop the machine operation and energize an indicator light whenever either of the following conditions exists: (1) there is no paper in the paper feeder tray; or (2) the two microswitches in the paper path are acti- vated, indicating a jam in the paper path. The presence of paper in the feeder tray is indicated by a HIGH at logic signal P. Each of the microswitches pro- duces a logic signal (Q and R) that goes HIGH whenever paper is passing over the switch to activate it. Design the logic circuit to produce a HIGH at output signal S for the stated conditions, and implement it using the Nand Gate.

5. Design a logic circuit that will allow a signal to pass to the output only when control inputs B and C are both HIGH; otherwise, the output will stay LOW.