DLD Online 1

Section B2

There are 6 boolean functions in the following page. **There are students ids written beside each problem.**

- You have to implement the boolean functions using **ONLY** the following IC chips in your circuit: ***IC 74x04, IC 74x08*** *and* ***IC 74x32****.*
- Each student will have to implement **only** the function having his/her student id written beside (Check next page).
- The online carries 10 Marks.
- Name you submission as STUDENT_ID.circ (e.g., **1905006.circ**). Submit the file in the moodle.
- **Time: 30 minutes + 5 Minutes to submit in Moodle.** Submissions made after this period will not be evaluated.

Step 1 (7): Given a **4**-bit Boolean input $X=X_3X_2X_1X_0$. Implement a Boolean function:
$F(X) =$

1. $X_1'(X_3X_2+X_2'X_0)+X_3'X_0(X_2'+X_1)$ [student id: **91,97,103,109,115**]
2. $X_1(X_3X_2+X_3'X_0)+X_3'X_2'(X_1'+X_0)$ [student id: **92,98,104,110,116**]
3. $X_2(X_3'X_0+X_1X_0')+X_1X_0(X_3'+X_2')$ [student id: **93,99,105,111,117**]
4. $X_2'(X_3X_1'+X_1X_0)+X_3'X_1(X_2+X_0)$ [student id: **94,100,106,112,118**]
5. $X_3'(X_2'X_1'+X_2X_0)+X_2X_0(X_3+X_1')$ [student id: **95,101,107,113,119**]
6. $X_3(X_2X_0'+X_1X_0)+X_1'X_0'(X_3'+X_2)$ [student id: **96,102,108,114,120**]

Step 2 (1): Create a circuit with **4** input bits X_3, X_2, X_1, X_0 and **2** output bits $F(X)$, $F(X)'$. (Hence, **4** input pins and **2** output pins)
Step 3 (2): For given two **4**-bit Boolean inputs ***A*** and ***B***, use the created circuit to calculate $F(A)'F(B)+F(A)F(B)'$. (**2** input pins, each with **4** data bits)

Evaluation

Problem	Teacher's Initial	Link
1 and 2	MB	https://bdren.zoom.us/j/64234432263
3 and 4	SSA	https://bdren.zoom.us/j/62038199284
5 and 6	MMM	https://bdren.zoom.us/j/64434053593?pwd=OXkrckUwNjdLUnBzU3VWOVUrTFpmdz09