CSC364/CSCM64 Lab 4

To be solved in groups of two or three.
Last day for lab sign-off: 28th March 2022

Task 1. Consider the boolean formula

$$(\textbf{not } A \textbf{ and } B) \textbf{ and } (C \textbf{ or } D). \tag{1}$$

Assume that each logical connective in the formula 1 is implemented using a suitable logic gate. The following test suite is designed to test the implementation:

Case	A	B	C	D	Expected Output
1	T	T	T	F	F
2	F	T	F	F	F
3	T	F	T	T	F
4	F	F	F	F	F

It is obvious that this test suite does not satisfy the MC/DC criterion (why?).

1. Use the first four steps of the five-step evaluation process introduced in the lectures to decide for each individual gate whether the test suite provides MC/DC for that gate (in the sense of the masking approach). Where the test suite does not provide MC/DC for a gate, list all missing test cases. Make all four steps clearly visible.

2. Add further test cases to the above test suite to make it satisfy the MC/DC criterion (in the sense of the masking approach). What is the smallest number of test cases one needs to add?