

Purpose	(i) To learn the electronic engineering 'Sum-of-Products' design approach, (ii) To discover how logic and language are related.
Files Required	Logisim Software (open source)
ILO Contribution	LO 4
Send to Me	nix
Homework	Read chapter 11 (WIP)

Language Statements, Truth Tables, Mini-terms and Digital Simulation

Here we shall work a number of problems each consisting of switches as inputs to some logic process, and a single light as outputs. The behaviour of each problem will be described through several statements in English language shown in bold italics. For each problem you will

- Complete the truth table
- Add mini-terms to the truth table
- Deduce a logical expression $L = \dots$ for the problem
- Implement this using **Logisim**
- Write down in English the simplest statement for the light turning on.

Logical connectives are shown like this: **and**, **or**, **not**

- 1 There are two switches **A** and **B**

The light turns on in either of two cases. Either when A is not pressed and when B is not pressed. Or when A is not pressed, and B is pressed.

Now complete (a) to (e)

- 2 There are two switches **A** and **B**

The light turns on in either of two cases. Either when A is pressed and when B is not pressed. Or when A is pressed, and B is pressed.

Now complete (a) to (e)

- 3 There are two switches **A** and **B**

The light turns on in either of three cases. Either when A is not pressed and when B is not pressed. Or when A is not pressed and B is pressed. Or when A is pressed and B is not pressed.

Now complete (a) to (e)

4 There are two switches **A** and **B**

The light turns on in either of three cases. Either when A is not pressed and when B is not pressed. Or when A is not pressed and B is pressed. Or when A is pressed and B is pressed.

Now complete (a) to (e)
