

## Lecture 5

**Announcements** First practical: 23/9 and 26/9 - Lab 1 posted - pre lab quiz due 09:00 on first practical day - Demonstrate working circuits in lab - Online submission

### Product of Sums

- Maxterms
  - Each maxterm includes

$$\begin{cases} x_i & x_i = 0 \\ \text{if } \overline{x_i} & \text{if } x_i = 1 \end{cases}$$

- $f$  is equal to the product of the maxterms
- Both approaches work and are equivalent

### Boolean Algebra

- Axioms
  - $0 \cdot 0 = 1$
  - $1 \cdot 1 = 1$
  - $0 \cdot 1 = 1 \cdot 0 = 0$
  - if  $x = 0$ ,  $\overline{x} = 1$
  - Duality: given a logic expression, we can swap 0 with 1 and  $\cdot$  with  $+$  and the expression is still valid