INF2270, exercise on combinational logic

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Abstract

In this exercise you can test your skills in simplifying combinational logic using the tools of Boolean logic, truth tables and Karnaugh maps

1. Analyse the combinational logic circuits in figure 1 and write down the corresponding Boolean function!
2. Write down the functions as truth tables!
3. Use the tables to write Karnaugh maps!
4. Use the Karnaugh maps to derive minimal 'sum of products' Boolean functions!
5. Draw the resulting combinational logic circuit!

Note that the resulting circuit might not always have a smaller gate count, but it will always be a standard format with only ANDs and ORs, which can be an advantage for implementation too.

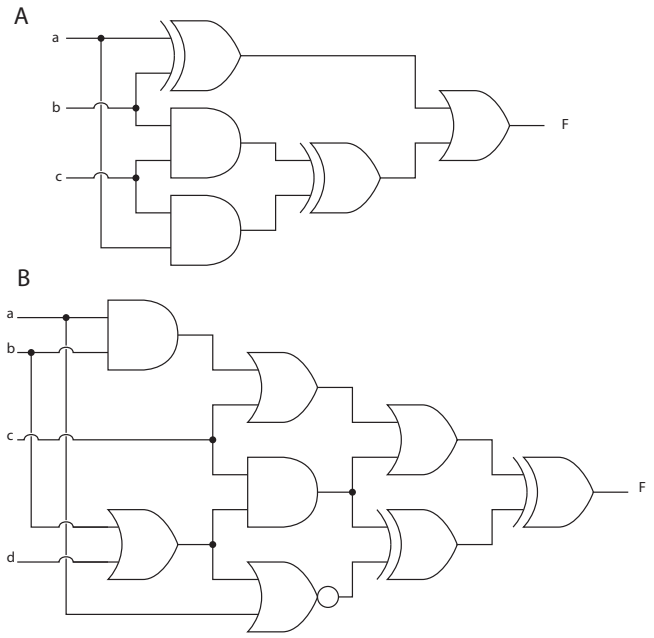

Figure 1: Two examples of (overly complicated) combinational circuits