

Formal Languages and Computability 12

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1 Let us consider the DPLL algorithm with

$$\Phi = (x_1 \vee \bar{x}_4 \vee x_3) \wedge (\bar{x}_1 \vee x_2 \vee \bar{x}_4) \wedge (\bar{x}_3 \vee \bar{x}_4 \vee x_2) \wedge (\bar{x}_2 \vee x_3 \vee x_4) \wedge (x_4) \wedge (\bar{x}_1 \vee \bar{x}_3 \vee \bar{x}_4).$$

- a) Carry out the unit clause propagation step for one (or more) unit clauses.
- b) Identify pure literals, set them true, and simplify the expression further.

2 Suppose a company has 5 contractors that supply the resources $a - d$.