

CSE 103: Discrete Mathematics

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Chapter 1, Section 2

Problem 6:

You can upgrade your operating system only if you have a 32-bit processor running at 1 GHz or faster, at least 1 GB RAM, and 16 GB free hard disk space, or a 64-bit processor running at 2 GHz or faster, at least 2 GB RAM, and at least 32 GB free hard disk space. Express your answer in terms of u : “You can upgrade your operating system,” b_{32} : “You have a 32-bit processor,” b_{64} : “You have a 64-bit processor,” g_1 : “Your processor runs at 1 GHz or faster,” g_2 : “Your processor runs at 2 GHz or faster,” r_1 : “Your processor has at least 1 GB RAM,” r_2 : “Your processor has at least 2 GB RAM,” h_{16} : “You have at least 16 GB free hard disk space,” and h_{32} : “You have at least 32 GB free hard disk space.”

Solution:

If I can upgrade my operating system, then I must satisfy the requirements:

$$u \rightarrow ((b_{32} \wedge g_1 \wedge r_1 \wedge h_{16}) \vee (b_{64} \wedge g_2 \wedge r_2 \wedge h_{32}))$$