

Hand-in @ lecture #5

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1.3.12

Let $I(x)$ be 'x has an Internet connection', and
let $C(x, y)$ be 'x and y have chatted over the Internet', where
 S is 'all students in this class' and
 $x \in S$ and
 $y \in S$

a)

The expression 'Jerry does not have an Internet connection.' can be expressed in propositional logic as $\neg I(a)$.

b)

The expression 'Rachel has not chatted over the Internet with Chelsea.' can be expressed in propositional logic as $\neg C(b, c)$.

c)

The expression 'Jan and Sharon have never chatted over the Internet.' can be expressed in propositional logic as $\neg C(d, e)$.

d)

The expression 'No one in the class has chatted with Bob.' can be expressed in propositional logic as $\exists!x C(x, f)$.

1.3.18

a)

'At least one console must be accessible during every fault condition.'

Let $A(x)$ be 'console is accessible' for any x in consoles, and $F(x)$ be 'condition is at fault' for any x in conditions.

$$\forall x \exists y (F(x) \wedge A(y))$$

b)

'The e-mail address of every user can be retrieved whenever the archive contains at least one message sent by every user on the system.'

Let $A(x)$ be 'address of user can be retrieved' for any x in users, and $Z(x)$ be 'archive contains message' for any x in messages, and $O(x, y)$ be 'message was sent by user' for any x in messages and y in users, and $S(x)$ be 'user is on the system' for any x in users.

$$\forall x (\exists y (Z(y) \wedge O(y, x)) \rightarrow A(x))$$

c)

'For every security breach there is at least one mechanism that can detect that breach if and only if there is a process that has not been compromised.'

1.3.50

1.3.56