

CS103 MT1 Review

Propositional Logic

De Morgan's Laws

Important Equivalences

First Order Logic

Building Blocks

MT1 Q3

In the novel Norwegian Wood by Haruki Murakami, the character Nagasawa says: “If you only read what everyone else is reading, you can only think what everyone else is thinking.” This question explores the first-order logic structure of this sentence.

We are given the predicates:

- **Reads(x, b)**, which states that x is a person that reads b
- **Thinks(x, t)**, which states that x is a person that thinks t

And we are given the constant:

- **You**, representing yourself

MT1 Q3 (i) - Intuition

Translate the statement “you only read what everyone else is reading” into first-order logic. You should interpret the statement to mean “if you read something, there is someone other than you who has read that too”.

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Building Blocks:

MT1 Q3 (i) - Solution

Translate the statement “you only read what everyone else is reading” into first-order logic. You should interpret the statement to mean “if you read something, there is someone other than you who has read that too”.

We are given the predicates:

- **Reads(x, b)**, which states that x is a person that reads b
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And we are given the constant:

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MT1 Q3 (i) - Common Mistakes

Translate the statement “you only read what everyone else is reading” into first-order logic. You should interpret the statement to mean “if you read something, there is someone other than you who has read that too”.

We are given the predicates:

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And we are given the constant:

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MT1 Q3 (ii) - Translation

Now, take the negation of your statement from part (i) and simplify as much as possible. As a sanity check, the first-order logic you get for this part should mean: “there is something that you read and no one else has read”

We are given the predicates:

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- **Thinks(x, t)**, which states that x is a person that thinks t

And we are given the constant:

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Building Blocks

MT1 Q3 (ii) - Negation

Now, take the negation of your statement from part (i) and simplify as much as possible. As a sanity check, the first-order logic you get for this part should mean: “there is something that you read and no one else has read”

We are given the predicates:

- **Reads(x, b)**, which states that x is a person that reads b
- **Thinks(x, t)**, which states that x is a person that thinks t

And we are given the constant:

- **You**, representing yourself

Important Equivalences