

Logic and Computation Notes

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Contents

1	1/7, Defining Functions	1
2	Course Plan	1

1 1/7, Defining Functions

mk-requests:(ListID)

$$\forall S, \forall r, \forall a, \exists R, \text{mk-requests}(S, r, a) = R$$

$$\forall S, \forall r, \forall a, \forall R, \text{mk-requests}(S, r, a) = R \implies \sum_{(\text{fr}, \text{to}, \text{amt})} \text{amt} = a$$

$$\forall S, \forall r, \forall a, a < 0 \implies \nexists R, \text{mk-requests}(S, r, a) = R$$

Advantages of proofs:

- Computable - we can turn these statements into tests and proofs
- Independent - decoupled from the code itself. We don't need to worry about runtime in order to test.

Coding a property?

Because we are universally quantifying, we would generally need to enumerate over the entire set of each \forall

Write a testing harness to substitute for the enumeration. Use randomness to generate test data.

2 Course Plan

Modules:

1. Programming and PBT
2. Engineering with Abstractions
3. Analyzing Programming Languages