

Principles of Programming Languages - Homework 11

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1 Problem 1

(a)

$t_0 <: t_1$: type t_0 can be safely substituted by values of type t_1 .

(i) True: Number can safely be substituted by values of Number.

(ii) True: Boolean can safely be substituted by values of Number.

(iii) True: Number can safely be substituted by values of Any.

(iv)

(v)

(vi) False

(vii) True: since $\{\}$ is a subtype of Any, and $\{\text{const f: } \{\}\}$ is a subtype of $\{\text{const f: any, var g: bool}\}$.

(viii)

(ix) True

(b)

I'm gonna assume for all of these y actually equals x. Or the variable at the top is supposed to be called y.

(i)

(ii)

(iii)

(iv)