F10 Exercise

Course in Semantics · Ling 531 / 731

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Key

Note on domains: When we assume a domain, we can simply define it (as an axiom). The typical way to define something like this is one of the two following:

a. Let D_e be the set of all entities

b. D_e = { x | x is an entities }

This is why we could replace { x | x is a KU student } in the handout with Z or whatever variable we like.

1. Fill in the blank spots, with a characteristic set or a function in λ-notation.

(1)	{ x ∈ D | x runs }	f : D → {1,0} For all x, f(x) = 1 if and only if **x runs**.	λx ∈ D. runs(x)
(2)	{ x ∈ C | x woke up }	f : D → {1,0} For all x, f(x) = 1 if and only if **x woke up**.	λx ∈ D. [woke up](x)
(3)	{ x ∈ C | x laughed }	f : C → {1,0} For all x, f(x) = 1 if and only if **x laughed**.	λx ∈ C. laughed(x)

2. Write the denotations of the following English expressions as functions, using the λ-notation.

1. *sit*
   λx ∈ D. sit(x)
2. *happy*
   λx ∈ D. [is happy](x)
3. *hurry*
   λx ∈ D. hurry(x)

3. β-Convert each of the following λ-expressions (*i.e.* give the result of plugging in these arguments). Then, give the English expression that corresponds to that result.

1. [λx ∈ D. barks(x)](Fido) — barks(Fido) ; Fido barks
2. [λy ∈ D. [is singing](y)](Eleanor) — [is singing](Eleanor) ; Eleanor is singing
3. [λy ∈ D. orange(y)](Snoopy) — orange(Snoopy); Snoopy is orange