

CS 3723: Programming Languages

Feb 22, 2012

You Name:

1. A lambda calculus expression is in the normal form if it
 - (a) cannot be further reduced or simplified
 - (b) does not have any naming conflict
2. Lambda calculus is said to be confluent because
 - (a) If a lambda calculus expression has a normal form, the normal form is unique.
 - (b) All lambda calculus expressions can be reduced to a normal form.
3. Which of the following statements about ML is incorrect?
 - (a) It is a compiled functional programming language;
 - (b) Every expression in the program can have only a single type;
 - (c) It supports functions as first-class objects;
 - (d) It determines the types of expressions at runtime;
 - (e) It supports modifications to variables and loops;
 - (f) It automatically infers the types of undeclared variables;
4. Which of the following are correct expressions in ML? Declare the type for each valid expression.
 - (a) `null []`
 - (b) `hd [7,"c"]`
 - (c) `tl(3::[4,5])`
 - (d) `(3,"c",[5])`
 - (e) `#2 (3,"c",[5])`
 - (f) `5 + 7.9`
 - (g) `{First=3, next="mine"}`
 - (h) `#First {First=3, next="mine"}`
 - (i) `fn x=> (ref x) = 5`
 - (j) `fn x=> (ref x) := 5`