homework 1, CS 421

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Apply ρ_i to denote the environment at the ith point.

1) $\rho_1 = \emptyset$
2) $\rho_2 = \{a \to 10, x \to 21\}$
3) $\rho_3 = \{\{f \to< x \to y \to x - y + a, \rho_2 >\} + \rho_2\}$
4) $\rho_4 = \{\{b \to 21, a \to 5, x \to 21\} + \{f \to< x \to y \to x - y + a, \rho_2 >\}\}$, ρ_3 is put into the stack.
5) ρ_3 is retrieved from the stack, $\rho_5 = \rho_3$
6) $\rho_6 = \{\{f \to< x \to y \to x - y + a, \rho_2 >\} + \{a \to 10, x \to 1\}\}$
7) $\rho_7 = \{\{h \to< y \to f\ 2\ 20, \rho_6 >\} + \rho_6\}$
8) ρ_7 is put into the stack,

$$\rho_8 = \{\{h \to< y \to f\ (y+4), \rho_7 >\} + \{f \to< x \to y \to x * y, \rho' >\} + \rho''\}$$

   where $\rho' = \{\{h \to< y \to f\ (y+4), \rho_7 >\} + \rho_6\}$, $\rho'' = \{a \to 10, x \to 1\}$
9) ρ_7 is retrieved from the stack, and $\rho_9 = \rho_7$