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COL226 | Programming Languages | Quiz 4
March 16, 2017 | 10 minutes | Maximum Marks: 10

Q1 (10 marks) Unification.

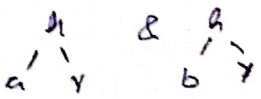
For each of the following pairs of terms, provide the *most general unifier* if it exists, and otherwise indicate why unification fails. The unifier must be given in its reduced form (as a finite domain function from variables to terms).

1. $f(h(a,Y),X)$ and $f(X,h(b,Y))$.

The unification fails, because if we proceed with the algorithm we get

$\sigma_1 = \{ X \to h(a,Y) \}$

Now finding mgu of (t_2, u_2) ⇒ we need to find the mgu of



which fails as $a \neq b$ (different constants)

2. $f(h(X,a),Y)$ and $f(Z,h(b,X))$.

The most general unifier is

$Z \mapsto h(X,a)$

$Y \mapsto h(b,X)$

3. $f(h(a,X),X)$ and $f(Y,h(Y,b))$.

The unification fails as when we first apply unification on $h(a,X)$ & Y we get $Y \mapsto h(a,X)$ but on applying on X & $h(Y,b)$ we need to get unification on X & $h(h(a,X),b)$ which fails as it contains X

4. $f(h(a,X),h(X,b))$ and $f(h(a,b),h(Z,X))$.

the unification is.

mgu = $X \mapsto b$

$Z \mapsto b$

10/10