Module 7 Self Check

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1 Unification

1. unify(Fred, Barney)
   Result: Fail, both are constants not really any steps to this one
2. unify(Pebbles, Pebbles)
   Result: No unification needed as Pebbles=Pebbles
3. unify((quarry_worker Fred), (quarry_worker ?x))
   Step 1: quarry_worker = quarry_worker, no sub needed
   Step 2: ?x = Fred via unification
   Result: {?x = Fred}
4. unify((son Barney ?x), (son ?y Bam_Bam))
   Step 1: son=son so no sub
   Step 2: Barney = ?y
   Step 3: ?x = Bam_Bam
   Result: {?y=Barney, ?x=Bam_Bam}
5. unify((married ?x ?y), (married Barney Wilma))
   Step 1: married=married no sub
   Step 2: ?x = Barney
   Step 3: ?y = Wilma
   Result: {?x = Barney, ?y = Wilma}
6. unify((son Barney ?x), (son ?y (son Barney)))
   Step 1: son=son no sub
   Step 2: ?y = Barney
   Step 3: ?x = son Barney
   Result: {?y = Barney, ?x = son Barney}
7. unify((son Barney ?x) (son ?y (son ?y)))
   Step 1: son=son no sub
   Step 2: ?y = Barney
   Step 3: son ?y = son Barney
   Step 4: ?x = son Barney
   Result: {?y = Barney, ?x = son Barney}

8. unify((son Barney Bam_Bam), (son ?y (son Barney)))

   Step 1: son=son no sub

   Step 2: ?y=Barney

   Step 3: Bam_Bam != (son Barney)

   Result: Fail, Bam_Bam cannot be unioned with son Barney (Constant to Compound)

9. unify((loves Fred Fred), (loves ?x ?x))

   Step 1: loves=loves, no sub

   Step 2: ?x=Fred

   Result {?x=Fred}

10. unify((future George Fred), (future ?y ?y))

    Step 1: future=future no sub

    Step 2: ?y=George

    Step 3: Can't reassign ?y

    Result: Fail, Cannot set 2 different constants to ?y

2 Pseudocode Walkthrough

unify((son Barney ?x), (son ?y (son Barney))

Step 1: First constants are both son, they hit the base case and we continue

Step 2: Barney and ?y, We pass base case as first is constant and second is a variable, pass second if statement but hit the third. Substitute ?y and Barney return: {?y \ Barney}

Step 3: Apply substitution: unify(son Barney ?x), (son Barney (son Barney))

Step 4: Pass base case, hit second if statement. ?x = son Barney return {?x \ son Barney}

Result: {?y \ Barney, ?x \ son Barney}