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**Logic Self Check**

**Unification**

**1. For each pair of expressions, show the substitution list if there is a valid unification or FAIL if there is not and why the unification fails. Variables begin with a “?”**

|  |  |  |
| --- | --- | --- |
| Expression 1 | Expression 2 | Result |
| Fred | Barney | Θ = {} |
| Pebbles | Pebbles | Θ = {} |
| (quarry\_worker Fred) | (quarry\_worker ?x) | Θ = {x/Fred} |
| (son Barney ?x) | (son ?y Bam\_Bam) | Θ = {x/Bam\_Bam} |
| (married ?x ?y) | (married Barney Wilma) | Θ = {x/Barney, y/Wilma} |
| (son Barney ?x) | (son ?y (son Barney)) | Θ ={y/Barnet, x/son Barney} |
| (son Barney ?x) | (son ?y (son ?y)) | Θ ={x/Barney, y/Barney} |
| (son Barney Bam\_Bam) | (son ?y (son Barney)) | Θ = {y/Barney} |
| (loves Fred Fred) | (loves ?x ?x) | Θ = {x/Fred} |
| (future George Fred) | (future ?y ?y) | Failed because y != Fred and George |

**2. Go back to (son Barney ?x) and (son ?y (son Barney)) and trace out the execution of the pseudocode provided for the programming assignment. Note at each step what could be different for unification to fail.**

* expr1 is son and expr 2 is son as well it will return {}
* exp2 is variable ?y and exp1 is Barney it will return {?y/Barney}
* exp1 is variable ?x and exp1 is [“son”, “Barney”] it will return {?x/[son barney]}

The result would be following:

Result = {?y : Barney, ?x: [son, Barney]}