Logic Self-Check

605.645 – Artificial Intelligence

The purpose of this self-check is to make sure you understand key concepts for the algorithms presented during the module and to prepare you for the programming assignment. As you work through problems, you should always be thinking "how would I do this in code? What basic data structures would I need? What operations on those basic data structures?"

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	_____
Pebbles	Pebbles	_____
(quarry_worker Fred)	(quarry_worker ?x)	_____
(son Barney ?x)	(son ?y Bam_Bam)	_____
(married ?x ?y)	(married Barney Wilma)	_____
(son Barney ?x)	(son ?y (son Barney))	_____
(son Barney ?x)	(son ?y (son ?y))	_____
(son Barney Bam_Bam)	(son ?y (son Barney))	_____
(loves Fred Fred)	(loves ?x ?x)	_____
(future George Fred)	(future ?y ?y)	_____

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.