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**Metropolitan State University**

**ICS-365-01 —Organization of Programming Languages**

**Homework #9**

1. Write the following English conditional statements as Prolog headed Horn clauses:

a. If Fred is the father of Ted, then Fred is an ancestor of Ted.

ancestor(Fred, Ted) :- father( Fred, Ted).

b. If Mike is the father of Fred and Mike is the father of Mary, then Mary is the sister of Fred.

sister(Mary, Fred) :- father(Mike, Fred), father(Mike, Mary).

c. If Mike is the brother of Fred and Fred is the father of Mary, then Mike is the uncle of Mary.

uncle(Mike, Mary) :- brother(Mike, Fed), father(Fred, Mary).

2. What does it mean for a language to be procedural?

Answer: It means that follows, in order, a set of commands. The procedural languages are some of the common types of programming languages used for script and software programmers like C, C++, Java, BASIC…etc.

3. What does it mean for a language to be non-procedural?

Answer: It means that, declarative rather then procedural. Only specification of results are stated and not detailed procedures for producing them. Declarative language concentrate on defining the input and output rather than the program steps required in a procedural programming language like C++ and Java.

1. What are antecedents? What are consequents?

Answer:

Antecedents: The right side of Clause Form. Or is the first half of a hypothetical proposition.

Consequents: The left side of Clause Form. Or is the second half of a hypothetical proposition.

For example code:

likes(Ping, Pong) :- likes(Pong, fish).

English: “if Pong likes fish, then Ping likes Ping.”

Antecedents: right side “Pong likes fish”.

Consequents: left side: “Ping likes Pong”.