**Workshop 2**

Exercise 2:

(1) The left hand part of a rule is called the rule Head whilst the sub-goals on

the right hand side are called the Body of the rule.

(2) Draw the solution tree for the bird(X) query whose execution is shown traced in

section 2.2.

**bird**

**vertebrate**

**feathered**

**pillow**

**kestrel**

**cat**

(4) Put the following facts into Prolog's database:

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event(battle\_of\_hastings, 1066).

event(plague\_of\_london, 1665).

event(fire\_of\_london, 1666).

event(man\_on\_the\_moon, 1969).

Define a rule happened\_before(X,Y) which defines the relation that event X happened

before event Y, and use it to obtain all such pairs of events. You will need to use the

system predicate <, less than. For example ?- (5 < 7). succeeds. Suitably instantiated

variables can be used either side of < instead of numbers.

happened\_before(X, Y) :- event(X, Y),(Y < 1960).

(5) Tom dislikes anyone in the third year who likes Dave. Dave only likes hard workers

and first years. Pete and Nigel are in the first year, Sam and Jane are in the third year.

Sam and Pete dislike Dave and like Tom. Jane likes Dave. Pete, Nigel and Jane are

all hard workers. Use Prolog to express the facts and rules (remember to start the

students' names with a lower-case letter) and find out: Who does Tom dislike?

person(jane, 3, hard\_worker, ld,\_).

person(pete, 1, hard\_worker, dd, lt).

person(sam, 3, \_, dd, lt).

person(nigel, 1, hard\_worker, \_, \_).

dave\_likes(X) :- person(X, Y, Z,\_,\_), (Y = 1), (Z = hard\_worker).

tom\_dislikes(X) :- person(X, Y, \_, Z,\_), (Y = 3), (Z = ld).

(6) Introduce the following car facts into the database alongside those we have met

previously:

car(ford, capri, injection,uk, 2800, sports, 11200).

car(alfa\_romeo, sprint, veloce, italy, 2000, coupe,

12500).

car(volvo, 928, gls, sweden, 1400, hatchback, 6290).

car(mitsubishi, colt, glx, japan, 1800, estate, 7420).

car(mercedes, roadster, 280, germany, 2800, convertible,

18450).

Write a set of facts that gives points for the type of car body according to the following

table:

type points

estate 1

saloon 2

hatchback 1

sports 3

coupe 5

convertible 7

(7) Write a rule that uses the facts and the risk\_for\_capacity rule already given to give

the total points scored by a car for engine capacity and body type. This will entail

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adding together the points for the capacity and the points for the body type. The car is

to be identified by the manufacturer and model.

**total\_points(Mk, Mod, Total) :-**

**car(Mk, Mod, \_, \_, Cap, Type, \_),**

**type\_point(Type, Y),**

**risk\_for\_capacity(Cap, Z),**

**(Total is (Y + Z)).**

**?- total\_points(Mk, Mod, Total).**