

## F28PL1 Programming Languages Tutorial 9

A) Write Prolog clauses for the following scenario:

- Max is an animal
- Milo is an animal
- Min is an animal
- Minnie is an animal
- Max is a cat
- Milo is a dog
- Min is a cat
- Minnie is a mouse
- cats chase mice
- dogs chase mice
- cats chase animals that chase mice

Write questions to:

- i) check if Max chases Minnie
- ii) find which animals Min chases
- iii) find which animals are chased by other animals

In each case, trace question execution, including backtracking to find alternative solutions where appropriate.

B) Write a Prolog rule to find the sum  $S$  of values between  $I$  and  $J$ :

- the sum between  $I$  and  $J$  is the sum between  $I+1$  and  $J$  added to  $I$
- the sum between  $J$  and  $J$  is  $J$

Write a question to find the sum of values between 5 and 7, and trace its execution.

C) Write Prolog clauses for the following scenario:

- Ann is a person
- Bill is a person
- Claire is a person
- David is a person
- Ann is paid £28000 per year
- Bill is paid £24500 per year
- Claire is paid £31100 per year
- David is paid £29750 per year
- to give someone  $S$  a  $P\%$  pay increase, find the pay for  $S$ , calculate  $P\%$  of their pay and assert a new clause for  $S$  with the new pay
- to give everyone a specified pay increase, find the next person, give them the pay increase, and backtrack

Write a question to give everyone a 10% pay increase, and trace its execution.