

INST0072 Logic and Knowledge Representation: Exercise Sheet 9

INST0072 Exercise Sheet 9 - Question 1

Given the following program:

```
catch_bus :- at_stop, has_ticket.  
has_ticket :- buys_ticket.  
at_stop :- on_time.  
buys_ticket.  
on_time.
```

- (a) Draw the search tree for the query ‘?- catch_bus’.
- (b) Convert the program into a CNF knowledge base (see Lecture 9, Slide 6), and show how the search tree in part (a) corresponds to a resolution proof by contradiction (see Lecture 9, Slide 7).

[[Example Answer](#)]

INST0072 Exercise Sheet 9 - Question 2

Given the the following program PR :

```
happy :- rich, \+ stressed.  
rich.
```

show by constructing the truth table for $\mathbf{COMP}(PR)$ that $\mathbf{COMP}(PR) \models happy$.

[[Example Answer](#)]

INST0072 Exercise Sheet 9 - Question 3

Given the following program PR :

```
likes(X, cooking_of(father_of(X))) :- person(X), \+ fussy(X).  
likes(X, cooking_of(X)) :- person(X).  
person(nina).  
person(mani).  
fussy(mani).
```

what is $\mathbf{COMP}(PR)$? (Include the Clark equality theory for PR in your answer.)

[[Example Answer](#)]