

# Prolog Tutorial 2

## Questions and Answers

1. A palindrome is a word which is the same backwards as forwards. Write a rule **palindrome(List)** which succeeds if **List** is the same backwards as forwards. Test your rule.

Remember that the built-in predicate **name** converts an atom into a list of ASCII codes of its characters. This information should enable you to put **palindrome** into a short program to test a typed in word to see whether it is a palindrome started by a rule **pal**. Test it with palindromes such as 'ada' and 'madam'.

The rule to test a palindrome list is amazingly simple:

```
palindrome(List) :- reverse(List,List).
```

where reverse is defined (in your notes) as:

```
reverse(L1,L2) :- rev(L1,[],L2).
rev([],L,L).
rev([X|L],L2,L3) :- rev(L,[X|L2],L3).
```

The program to test a palindrome could be:

```
pal :- write('Enter your word: '),read(Word),name(Word,List),palindrome(List).
```

2. Write a rule **convert** which works through a list of integers, takes all those between 64 and 91, and adds 32 to them. In other words, if the list of integers is a list of ASCII codes, it converts all the ASCII codes of upper case characters to the ASCII codes of their corresponding lower case characters.

```
convert([],[]).
convert([L|Lt],[Q|Qt]) :- L>64, L<91, Q is L+32, convert(Lt,Qt).
convert([L|Lt],[L|Qt]) :- convert(Lt,Qt).
```

3. You can put this rule into your program **pal**

```
pal :- write('Enter your word: '),read(Word),name(Word,List),convert(List,NewList),palindrome(NewList).
```

4. Write a rule **stars** to draw a specified number of stars or asterisks in a horizontal line on the screen.

```
stars(0).
stars(N) :- write('*'), M is N-1, stars(M).
```

5. Share prices for a company at the end of each month are saved as facts of the form:

```
share(jan,25).
share(feb,15).
share(mar,24).
share(apr,12).
share(may,30).
```

Write a rule **display** which writes these out in two columns on the screen.

```
display :- share(Month,Price),write(Month),write(' '),write(Price),nl,fail.
display.
```

6. Now modify this rule to call the rule **stars** and draw the share price as lines of stars on the screen instead of writing the numbers. Somethig like this:

```
jan *****
feb *****
mar *****
apr *****
may *****
```

```
display :- share(Month,Price),write(Month),write(' '),stars(Price),nl,fail.
display.
```

```
stars(0).
stars(N) :- write('*'), M is N-1, stars(M).
```