

Lecture five: More examples

This lecture present several example that intended to display various way to write prolog program, how to write if –else program ,divide problem into several parts then combine them in a single rule and how to write program describe specific problem.

Example 1: write prolog program to check if the given number is positive or negative.

Basic rule to check the number

```
If  X>=0  then
      X is positive
Else
      X is negative
```

Domains

I= integer

Predicates

Pos_neg(i)

Clauses

Pos_neg(X):-X>=0, write(“positive number”),nl.

Pos_neg(_):-write(“negative number”),nl.

Goal

Pos_neg(4)

Output:

Positive number

Note: nl mean new line.

Example 2: write prolog program to check if a given number is odd or even.

Basic rule to check number

```
If X mod 2=0 then
    X is even number
Else
    X is odd number
```

Predicates

```
Odd_even(integer)
```

Clauses

```
Odd_even(X):-X mod 2= 0, write ("even number"), NL.
Odd_even(X):- write ("odd number"), nl.
```

Goal

```
Odd_even(5)
```

Output

```
Odd number
```

Example 3: write prolog program to combine both rule in example 1 and example2.

Domains

```
I= integer
```

Predicates

```
Pos_neg(i)
```

```
Odd_even(i)
```

```
Oe_pn(i)
```

Clauses

```
Oe_pn(X):-pos_neg(X),odd_even(X).
```

```
Odd_even(X):-X mod 2= 0, write(" even number"),nl.
```

```
Odd_even(X):- write("odd number"),nl.
```

```
Pos_neg(X):-X>=0, write("positive number"),nl.
```

```
Pos_neg(_):-write("negative number"),nl.
```

Goal

```
Oe_pn(3)
```

Output:

```
Odd number
```

```
Positive number
```

Note: the rule of same type must be gathering with each other.

Example 4 : write prolog program to describe the behavior of the logical And gate.

Truth table of And gate

X	Y	Z
0	0	0
1	0	0
0	1	0
1	1	1

Sol 1:

Domains

I= integer

Predicates

And1(I, I, I)

Clauses

And1(0,0,0).

And1(0,1,0).

And1(1,0,0).

And1(1,1,1).

Goal

And1 (0,1,Z)

Output:

Z =0

Sol 2:

From the truth table we can infer the following rule:

If X= Y then

Z= X

Else

Z =0