

Modern Programming Languages (CS508)
SPRING 2012
Assignment No. 3

Total Marks: 20

Dead line: June 06, 2012

Purpose of Assignment:

Intended purpose of this assignment is to give students an exercise using Prolog programming language and to make use of **Prolog's** fast incremental development cycle and rapid prototyping capabilities that have encouraged the use of the language as a tool for solving complex problems while working in any professional software development environments.

After attempting this assignment students will be able to:

- Familiarize with the Logical and declarative aspects and programming techniques used in the programming language like Prolog
- Learn the basic syntax of Prolog as a highest level general-purpose language widely used today
- Students will get comprehensive understanding of Working with Rules and Facts in Prolog.

Application:

AlstraSoft Expert System Application:

Scenario:

Suppose you are developing an expert **Environmental system** at **Alstrasoft Pvt Ltd** that strives to be the premier provider of web-based software solutions for businesses worldwide. As a web development and software company, Alstrasoft specialize mainly in web design and software programming.

Evaluation:

Now In the same Environmental systems that predict the weather, analyze water supplies, and so on. There is a need to develop an expert system in Prolog named '**Weather Modeling System**', for National Center for Atmospheric Research .This expert system will provide relatively detailed, short term forecast of meteorological conditions. It is used particularly to model pollutant dispersion (for instance, acid rain deposition). Answer the following questions based on the scenario provided.

a) Why is **PROLOG** the language of choice for developers to develop expert system like ‘**Weather Modeling System**’? [5]

b) Write Prolog equivalent for the following statements? [5]

1. Weather is cloudy and rainy.
2. Dust storm is expected today.
3. Mike carries umbrella for John.
4. Is there a forecast for rain today?
5. Is the earth round.

c) Consider a program that has following four facts and one rule. What will be the response of following queries in PROLOG also justify your answer against each query?[10]

Facts:

cloudy(South Carolina).

cloudy(Oslo).

cold(Oslo).

snowy(Toronto)

The rule is:

foggy(X) :- cloudy(X), cold(X).

Queries:

?- foggy(Oslo).

?- foggy(South Carolina).

?- foggy(Toronto).

?- foggy(C).

C = X

?- foggy(Sweden).

Uploading instructions:

- Your assignment must be in .doc format.(Any other formats like scan images, PDF, Zip, rar, bmp, docx etc will not be accepted)
- Save your assignment with your ID (e.g. bc020200786.doc).
- No assignment will be accepted through email.

Rules for Marking:

It should be clear that your assignment will not get any credit if:

- The assignment is submitted after due date.
- The submitted assignment does not open or file is corrupted.
- Your assignment is copied from internet, handouts or from any other student (Strict disciplinary action will be taken in this case).

Note:

- Your answer must follow the below given specifications. **Marks will be deducted if you do not follow these instructions.**
 - Font style: “Times New Roman”
 - Font color: “Black”
 - Font size: “12”
 - **Bold** for heading only.
 - Font in *Italic* is not allowed at all.
- You should consult recommended books to clarify your concepts.
- It's better for you to submit the assignment well before the deadline.
- Do not put any query at MDB about this assignment, if you have any query then email at cs508@vu.edu.pk.