**FOR DATABASE PROGRAM**

**OBJECT: TO WORK WITH THE IMPLEMENTATION OF PROLOG DATABASE (i.e., FACTS AND RULES WHICH MAKE RELATIONAL DATABASE)**

**Theory:**

Databases in Prolog are bit different from other (procedural) databases. In Prolog there are two types of databases: static databases and dynamic database.

A static database is one whose component’s (field records) information, as well as rules about their relationships is stored in memory at run time.

A dynamic database is composed of facts gathered by the user during program execution. These facts re stored in a separate (dynamic) database. A dynamic database is stored in memory along with a static database; more memory is needed here.

Example:

Suppose department of an educational institute stores this information for each student.

student number, last name, first name, street, city, state, major, minor, class taken, time, class credit hours, class meeting time, class grade, total credit hours, total honor points, and honor point average a database system should be able to handle queries about any combination of fields pertaining to an individual student; which Prolog can do very well. The above attributes are divided into three relations (tables): student, class, and major, having the formats following and with key fields indicated by all capital letters.

**1 – NF OF DATABASE:**

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student( **STUDENT\_NUMBER**, Last\_name, First\_name, Street\_address, City, State)

class(**CLASS\_NAME**, **STUDENT\_NUMBER**, Credit\_hours, Meeting\_time, Grade)

major(**STUDENT\_NAME**, Major\_subject, Minor\_subject)

**\*/**

**RECORDS (FACTS FOR KB)**

student(1001, brown, sam, happy\_way,marquette, mi).

student(1022, andrews, andy, kin\_olaf\_st, marquette, mi).

student(1099, cummings, maria, gray\_rd, marquette, mi).

student(2000, xylon, fed, greenview\_ave, lansing, mi).

student(3022, franklin, georgia, burrow\_way, detroit, mi).

student(4001, green, nancy, greenview\_rd, mt\_pleasant, mi).

student(5000, green, sam, greenview\_rd, mt\_pleasant, mi).

student(5055, pershing, xerexes, happy\_way, marquette, mi).

student(6000, petersen, olaf, blackstone\_blvd, detroid, mi).

student(6087, sklarson, bill, center\_blvd, milwaukee, wi).

student(7001, timmons, timmy, twin\_st, minneapolis, mn).

student(7555, young, chiquita, felton\_st, philadelphia, pa).

student(8005, herring, cremora, briggs\_blvd, detroit, mi).

class(elem\_math, 1001, 3, m900).

class(elem\_math, 2000, 3, m900).

class(elem\_math, 4001, 3, m900).

class(elem\_math, 7555, 3, m900).

class(elem\_math, 8005, 3, m900).

class(intro\_comp, 1001, 3, m1100).

class(intro\_comp, 2000, 3, m1100).

class(intro\_comp, 5000, 3, m1100).

class(intro\_comp, 6087, 3, m1100).

class(intro\_comp, 7555, 3, m1100).

class(english\_comp, 3022, 4, t800).

class(english\_comp, 4001, 4, t800).

class(english\_comp, 5000, 4, t800).

class(english\_comp, 6000, 4, t800).

class(english\_comp, 6087, 4, t800).

class(english\_comp, 7001, 4, t800).

class(english\_comp, 8005, 4, t800).

class(intro\_bus, 1001, 3, t1200).

class(intro\_bus, 4001, 3, t1200).

class(intro\_bus, 5000, 3, t1200).

class(intro\_bus, 6000, 3, t1200).

class(intro\_bus, 7001, 3, t1200).

class(intro\_bus, 7555, 3, t1200).

major(1001, business, economics).

major(1022, business, economics).

major(1099, business, economics).

major(2000, computer\_sci, math).

major(3022, accounting, business).

major(4001, business, accounting).

major(5000, computer\_sci, bussiness).

major(5055, computer\_sci, economics).

major(6006, economics, accounting).

major(6087, economics, computer\_sci).

major(7001, accounting, economics).

major(7555, accounting, business).

major(8005, economics, accounting).

**QUERIES:**

Find the complete address (street, city, state) of student Sam Brown.

Find the student number of student Xeroxed Pershin.

Find Olaf Petersen’s major and minor fields.

List the names of all students living in Michigan (MI).

List the student numbers of all students taking **elem\_math**.

List the names of all students taking **elem\_math**.

List the names of all students with business as their major field.

List the names and address of all students with economics as their minor field.