/\* --- Student-Teacher-Subject Database --- \*/

/\* Students: student(StudentID, Name) \*/

student(s1, 'Alice').

student(s2, 'Bob').

student(s3, 'Charlie').

student(s4, 'Diana').

/\* Teachers: teacher(TeacherID, Name) \*/

teacher(t1, 'Dr\_Smith').

teacher(t2, 'Prof\_Johnson').

teacher(t3, 'Dr\_Williams').

/\* Subjects with codes taught by teachers \*/

teaches(t1, 'CS101'). % Dr\_Smith teaches CS101

teaches(t1, 'CS102'). % Dr\_Smith teaches CS102

teaches(t2, 'MA101'). % Prof\_Johnson teaches MA101

teaches(t3, 'PH101'). % Dr\_Williams teaches PH101

/\* Enrollment: student enrolled in subject code \*/

enrolled(s1, 'CS101').

enrolled(s1, 'MA101').

enrolled(s2, 'CS102').

enrolled(s2, 'PH101').

enrolled(s3, 'MA101').

enrolled(s4, 'CS101').

enrolled(s4, 'PH101').

/\* --- Queries / Rules --- \*/

/\* Find which teacher teaches a subject \*/

subject\_teacher(SubCode, TeacherName) :-

teaches(TID, SubCode),

teacher(TID, TeacherName).

/\* Find which subjects a student takes \*/

student\_subjects(StudentName, SubCode) :-

student(SID, StudentName),

enrolled(SID, SubCode).

/\* Find teacher(s) for a given student \*/

student\_teacher(StudentName, TeacherName) :-

student(SID, StudentName),

enrolled(SID, SubCode),

teaches(TID, SubCode),

teacher(TID, TeacherName).

/\* Find classmates: students in the same subject \*/

classmate(Student1, Student2) :-

student(SID1, Student1),

student(SID2, Student2),

SID1 \= SID2,

enrolled(SID1, SubCode),

enrolled(SID2, SubCode).

/\* --- Helper display --- \*/

list\_students :-

student(\_,N),

write('Student: '), write(N), nl,

fail.

list\_students.

list\_teachers :-

teacher(\_,N),

write('Teacher: '), write(N), nl,

fail.

list\_teachers.

/\* --- Main entry point --- \*/

main :-

write('\*\*\* Student-Teacher-Subject Database \*\*\*'), nl, nl,

list\_students, nl,

list\_teachers, nl,

write('Enter a student name (with quotes, e.g. ''Alice''.) : '), nl,

read(Name),

show\_teachers(Name),

halt.

/\* Print teachers for a student \*/

show\_teachers(Name) :-

student\_teacher(Name, Teacher),

write(Name), write(' is taught by '), write(Teacher), nl,

fail.

show\_teachers(\_).

/\* Run automatically \*/

:- initialization(main).