COMP 348: Principles of Programming Languages

Assignment 1 on Logical Programming

Summer 2020, sections AA and AB

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**Question 1:**

/\* Question 1 \*/

team(['40131284','27877986', '480298']).

student\_info('40131284', 'Shadi', 'Jiha').

student\_info('27877986', 'Achoura', 'Bague').

student\_info('480298', 'Caleb', 'Hoyne').

takes\_course('40131284', 'comp', '348', 'aa').

takes\_course('40131284', 'comp', '348', 'aaaf').

takes\_course('40131284', 'comp', '352', 'aa').

takes\_course('40131284', 'comp', '352', 'aaae').

takes\_course('27877986', 'comp', '348', 'aa').

takes\_course('27877986', 'comp', '348', 'aaaf').

takes\_course('27877986', 'comp', '333', 'cc').

takes\_course('480298', 'comp', '348', 'aa').

takes\_course('480298', 'comp', '348', 'aaaf').

course\_schedule('comp', '348', 'aa', 'mon', '1445', '1715').

course\_schedule('comp', '348', 'aa', 'wed', '1445', '1715').

course\_schedule('comp', '348', 'aaaf', 'mon', '1315', '1405').

course\_schedule('comp', '348', 'aaaf', 'wed', '1315', '1405').

course\_schedule('comp', '352', 'aa', 'tue', '1830', '2100').

course\_schedule('comp', '352', 'aaae', 'wed', '1315', '1415').

course\_schedule('comp', '333', 'cc', 'tue', '1315', '1545').

course\_schedule('comp', '333', 'cc', 'thu', '1315', '1545').

**Question 2:**

Output:

40131284 has only taken 4 courses and tutorials in summer 2020.  
27877986 has only taken 3 courses and tutorials in summer 2020.  
480298 has only taken 2 courses and tutorials in summer 2020.  
false

**Question 3:**

1. Using the code from question 1 we can write:

/\* Question 3 A \*/

get\_sections(CNAME, CNUM, L) :- findall(L, course\_schedule(CNAME, CNUM, L, \_, \_, \_), L).

all\_sections(CNAME, CNUM, L) :- get\_sections(CNAME, CNUM, T), list\_to\_set(T, L).

1. Using code from Q1:

/\* Question 3 B \*/

has\_taken(S, [CNAM|[CNUM|[SEC|[]]]]) :- takes\_course(S, CNAM, CNUM, SEC).

1. Using code from Q1:

/\* Question 3 C \*/

has\_taken2(S, [CNAM|[CNUM|[]]]) :- takes\_course(S, CNAM, CNUM, \_).

1. Using code from Q1:

/\* Question 3 D \*/

get\_courses(S, L):- findall(T, takes\_course(S, T, \_, \_), L).

all\_subjects(S, L) :- get\_courses(S, T), list\_to\_set(T, L).

1. F
2. F

**Question 4:**

team(X), member(S, X),

findall(S,(takes\_course(S, \_, \_,aa)),LL),

length(LL, NN),

write(S), write(' has only taken '), write(NN),

write(' courses and tutorials in summer 2020.'), nl, fail.