Exercise 5.1

Student(snum, sname, major, level, age) PUT SOME FACTS IN TO PROLOG
Class(name, meets at, room, fid)
Enrolled(snum, cname)
Faculty(fid, fname, deptid)

1. Find the names of all Juniors (level = JR) who are enrolled in a class taught by I. Teach.

result(Sname):- Student(Snum, Sname, _, jr,_), Class(Cname,_,_,Fid), Enrolled(Snum, Cname), Faculty(Fid, i.Teach, _).

2. Find the age of the student who is either a History major or enrolled in a course taught by I. Teach.

result(Age):- Student(_, _ ,history,_,Age). result(Age):- Student(Snum, _ ,_ , _, Age), Enrolled(Snum, Cname), Class(Cname,_,_,Fid), Faculty(Fid, i.Teach, _).

3. Find the names of all students who are enrolled in two classes that meet at the same time.

result(Sname):- Student(Snum, Sname, _, _,_), Enrolled(Snum, Cname1), Enrolled(Snum, Cname2), Class(Cname1, Time, _,_), Class(Cname2, Time, _,_), NOT Cname1=Cname2.

DO NOT DO 4 - IT IS MUCH HARDER AND WE'LL COVER IT LATER
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4. Find the names of faculty members who teach in every room in which some class is taught.

RoomsNotTaughtByFaculty(Room,Fid):-Faculty(Fid,_,_), NOT Class(_,_,Room,Fid). result(Fname):- Faculty(Fid,Fname,_), ~~NOT(RoomsNotTaughtByFaculty (Room,Fid)).~~

5. Find the names of students not enrolled in any class.

result(Sname):- Student(Snum, _, _, _,_), NOT Enrolled(Snum,_).

Exercise 5.2

Suppliers(sid, sname, address)
Parts(pid, pname, color)
Catalog(sid, pid, cost)

1. Find the pname's of parts for which there is some supplier.

result(Pname):- Parts(Pid, Pname, _), Catalog(_, Pid, _).

2. Find the sid's of suppliers who supply only red parts. (find suppliers who sell parts other than red)

supplyOtherThanRedParts(Sid):- Suppliers(Sid, _, _), NOT Parts(Pid, _, red), Catalog(Sid, Pid, _).

result(Sid):-Suppliers(Sid, _, _), Parts(Pid, _, red), Catalog(Sid, Pid, _), NOT supplyOtherThanRedParts(Sid)

3. Find the sid's of suppliers who supply a red part or a green part.

result(Sid):-Suppliers(Sid, _, _), Parts(Pid, _, red), Catalog(Sid, Pid, _).
result(Sid):-Suppliers(Sid, _, _), Parts(Pid, _, green), Catalog(Sid, Pid, _).

4. Find the name of the suppliers that supply at least 2 parts that cost more than $500 and have red color.

result(Sname):- Suppliers(Sid, Sname, _), Catalog(Sid, Pid1, Cost), Parts(Pid1, _, red), Catalog(Sid, Pid2, Cost), Parts(Pid2, _, red), Cost>500, NOT Pid1=Pid2.

5. Find the sid's of suppliers who supply a red part and a green part.

result(Sid):-Suppliers(Sid, _, _), Catalog(Sid, Pid1, _), Parts(Pid1, _, red), Catalog(Sid, Pid2, _), Parts(Pid2, _, green).

Exercise 5.3

Flights(flno, from, to, distance, departs, arrives, price)
Aircraft(aid, aname, cruisingrange)
Certified(eid, aid)
Employees(eid, ename, salary)

1. Find the names of aircraft such that all pilots certified to operate them have salaries more than $80,000.

result(Aname):- Aircraft(Aid, Aname,_), Certified(Eid, Aid), Employees(Eid, _, Salary), Salary>=80.000.

2. Find the names of pilots whose salary is less than the price of the route from Los Angeles to Honolulu.

result(Ename):- Employees(_, Ename, Salary), Flights(_, losAngeles, honolulu, _, _, _, Price), Salary<Price.

3. Find the names of pilots certified for the Boeing747 aircraft.

result(Ename):-Employees(Eid, Ename,_), Certified(Eid, Aid), Aircraft(Aid, boeing747, _)

4. Find the aid's of all aircraft that can be used on routes from Los Angeles to Chicago.

result(Aid):-Flights(_,losAngeles, chicago, Distance,_,_,_), Aircraft(Aid, _, CrusingRange), CruisingRange>Distance.

5. Print the names of employees who are certified only on aircrafts with cruising range longer than 1000 miles, but on at least two such aircrafts.

result(Eid):-Certified(Eid, Aid1), Aircraft(Aid1,_, CrusingRange1), CruisingRange1>1000, Certified(Eid, Aid2), Aircraft(Aid2,_, CrusingRange2), CruisingRange2>1000, NOT Aid1=Aid2.