16-124-836
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10.1 Genealogy for covering relations in a family

We can define the following rules to define the given relations:

```
grandfather(X,Y) :- male(X), parent(X,W), parent(W,Y)
grandmother(X,Y) :- female(X), parent(X,W), parent(W,Y)
grandparent(X,Y) :- parent(X,W), parent(W,Y)
grandson(X,Y) :- male(X), parent(W,X), parent(Y,W)
granddaughter(X,Y) :- female(X), parent(W,X), parent(Y,W)
grandchild(X,Y) :- parent(W,X), parent(Y,W)
```

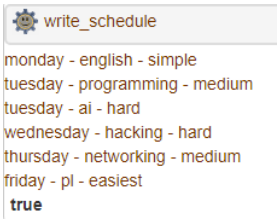
10.2 Week schedule

Using the online prolog compiler https://swish.swi-prolog.org/. We can define the following rules:

```
day_lecture_compl(monday,english,simple).
day_lecture_compl(tuesday,programming,medium).
day_lecture_compl(tuesday,ai,hard).
day_lecture_compl(wednesday,hacking,hard).
day_lecture_compl(thursday,networking,medium).
day_lecture_compl(friday,pl,easiest).

write_day_schedule(X,Y,Z) :- write(X), write(' - '), write(Y), write(' - '), write(Z), nl.
write_schedule :- forall(day_lecture_compl(X,Y,Z),write_day_schedule(X,Y,Z)).
```

With the command `?- write_schedule` we get the following output:



Alternatively we can build it differently by splitting up all the attributes:

```
day(monday).
day(tuesday).
day(wednesday).
day(thursday).
day(friday).

day_lect(monday,english).
day_lect(tuesday,programming).
day_lect(tuesday,ai).
day_lect(wednesday,hacking).
day_lect(thursday,networking).
day_lect(friday,pl).

lect_compl(english,simple).
lect_compl(programming,medium).
lect_compl(ai,hard).
lect_compl(hacking,hard).
lect_compl(networking,medium).
lect_compl(pl,easiest).

write_schedule :- forall(day(X),write_all(X)).
write_all(X) :- forall(day_lect(X,Y),write_lect_compl(X,Y)).
write_lect_compl(X,Y) :- write(X), write(' - '), write(Y), lect_compl(Y,Z) ,write(' - '), write(Z), nl.
```

With which the same result will be printed.