

Prolog Programming Assignment #2: A Favorite Pokemon KB plus Simple List Processing Exercises

Abstract: In this assignment we were asked to interact with the Pokemon KB along with simple list processing exercises to become more

Task 1: Pokemon

Part 1: Initial Pokemon KB

Code:

```
% -----  
% -----  
% --- File: pokemon.pro  
% --- Line: Just a few facts about pokemon  
% -----  
  
% -----  
% --- cen(P) :: Pokemon P was "creatio ex nihilo"  
  
cen(pikachu).  
cen(bulbasaur).  
cen(caterpie).  
cen(charmander).  
cen(vulpix).  
cen(poliwag).  
cen(squirtle).  
cen(staryu).  
  
% -----  
% --- evolves(P,Q) :: Pokemon P directly evolves to pokemon Q  
  
evolves(pikachu,raichu).  
evolves(bulbasaur,ivysaur).  
evolves(ivysaur,venusaur).  
evolves(caterpie,metapod).  
evolves(metapod,butterfree).  
evolves(charmander,charmeleon).  
evolves(charmeleon,charizard).  
evolves(vulpix,ninetails).  
evolves(poliwag,poliwhirl).  
evolves(poliwhirl,poliwrath).  
evolves(squirtle,wartortle).  
evolves(wartortle,blastoise).
```

evolves(staryu,starmie).

% -----
% --- pokemon(name(N),T,hp(H),attach(A,D)) :: There is a pokemon with
% --- name N, type T, hit point value H, and attack named A that does
% --- damage D.

pokemon(name(pikachu), electric, hp(60), attack(gnaw, 10)).
pokemon(name(raichu), electric, hp(90), attack(thunder-shock, 90)).

pokemon(name(bulbasaur), grass, hp(40), attack(leech-seed, 20)).
pokemon(name(ivysaur), grass, hp(60), attack(vine-whip, 30)).
pokemon(name(venusaur), grass, hp(140), attack(poison-powder, 70)).

pokemon(name(caterpie), grass, hp(50), attack(gnaw, 20)).
pokemon(name(metapod), grass, hp(70), attack(stun-spore, 20)).
pokemon(name(butterfree), grass, hp(130), attack(whirlwind, 80)).

pokemon(name(charmander), fire, hp(50), attack(scratch, 10)).
pokemon(name(charmeleon), fire, hp(80), attack(slash, 50)).
pokemon(name(charizard), fire, hp(170), attack(royal-blaze, 100)).

pokemon(name(vulpix), fire, hp(60), attack(confuse-ray, 20)).
pokemon(name(ninetails), fire, hp(100), attack(fire-blast, 120)).

pokemon(name(poliwag), water, hp(60), attack(water-gun, 30)).
pokemon(name(poliwhirl), water, hp(80), attack(amnesia, 30)).
pokemon(name(poliwrath), water, hp(140), attack(dashing-punch, 50)).

pokemon(name(squirtle), water, hp(40), attack(bubble, 10)).
pokemon(name(wartortle), water, hp(80), attack(waterfall, 60)).
pokemon(name(blastoise), water, hp(140), attack(hydro-pump, 60)).

pokemon(name(staryu), water, hp(40), attack(slap, 20)).
pokemon(name(starmie), water, hp(60), attack(star-freeze, 20)).

Part 2: Interaction demo with the Initial KB

```
?- cen(pikachu).  
true.  
  
?- cen(riachu).  
false.  
  
?- cen(Name).  
Name = pikachu ;  
Name = bulbasaur ;  
Name = caterpie ;  
Name = charmander ;  
Name = vulpix ;  
Name = poliwag ;  
Name = squirtle ;  
Name = staryu.  
  
?- cen(Name), write(Name), nl, fail.  
pikachu  
bulbasaur  
caterpie  
charmander  
vulpix  
poliwag  
squirtle  
staryu  
false.  
  
?- evolves(squirtle, wartortle).  
true.  
  
?- evolves(wartortle, squirtle).  
false.  
  
?- evolves(squirtle, blastoise).  
false.  
  
?- evolves(X, Y), evolves(Y, Z).  
X = bulbasaur,  
Y = ivysaur,  
Z = venusaur ;  
X = caterpie,  
Y = metapod,  
Z = butterfree ;  
X = charmander,  
Y = charmeleon,  
Z = charizard ;  
X = poliwag,  
Y = poliwhirl,  
Z = poliwrath ;  
X = squirtle,  
Y = wartortle,  
Z = blastoise ;  
false.
```

```

?- evolves(X, Y), evolves(Y, Z), write(X --> Z), nl, fail.
bulbasaur-->venusaur
caterpie-->butterfree
charmander-->charizard
poliwag-->poliwrath
squirtle-->blastoise
false.

?- pokemon(name(Name), _, _, _), write(Name), nl, fail.
pikachu
raichu
bulbasaur
ivysaur
venusaur
caterpie
metapod
butterfree
charmander
charmeleon
charizard
vulpix
ninetails
poliwag
poliwhirl
poliwrath
squirtle
wartortle
blastoise
staryu
starmie
false.

?- pokemon(name(Name), fire, _, _), write(Name), nl, fail.
charmander
charmeleon
charizard
vulpix
ninetails
false.

?- pokemon(name(N), _, _, attack(waterfall, _)).
N = wartortle ;
false.

?- pokemon(name(N), _, _, attack(poison-powder, _)).
N = venusaur ;
false.

?- pokemon(_, water, _, attack(Attack, _)), write(Attack), nl, fail.
water-gun
amnesia
dashing-punch
bubble
waterfall
hydro-pump
slap
star-freeze
false.

?- pokemon(name(poliwhirl), _, hp(HP), _).
HP = 80.

?- pokemon(name(butterfree), _, hp(HP), _).
HP = 130.

```

```

?- pokemon(name(Name), _, hp(HP), _), HP > 85, write(Name), nl, fail.
raichu
venusaur
butterfree
charizard
ninetails
poliwrath
blastoise
false.

?- pokemon(name(Name), _, _, attack(_, Attack)), Attack > 60, write(Name), nl, fail.
raichu
venusaur
butterfree
charizard
ninetails
false.

?- pokemon(name(Name), _, hp(HP), _), cen(Name), write(Name: HP), nl, fail.
pikachu:60
bulbasaur:40
caterpie:50
charmander:50
vulpix:60
poliwag:60
squirtle:40
staryu:40
false.

```

Part 3: KB Extension

```

display_cen_names :- cen(Name), write(Name), nl, fail.
display_cen_names.

```

```

display_not_cen_names :- evolves(X, Y), write(Y), nl, fail.
display_not_cen_names.

```

```

generator(Name, Type) :- cen(Name), pokemon(name(Name), Type, _, _).

```

```

display_names :- pokemon(name(Name), _, _, _), write(Name), nl, fail.
display_names.

```

```

display_attacks :- pokemon(name(Name), _, _, attack(Attack, _)), write(Attack), nl, fail.
display_attacks.

```

```

display_cen_attacks :- cen(Name), pokemon(name(Name), _, _, attack(Attack, _)),
write(Attack), nl, fail.
display_cen_attacks.

```

indicate_attack(Name) :- pokemon(name(Name), _, _, attack(Attack, _)), write(Name --> Attack), nl, fail.

indicate_attacks :- pokemon(name(Name), _, _, attack(Attack, _)), write(Name --> Attack), nl, fail.

indicate_attacks.

powerful(Name) :- pokemon(name(Name), _, _, attack(_, Power)), Power > 55.

tough(Name) :- pokemon(name(Name), _, hp(HP), _), HP > 100.

awesome(Name) :- powerful(Name), tough(Name).

powerful_but_vulnerable(Name) :- powerful(Name), pokemon(name(Name), _, hp(HP), _), HP < 101.

type(Name, Type) :- pokemon(name(Name), Type, _, _).

dump_kind(Type) :- pokemon(Name, Type, HP, Attack), write(pokemon(Name, Type, HP, Attack)), nl, fail.

family(Name) :- cen(Name), evolves(Name, X), (evolves(X, Y)->write(Name), write(' '), write(X), write(' '), write(Y);

cen(Name), evolves(Name, X), write(Name), write(' '), write(X)).

families(Name) :- family(Name), nl, fail.

families.

lineage(Name) :- pokemon(name(Name), Type, HP, Attack), write('pokemon(name('), write(Name), write('),'), write(Type), write('),'), write(HP), write('),'), write(Attack), write(')'), evolves(Name, X), nl, lineage(X).

Part 4: Interaction demo with the Augmented KB

```
?- display_cen_names.
```

```
pikachu  
bulbasaur  
caterpie  
charmander  
vulpix  
poliwhag  
squirtle  
staryu  
false.
```

```
?- display_not_cen_names.
```

```
raichu  
ivysaur  
venusaur  
metapod  
butterfree  
charmeleon  
charizard  
ninetails  
poliwhirl  
poliwrath  
wartortle  
blastoise  
starmie  
false.
```

```
?- lineage(pikachu).
pokemon(name(pikachu),electric,hp(60),attack(gnaw,10))
pokemon(name(raichu),electric,hp(90),attack(thunder-shock,90))
false.

?- generator(Name, fire).
Name = charmander ;
Name = vulpix ;
false.

?- generator(Name, water).
Name = poliwag ;
Name = squirtle ;
Name = staryu ;
false.

?- generator(Name, electric).
Name = pikachu ;
false.

?- generator(Name, grass).
Name = bulbasaur ;
Name = caterpie ;
false.

?- display_names.
pikachu
raichu
bulbasaur
ivysaur
venusaur
caterpie
metapod
butterfree
charmander
charmeleon
charizard
vulpix
ninetails
poliwag
poliwhirl
poliwrath
squirtle
wartortle
blastoise
staryu
starmie
true.
```

```
?- display_attacks.
```

```
gnaw
thunder-shock
leech-seed
vine-whip
poison-powder
gnaw
stun-spore
whirlwind
scratch
slash
royal-blaze
confuse-ray
fire-blast
water-gun
amnesia
dashing-punch
bubble
waterfall
hydro-pump
slap
star-freeze
true.
```

```
?- display_cen_attacks.
```

```
gnaw
leech-seed
gnaw
scratch
confuse-ray
water-gun
bubble
slap
true.
```

```
?- indicate_attack(charmander)
```

```
charmander-->scratch
```

```
false.
```

```
?- indicate_attack(bulbasaur).
```

```
bulbasaur-->leech-seed
```

```
false.
```

```
?- indicate_attacks.  
pikachu-->gnaw  
raichu-->thunder-shock  
bulbasaur-->leech-seed  
ivysaur-->vine-whip  
venusaur-->poison-powder  
caterpie-->gnaw  
metapod-->stun-spore  
butterfree-->whirlwind  
charmander-->scratch  
charmeleon-->slash  
charizard-->royal-blaze  
vulpix-->confuse-ray  
ninetails-->fire-blast  
poliwag-->water-gun  
poliwhirl-->amnesia  
poliwrath-->dashing-punch  
squirtle-->bubble  
wartortle-->waterfall  
blastoise-->hydro-pump  
staryu-->slap  
starmie-->star-freeze  
true.
```

```
?- powerful(Name).  
Name = raichu ;  
Name = venusaur ;  
Name = butterfree ;  
Name = charizard ;  
Name = ninetails ;  
Name = wartortle ;  
Name = blastoise ;  
false.
```

```
?- tough(Name).  
Name = venusaur ;  
Name = butterfree ;  
Name = charizard ;  
Name = poliwrath ;  
Name = blastoise ;  
false.
```

```
?- awesome(Name).  
Name = venusaur ;  
Name = butterfree ;  
Name = charizard ;  
Name = blastoise ;  
false.
```

```
?- powerful_but_vulnerable(Name).  
Name = raichu ;  
Name = ninetails ;  
Name = wartortle ;  
false.
```

```
?- type(squirtle, Type).
Type = water.

?- type(caterpie, Type).
Type = grass.

?- type(Name, fire), write(Name), nl, fail.
charmander
charmeleon
charizard
vulpix
ninetails
false.

?- dump_kind(water).
pokemon(name(poliwag), water, hp(60), attack(water-gun, 30))
pokemon(name(poliwhirl), water, hp(80), attack(amnesia, 30))
pokemon(name(poliwrath), water, hp(140), attack(dashing-punch, 50))
pokemon(name(squirtle), water, hp(40), attack(bubble, 10))
pokemon(name(wartortle), water, hp(80), attack(waterfall, 60))
pokemon(name(blastoise), water, hp(140), attack(hydro-pump, 60))
pokemon(name(staryu), water, hp(40), attack(slap, 20))
pokemon(name(starmie), water, hp(60), attack(star-freeze, 20))
false.
```

```

?- dump_kind(grass).
pokemon(name(bulbasaur),grass,hp(40),attack(leech-seed,20))
pokemon(name(ivysaur),grass,hp(60),attack(vine-whip,30))
pokemon(name(venusaur),grass,hp(140),attack(poison-powder,70))
pokemon(name(caterpie),grass,hp(50),attack(gnaw,20))
pokemon(name(metapod),grass,hp(70),attack(stun-spore,20))
pokemon(name(butterfree),grass,hp(130),attack(whirlwind,80))
false.

?- family(pikachu).
pikachu raichu
true.

?- family(bulbasaur).
bulbasaur ivysaur venusaur
true.

?- family(caterpie).
caterpie metapod butterfree
true.

?- families.
true.

?- lineage(pikachu).
pokemon(name(pikachu),electric,hp(60),attack(gnaw,10))
pokemon(name(raichu),electric,hp(90),attack(thunder-shock,90))
false.

?- lineage(squirtle).
pokemon(name(squirtle),water,hp(40),attack(bubble,10))
pokemon(name(wartortle),water,hp(80),attack(waterfall,60))
pokemon(name(blastoise),water,hp(140),attack(hydro-pump,60))
false.

?- lineage(wartortle).
pokemon(name(wartortle),water,hp(80),attack(waterfall,60))
pokemon(name(blastoise),water,hp(140),attack(hydro-pump,60))
false.

?- lineage(blastoise).
pokemon(name(blastoise),water,hp(140),attack(hydro-pump,60))
false.

?- lineage(charmander).
pokemon(name(charmander),fire,hp(50),attack(scratch,10))
pokemon(name(charmeleon),fire,hp(80),attack(slash,50))
pokemon(name(charizard),fire,hp(170),attack(royal-blaze,100))
false.

```

Part 5: KB Augmented by 12 Pokemon

```
?- display_cen_names.
```

```
pikachu  
bulbasaur  
caterpie  
charmander  
vulpix  
poliwhag  
squirtle  
staryu  
oddish  
snivy  
totodile  
fletchling  
tynamo  
true.
```

```
?- display_not_cen_names.
```

```
gloom  
vileplume  
servine  
serperior  
croconaw  
fletchinder  
eelektrik  
raichu  
ivysaur  
venusaur  
metapod  
butterfree  
charmeleon  
charizard  
ninetails  
poliwhirl  
poliwrath  
wartortle  
blastoise  
starmie  
true.
```

```
?- generator(Name, fire).
```

```
Name = charmander ;  
Name = vulpix ;  
Name = fletchling ;  
false.
```

```
?- generator(Name, water).
```

```
Name = poliwhag ;  
Name = squirtle ;  
Name = staryu ;  
Name = totodile ;  
false.
```

```
?- generator(Name, electric).
```

```
Name = pikachu ;  
Name = tynamo ;  
false.
```

```
?- generator(Name, grass).  
Name = bulbasaur ;  
Name = caterpie ;  
Name = oddish ;  
Name = snivy ;  
false.
```

```
?- display_names.  
oddish  
gloom  
vileplume  
snivy  
servine  
serperior  
totodile  
croconaw  
fletchling  
fletchlinder  
tynamo  
eelektrik  
pikachu  
raichu  
bulbasaur  
ivysaur  
venusaur  
caterpie  
metapod  
butterfree  
charmander  
charmeleon  
charizard  
vulpix  
ninetails  
poliwag  
poliwhirl  
poliwrath  
squirtle  
wartortle  
blastoise  
staryu  
starmie  
true.
```

?- display_attacks.

leaf
spore
gnaw
leaf-cut
slash
whip
spray
swift-swim
claw
air-slash
zap
strike
gnaw
thunder-shock
leech-seed
vine-whip
poison-powder
gnaw
stun-spore
whirlwind
scratch
slash
royal-blaze
confuse-ray
fire-blast
water-gun
amnesia
dashing-punch
bubble
waterfall
hydro-pump
slap
star-freeze
true.

?- display_cen_attacks.

gnaw
leech-seed
gnaw
scratch
confuse-ray
water-gun
bubble
slap
leaf
leaf-cut
spray
claw
zap
true.

```
?- indicate_attack(charmander).
charmander-->scratch
false.
```

```
?- indicate_attack(bulbasaur).
bulbasaur-->leech-seed
false.
```

```
?- indicate_attacks.
oddish-->leaf
gloom-->spore
vileplume-->gnaw
snivy-->leaf-cut
servine-->slash
serperior-->whip
totodile-->spray
croconaw-->swift-swim
fletchling-->claw
fletchlinger-->air-slash
tynamo-->zap
eelektrik-->strike
pikachu-->gnaw
raichu-->thunder-shock
bulbasaur-->leech-seed
ivysaur-->vine-whip
venusaur-->poison-powder
caterpie-->gnaw
metapod-->stun-spore
butterfree-->whirlwind
charmander-->scratch
charmeleon-->slash
charizard-->royal-blaze
vulpix-->confuse-ray
ninetails-->fire-blast
poliwag-->water-gun
poliwhirl-->amnesia
poliwrath-->dashing-punch
squirtle-->bubble
wartortle-->waterfall
blastoise-->hydro-pump
staryu-->slap
starmie-->star-freeze
true.
```

```
?- powerful(Name).
Name = raichu ;
Name = venusaur ;
Name = butterfree ;
Name = charizard ;
Name = ninetails ;
Name = wartortle ;
Name = blastoise ;
false.
```

```

?- tough(Name).
Name = venusaur ;
Name = butterfree ;
Name = charizard ;
Name = poliwrath ;
Name = blastoise ;
false.

?- awesome(Name).
Name = venusaur ;
Name = butterfree ;
Name = charizard ;
Name = blastoise ;
false.

?- powerful_but_vulnerable(Name).
Name = raichu ;
Name = ninetails ;
Name = wartortle ;
false.

?- type(squirtle, Type).
Type = water.

?- type(caterpie, Type).
Type = grass.

?- type(Name, fire), write(Name), nl, fail.
fletchling
fletchlinder
charmander
charmeleon
charizard
vulpix
ninetails
false.

?- dump_kind(water).
pokemon(name(totodile),water,hp(70),attack(spray,30))
pokemon(name(croconaw),water,hp(80),attack(swift-swim,55))
pokemon(name(poliwag),water,hp(60),attack(water-gun,30))
pokemon(name(poliwhirl),water,hp(80),attack(amnesia,30))
pokemon(name(poliwrath),water,hp(140),attack(dashing-punch,50))
pokemon(name(squirtle),water,hp(40),attack(bubble,10))
pokemon(name(wartortle),water,hp(80),attack(waterfall,60))
pokemon(name(blastoise),water,hp(140),attack(hydro-pump,60))
pokemon(name(staryu),water,hp(40),attack(slap,20))
pokemon(name(starmie),water,hp(60),attack(star-freeze,20))
false.

```

Part 6: KB Augmented by 12 Pokemon

cen(oddish).
cen(snivy).
cen(totodile).
cen(fletchling).
cen(tynamo).

evolves(oddish, gloom).
evolves(gloom, vileplume).
evolves(snivy, servine).
evolves(servine, serperior).
evolves(totodile, croconaw).
evolves(fletchling, fletchinder).
evolves(tynamo, eeλεκτρικ).

pokemon(name(oddish), grass, hp(40), attack(leaf, 15)).
pokemon(name(gloom), grass, hp(50), attack(spore, 30)).
pokemon(name(vileplume), grass, hp(60), attack(gnaw, 40)).
pokemon(name(snivy), grass, hp(50), attack(leaf-cut, 20)).
pokemon(name(servine), grass, hp(75), attack(slash, 35)).
pokemon(name(serperior), grass, hp(85), attack(whip, 55)).
pokemon(name(totodile), water, hp(70), attack(spray, 30)).
pokemon(name(croconaw), water, hp(80), attack(swift-swim, 55)).
pokemon(name(fletchling), fire, hp(20), attack(claw, 25)).
pokemon(name(fletchlinder), fire, hp(65), attack(air-slash, 50)).
pokemon(name(tynamo), electric, hp(40), attack(zap, 15)).
pokemon(name(eeλεκτρικ), electric, hp(70), attack(strike, 45)).

Task 2: List Processing in Prolog

Part 1:

```
?- [H|T] = [red, yellow, blue, green].
H = red,
T = [yellow, blue, green].

?- [H|T] = [red, yellow, blue, green].
H = red,
T = [yellow, blue, green].

?- [H, T] = [red, yellow, blue, green].
false.

?- [F|_] = [red, yellow, blue, green].
F = red.

?- [_|[S|_]] = [red, yellow, blue, green].
S = yellow.

?- [F|[S|R]] = [red, yellow, blue, green].
F = red,
S = yellow,
R = [blue, green].

?- List = [this|[and, that]].
List = [this, and, that].

?- List = [this, and, that].
List = [this, and, that].

?- [a,[b, c]] = [a, b, c].
false.

?- [a|[b, c]] = [a, b, c].
true.

?- [cell(Row,Column)|Rest] = [cell(1,1), cell(3,2), cell(1,3)].
Row = Column, Column = 1,
Rest = [cell(3, 2), cell(1, 3)].

?- [X|Y] = [one(un, uno), two(dos, deux), three(trois, tres)].
X = one(un, uno),
Y = [two(dos, deux), three(trois, tres)].
```

Part 2:

Code:

```
first([H|_], H).
```

```
rest(_|T], T).
```

```
last([H|_], H).
```

```
last(_|T], Result) :- last(T, Result).
```

```
nth(0,[H|_],H).
```

```
nth(N,_|T],E) :- K is N - 1, nth(K,T,E).
```

```
writelist([]).
```

```
writelist([H|T]) :- write(H), nl, writelist(T).
```

```
sum([],0).
```

```
sum([Head|Tail],Sum) :-
```

```
sum(Tail,SumOfTail),
```

```
Sum is Head + SumOfTail.
```

```
add_first(X,L,[X|L]).
```

```
add_last(X,[],[X]).
```

```
add_last(X,[H|T],[H|TX]) :- add_last(X,T,TX).
```

```
iota(0,[]).
```

```
iota(N,lotaN) :-
```

```
K is N - 1,
```

```
iota(K,lotaK),
```

```
add_last(N,lotaK,lotaN).
```

```
pick(L,Item) :-
```

```
length(L,Length),
```

```
random(0,Length,RN),
```

```
nth(RN,L,Item).
```

```
make_set([],[]).
```

```
make_set([H|T],TS) :-
```

```
member(H,T),
```

```
make_set(T,TS).
```

```
make_set([H|T],[H|TS]) :-
```

```
make_set(T,TS).
```

Demo:

```
?- first([apple],First).
First = apple.

?- first([c,d,e,f,g,a,b],P).
P = c.

?- rest([apple],Rest).
Rest = [].

?- rest([c,d,e,f,g,a,b],Rest).
Rest = [d, e, f, g, a, b].

?- last([peach],Last).
Last = peach ;
false.

?- last([c,d,e,f,g,a,b],P).
P = b ;
false.

?- nth(0,[zero,one,two,three,four],Element).
Element = zero ;
false.

?- nth(3,[four,three,two,one,zero],Element).
Element = one ;
false.

?- writelist([red,yellow,blue,green,purple,orange]).
red
yellow
blue
green
purple
orange
true.

?- sum([],Sum).
Sum = 0.

?- sum([2,3,5,7,11],SumOfPrimes).
SumOfPrimes = 28.

?- add_first(thing,[],Result).
Result = [thing].

?- add_first(racket,[prolog,haskell,rust],Languages).
Languages = [racket, prolog, haskell, rust].

?- add_last(thing,[],Result).
Result = [thing] ;
false.

?- add_last(rust,[racket,prolog,haskell],Languages).
Languages = [racket, prolog, haskell, rust] ;
false.
```

```
?- iota(5,Iota5).
Iota5 = [1, 2, 3, 4, 5] .

?- iota(9,Iota9).
Iota9 = [1, 2, 3, 4, 5, 6, 7, 8, 9] .

?- pick([cherry,peach,apple,blueberry],Pie).
Pie = cherry ;
false.

?- pick([cherry,peach,apple,blueberry],Pie).
Pie = apple ;
false.

?- pick([cherry,peach,apple,blueberry],Pie).
Pie = apple ;
false.

?- pick([cherry,peach,apple,blueberry],Pie).
Pie = apple ;
false.

?- pick([cherry,peach,apple,blueberry],Pie).
Pie = cherry ;
false.

?- pick([cherry,peach,apple,blueberry],Pie).
Pie = peach ;
false.

?- pick([cherry,peach,apple,blueberry],Pie).
Pie = apple ;
false.

?- pick([cherry,peach,apple,blueberry],Pie).
Pie = apple ;
false.

?- make_set([1,1,2,1,2,3,1,2,3,4],Set).
Set = [1, 2, 3, 4] .

?- make_set([bit,bot,bet,bot,bot,bit],B).
B = [bet, bot, bit] .
```