```
main:-
write('Welcome to Pro-Wordle!'),nl,
write('----------------------'),nl,nl,
build_kb,
play.
```
The main predicate that will be queried to initiate the KB building phase then the game play phase.

```
build_kb:-
write('Please enter a word and its category on separate lines:'),nl,
read(W) ,
(W\==done ,
read(C) ,
assert(word(W,C)) ,
build_kb);
write('Done building the words database...'),nl,nl. %When writing done
```
Reponsible of the KB building phase

```
play:-
write('The available categories are: '),
categories(L),
write(L),nl,
choosing_category(C),
choosing_length(C, Length),
NoOfGuesses is Length+1 ,
write('Game started.You have  ') , write(NoOfGuesses) ,write('  gusses'),nl,nl,
pick_word(W,Length,C),
guess(W,NoOfGuesses,NoOfGuesses).
```
Responsible of the game play phase

```
guess(W,NoOfGuesses,RemGuesses):-
RemGuesses>0,
Length is NoOfGuesses-1 ,
write('Enter a word composed of   '), write(Length) , write('  letters'),nl,
read(G),
guessH(W,G,NoOfGuesses,RemGuesses).
```
Responsible of the guessing phase

```
guessH(W,W,_,_):- %winning case
write('congratulations, You won!').
```
Winning case if the player guessed the correct word

```
guessH(W,G,_,1):- %losing case
W\==G,
write('You lost!') .
```
Losing case if the player run out of gusses

```
guessH(W,G,NoOfGuesses,RemGuesses):-
RemGuesses>1,
W\==G,
string_length(W,L1),
string_length(G,L2),
L1==L2,
string_chars(G,WL),
string_chars(W,GL),
correct_letters(WL,GL,CL),
write('Correct letters are:   '),write(CL),nl,
correct_positions(GL,WL,CP),
write('Correct letters in correct positions are:   '),write(CP),nl,
NewRemGuesses is RemGuesses-1,
write('Remaining Guesses are   '),write(NewRemGuesses),nl,nl,
guess(W,NoOfGuesses,NewRemGuesses).
```
**Guessing phase helper
(to keep guessing until the player guess the correct word or run out of guesses)**

```
guessH(W,G,NoOfGuesses,RemGuesses):- %incase the user entered a guess that is not the same length as the word
RemGuesses>1,
W\==G,
string_length(W,L1),
string_length(G,L2),
L1\==L2,
write('Word is not composed of  '),write(L1), write('  letters. Try again.'),nl,
write('Remaining Guesses are   '),write(RemGuesses),nl,nl,
guess(W,NoOfGuesses,RemGuesses).
```
**Guessing phase helper
(in case that the user guessed a word that is not the same length of the word)**

```
choosing_category(C):-  %Player keeps choosing a category until he chooses an available one
write('Choose a category:'),nl,
read(C),
is_category(C) ;
(write('This category does not exist.'),nl, choosing_category(C)).
```
Player keeping choosing a category until he chooses a category that exists

```
choosing_length(C,Length):-  %Player keeps choosing a length until he chooses an available one
write('Choose a length: '),nl,
read(Length),
number(Length),
is_length(C,Length);
(write('There are no words of this length.') ,nl, choosing_length(C,Length)).
```
Player keeping choosing a length until he chooses a length that exists

```
is_length(C,L):-  %succeeds if L is a length of a word in C
word(_,C),
available_length(L).
```
Succeeds if L is a length of a word in C

```
is_category(C):- %succeeds if C is an avaialable category in the KB
word(_,C).
```
Succeeds if C is an avaialable category in the KB

```
categories(L):- %succeeds if L is a list containing all the available categories without duplicates.
setof(C,is_category(C),L).
```
Succeeds if L is a list containing all the available categories without duplicates

```
available_length(L):- %succeeds if L is a length of a word in the KB
number(L),
word(W,_),
atom_length(W,L).
```
Succeeds if L is a length of a word in the KB

```
pick_word(W,L,C):-
word(W,C),
atom_length(W,L).
```
Succeeds if W is a word in the KB with length L and category C.

```
correct_letters(_,[],[]).
```

```
correct_letters(L1,[H|T],[H|T1]):-
member(H,L1),
delete(T,H,T2),
correct_letters(L1,T2,T1).
```
Correct_letters(L1,L2,CL): succeeds if CL is a list containing the letters in both L1 and L2.

```
correct_letters(L1,[H|T],CL):-
\+member(H,L1),
correct_letters(L1,T,CL).
```

```
correct_positions(_,[],[]).
```

```
correct_positions([H1|T1],[H2|T2],[H1|T3]):-
H1==H2,
correct_positions(T1,T2,T3).
```
Correct_positions(L1,L2,PL): succeeds if PL is a list containing the letters that occur in both L1 and L2 in the same positions.

```
correct_positions([H1|T1],[H2|T2],PL):-
H1\==H2,
correct_positions(T1,T2,PL).
```

Winning scenario

```
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For help, use ?- help(Topic). or ?- apropos(Word).

1 ?- main.
Welcome to Pro-Wordle!
---------------------

Please enter a word and its category on separate lines:
|: egypt.
|: countries.
Please enter a word and its category on separate lines:
|: germany.
|: countries.
Please enter a word and its category on separate lines:
|: spain.
|: countries.
Please enter a word and its category on separate lines:
|: cairo.
|: cities.
Please enter a word and its category on separate lines:
|: newyork.
|: cities.
Please enter a word and its category on separate lines:
|: tokyo.
|: cities.
Please enter a word and its category on separate lines:
|: callofduty.
|: games.
Please enter a word and its category on separate lines:
|: fifa.
|: games.
Please enter a word and its category on separate lines:
|: meat.
|: food.
Please enter a word and its category on separate lines:
|: chicken.
|: food.
Please enter a word and its category on separate lines:
|: fish.
|: food.
Please enter a word and its category on separate lines:
|: done.
Done building the words database...

The available categories are: [cities,countries,food,games]
Choose a category:
|: cities.
Choose a length:
|: 8.
There are no words of this length.
Choose a length:
|: five.
There are no words of this length.
Choose a length:
|: 5.
Game started.You have  6  gusses

Enter a word composed of   5  letters
|: circle.
Word is not composed of  5  letters. Try again.
Remaining Guesses are   6

Enter a word composed of   5  letters
|: carry.
Correct letters are:   [c,a,r]
Correct letters in correct positions are:   [c,a,r]
Remaining Guesses are   5

Enter a word composed of   5  letters
|: chair.
Correct letters are:   [c,a,i,r]
Correct letters in correct positions are:   [c]
Remaining Guesses are   4

Enter a word composed of   5  letters
|: cloud.
Correct letters are:   [c,o]
Correct letters in correct positions are:   [c]
Remaining Guesses are   3

Enter a word composed of   5  letters
|: cairo.
congratulations, You won!
true .
```

Loosing scenario

```
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For help, use ?- help(Topic). or ?- apropos(Word).

1 ?- main.
Welcome to Pro-Wordle!
---------------------

Please enter a word and its category on separate lines:
|: egypt.
|: countries.
Please enter a word and its category on separate lines:
|: germany.
|: countries.
Please enter a word and its category on separate lines:
|: spain.
|: countries.
Please enter a word and its category on separate lines:
|: cairo.
|: cities.
Please enter a word and its category on separate lines:
|: newyork.
|: cities.
Please enter a word and its category on separate lines:
|: tokyo.
|: cities.
Please enter a word and its category on separate lines:
|: callofduty.
|: games.
Please enter a word and its category on separate lines:
|: fifa.
|: games.
Please enter a word and its category on separate lines:
|: meat.
|: food.
Please enter a word and its category on separate lines:
|: chicken.
|: food.
Please enter a word and its category on separate lines:
|: fish.
|: food.
Please enter a word and its category on separate lines:
|: done.
Done building the words database...

The available categories are: [cities,countries,food,games]
Choose a category:
|: vegetables.
This category does not exist.
Choose a category:
|: food.
Choose a length:
|: 6.
There are no words of this length.
Choose a length:
|: 4.
Game started.You have  5  gusses

Enter a word composed of   4  letters
|: fish.
Correct letters are:   []
Correct letters in correct positions are:   []
Remaining Guesses are   4

Enter a word composed of   4  letters
|: sushi.
Word is not composed of  4  letters. Try again.
Remaining Guesses are   4

Enter a word composed of   4  letters
|: main.
Correct letters are:   [m,a]
Correct letters in correct positions are:   [m]
Remaining Guesses are   3

Enter a word composed of   4  letters
|: meet.
Correct letters are:   [m,e,t]
Correct letters in correct positions are:   [m,e,t]
Remaining Guesses are   2

Enter a word composed of   4  letters
|: meal.
Correct letters are:   [m,e,a]
Correct letters in correct positions are:   [m,e,a]
Remaining Guesses are   1

Enter a word composed of   4  letters
|: fish.
You lost!
true .
```