

Muhammad Hargi Muttaqin  
D4-2A (191524027)

1. Code :

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

```
replace_all([X|Y],A,B,[B|Result]) :-
```

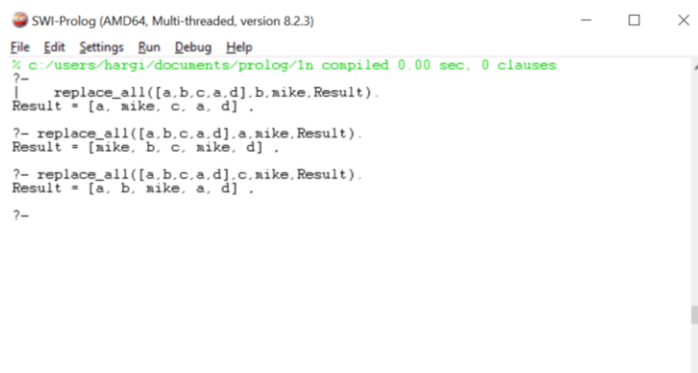
```
    X=A,
```

```
    replace_all(Y,A,B,Result).
```

```
replace_all([X|Y],A,B,[X|Result]) :-
```

```
    replace_all(Y,A,B,Result).
```

Output :



```
SWI-Prolog (AMD64, Multi-threaded, version 8.2.3)
File Edit Settings Run Debug Help
% c:/users/hargi/documents/prolog/in compiled 0.00 sec, 0 clauses
?-
| replace_all([a,b,c,a,d],b,mike,Result).
Result = [a, mike, c, a, d] .
?- replace_all([a,b,c,a,d],a,mike,Result).
Result = [mike, b, c, mike, d] .
?- replace_all([a,b,c,a,d],c,mike,Result).
Result = [a, b, mike, a, d] .
?-
```

2. Source :

```
numval(multiply(X,Y),Z):-
```

```
    numval(X,I),
```

```
    numval(Y,K),
```

```
    Z is I*K.
```

```
numval(add(X,Y),Z):-
```

```
    numval(X,I),
```

```
    numval(Y,K),
```

```
    Z is I+K.
```

```
numval(X,X):-
```

```
    number(X).
```

```
numval(X,X,X):-
```

```
    number(X).
```

Output:

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```
SWI-Prolog (AMD64, Multi-threaded, version 8.2.3)
File Edit Settings Run Debug Help
?- nuval(add(multiply(3,add(2,5)),add(2,3)))
nuval(add(multiply(3,add(2,5)),add(2,3)))
ERROR: Syntax error: Operator expected
ERROR: nuval(add(multiply(3,add(2,5)),add(2,3)))
ERROR: ** here **
ERROR:
nuval(add(multiply(3,add(2,5)),add(2,3)))
?- nuval(add(multiply(3,add(2,5)),add(2,3))).
ERROR: Syntax error: Operator expected
ERROR: nuval(add(multiply(3,add(2,5)),add(2,3)))
ERROR: ** here **
ERROR:
?- nuval(add(multiply(3,add(2,5)),add(2,3)).X).
ERROR: Syntax error: Operator expected
ERROR: nuval(add(multiply(3,add(2,5)),add(2,3).X))
ERROR: ** here **
ERROR:
?- nuval(add(multiply(3,add(2,5)),add(2,3)).X).
X = 26
Unknown action: 0 (h for help)
Action? .
?- nuval(add(multiply(3,add(2,5)),add(2,3)).X).
X = 26
```

3. Source :

add([],\_,[]).

add([X|Y],I,[X|Z]):-

append(Y,I,Z).

Output:

```
SWI-Prolog (AMD64, Multi-threaded, version 8.2.3)
File Edit Settings Run Debug Help
ERROR: ** here **
ERROR:
?- nuval(add(multiply(3,add(2,5)),add(2,3)).X).
ERROR: Syntax error: Operator expected
ERROR: nuval(add(multiply(3,add(2,5)),add(2,3).X))
ERROR: ** here **
ERROR:
?- nuval(add(multiply(3,add(2,5)),add(2,3)).X).
X = 26
Unknown action: 0 (h for help)
Action? .
?- nuval(add(multiply(3,add(2,5)),add(2,3)).X).
X = 26
% c:/Users/Hargi/Documents/Prolog/add.pl compiled 0.00 sec, 2 clauses
.
?- add([1,2,3],[4,5,6],I).
I = [1, 2, 3, 4, 5, 6].
?- add([1,2,3,4,5,6],[4,5,6],I).
I = [1, 2, 3, 4, 5, 6, 4, 5, 6].
?-
```

4. Source :

p([],[]).

p([I|J],K):-

p(J,M),

append(X,Y,M),

append(X,[I|Y],K).

Output :

```
SWI-Prolog (AMD64, Multi-threaded, version 8.2.3)
File Edit Settings Run Debug Help
P = [love, i, polban].
?- p([i,love,polban],P).
P = [i, love, polban];
P = [love, i, polban];
P = [love, polban, i];
P = [i, polban, love];
P = [polban, i, love];
P = [polban, love, i];
false.
?-
% c:/users/hargi/documents/prolog/polban compiled 0.00 sec, 0 clauses
?-
|
p([i,love,polban],P).
P = [i, love, polban];
P = [love, i, polban];
P = [love, polban, i];
P = [i, polban, love];
P = [polban, i, love];
P = [polban, love, i];
false.
?-
```

5. —

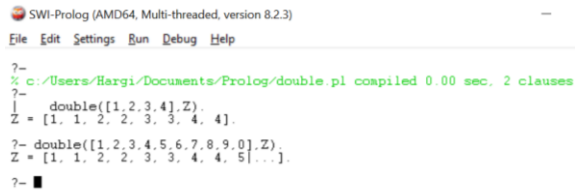
6. Source:

```
double([],[]).
```

```
double([X|Y],[X,X|Z]):-
```

```
double(Y,Z).
```

Output :



```
SWI-Prolog (AMD64, Multi-threaded, version 8.2.3)
File Edit Settings Run Debug Help
?-
% c:/Users/Hargi/Documents/Prolog/double.pl compiled 0.00 sec, 2 clauses
?-
| double([1,2,3,4],Z).
Z = [1, 1, 2, 2, 3, 3, 4, 4].
?- double([1,2,3,4,5,6,7,8,9,0],Z).
Z = [1, 1, 2, 2, 3, 3, 4, 4, 5|...].
?-
```

7. Source :

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

```
row(X,Y,[X|Z]):-
```

```
X < Y,
```

```
I is X+1,
```

```
row(I,Y,Z).
```

Output :



```
SWI-Prolog (AMD64, Multi-threaded, version 8.2.3)
File Edit Settings Run Debug Help
ERROR: row
ERROR: ** here **
ERROR: (1,20,H) .
?- row (1,20,H) .
ERROR: Syntax error: Operator expected
ERROR: row
ERROR: ** here **
ERROR: (1,20,H) .
?-
% c:/users/hargi/documents/prolog/row compiled 0.00 sec, -2 clauses
?-
| row (1,20,H).
ERROR: Syntax error: Operator expected
ERROR: row
ERROR: ** here **
ERROR: (1,20,H) .
?- row(1,20,Z).
Z = [1, 2, 3, 4, 5, 6, 7, 8, 9|...] .
?- row(1,30,I).
I = [1, 2, 3, 4, 5, 6, 7, 8, 9|...] ;
false.
?-
```