

PROGRAMMING ASSIGNMENT 2: PROLOG

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OUTPUTS:

Q1)

?- brother(tod,X).

X = rod ;

false.

?- sister(marge,X).

X = patty ;

X = selma ;

false.

?- aunt(X,patty).

X = bart ;

X = lisa ;

X = maggie ;

false.

?- uncle(bart,X).

X = herb ;

false.

?- grandfather(maggie,X).

X = abraham ;

false.

?- granddaughter(jackie,lisa).

true.

?- ancestor(bart,X).

X = homer ;

X = marge ;

X = abraham ;

X = jackie ;

false.

?- unrelated(tod,bart).

true.

?- unrelated(maggie,smithers).

true.

?- unrelated(maggie,selma).

false.

Q2)

?- result(X).

X = lisa ;

X = charlie ;

false.

Q3)

?- remdups([1,3,4,2,4,3,6,8,6,5,4,2,3,4,9],X).

X = [1, 8, 6, 5, 2, 3, 4, 9] .

Q4)

?- factor(120,M).

M = [2, 2, 2, 3, 5] ;

false.

?- factor(7,P).

P = [7] ;

false.

Q5)

?- bitvec(3,K).

K = [0, 0, 0] ;

K = [1, 0, 0] ;

K = [0, 1, 0] ;

K = [1, 1, 0] ;

K = [0, 0, 1] ;

K = [1, 0, 1] ;

K = [0, 1, 1] ;

K = [1, 1, 1] ;

false.

?- code(5,2,X).

X = [1, 1, 0, 0, 0] ;

X = [1, 0, 1, 0, 0] ;

X = [0, 1, 1, 0, 0] ;

X = [1, 0, 0, 1, 0] ;

X = [0, 1, 0, 1, 0] ;

X = [0, 0, 1, 1, 0] ;

X = [1, 0, 0, 0, 1] ;

X = [0, 1, 0, 0, 1] ;

X = [0, 0, 1, 0, 1] ;

X = [0, 0, 0, 1, 1] ;

false.

Q6)

?- sin_zero(3,Y).

Y = 3.141592653300477 ;

false.

?- sin_zero(10,Y).

Y = 9.424777960768635 ;

false.

Q7) NOTE: THIS QUESTION TAKES 2 MINUTES TO GET RESULT AFTER QUERY

Solution is in the format: ['S', 'E', 'N', 'D', 'M', 'O', 'R', 'Y']

?- solution(L).

L = [9, 5, 6, 7, 1, 0, 8, 2]

Q8)

WITH THIS ARRANGEMENT:

p(x,1,1).

p(x,1,3).

p(o,3,1).

p(o,1,3).

OUTPUT:

?- move(x,R,C).

go for win!

R = 1,

C = 2 ;

false.

WITH THIS ARRANGEMENT:

p(x,1,1).

p(x,2,3).

p(o,3,1).

p(o,3,3).

OUTPUT:

?- move(x,R,C).

move to block opponent!

R = 3,

C = 2 ;

false.

?- move(o,R,C).

go for win!

R = 3,

C = 2 ;

false.

Q9)

WITH THIS ARRANGEMENT:

visited(1,1).

visited(2,1).

visited(1,2).

stench(2,1).

breeze(1,2).

OUTPUT:

I?- candidate(X,Y).

X = Y, Y = 2 ;

X = 3,

Y = 1 ;

X = 1,

Y = 3 ;

X = Y, Y = 2 ;

false.

?- move(X,Y).

X = Y, Y = 2 ;

false.

WITH THIS ARRANGEMENT:

visited(1,1).

visited(2,1).

visited(1,2).

stench(2,1).

breeze(1,2).

visited(2,2).

OUTPUT:

?- candidate(X,Y).

X = 3,

Y = 1 ;

X = 3,

```
Y = 2 ;  
X = 1,  
Y = 3 ;  
X = 2,  
Y = 3 ;  
false.
```

```
?- move(X,Y).  
X = 3,  
Y = 2 ;  
X = 2,  
Y = 3 ;  
false.
```

WITH THIS ARRANGEMENT:

```
visited(4,1).  
visited(4,2).  
visited(4,3).  
visited(4,4).  
stench(4,2).  
breeze(4,3).  
breeze(4,4).
```

OUTPUT:

```
?- move(X,Y).  
X = 3,  
Y = 1 ;  
false.
```