Keerthi Teja Konuri

H Weekly Activity & Quiz Week08 10/17 **Review Test Submission: Week08 Quiz Prolog2**

Review Test Submission: Week08 Quiz Prolog2

User	Keerthi Teja Konuri
Course	CS 6364.001 - Artificial Intelligence - F15
Test	Week08 Quiz Prolog2
Started	10/17/15 9:24 PM
Submitted	10/17/15 9:38 PM
Due Date	10/17/15 11:59 PM
Status	Completed
Attempt Score	18 out of 18 points
Time Elapsed	13 minutes out of 1 hour
Results Displayed	All Answers, Submitted Answers, Correct Answers

Question 1

2 out of 2 points

4. Explain the behavior or goal of the following program (mystery/3). What would be the result of the query below?

```
mystery(A,B) :- mystery(A,[],B).
mystery([X|Y],Z,W) :- mystery(Y,[X|Z],W).
mystery([],X,X).
```

```
?- mystery([1,2,3], A).
```

Selected Answer: ✓ A = [3,2,1].

Answers:

A = [1,2,3].

A = [ ].

A = [1].

A = [2,3].

✓ A = [3,2,1].

Question 2

2 out of 2 points

8. Explain the behavior or goal of the following program xyz/3.

```
xyz(X,[X|R],R).
xyz(X,[F|R],[F|S]) :- xyz(X,R,S).

?- xyz(X,[1,2,3],L).
```

Selected Answer: ✓ It will take an element X out of a list [X|R], resulting in a list R.

Answers:

✓ It will take an element X out of a list [X|R], resulting in a list R.

It will take an element X out of a list [X|R], resulting in a reversed list.

It will add an element X into a list R, resulting in a list [X|R].

It will check a membership of an element X from of a list [X|R].

It will rotate a list [X|R], resulting in a list [R|X].

Question 3

2 out of 2 points

What is a correct definition of negation in Prolog?

Selected Answer: ✓

```
not(P) :- call(P), !, fail.
not(P).
```

Answers:

```
not(P) :- call(P), !.
```

```
not(P) :- call(P), !.
not(P).
```

```
not(P) :- not call(P), fail.
not(P).
```

✓

```
not(P) :- call(P), !, fail.
not(P).
```

```
not(P) :- \+ call(P), !, fail.
not(P).
```

Question 4

2 out of 2 points

Write a Prolog program (append/3) where two lists (A and B) are appended to the third list (C) in ‘append(A, B, C)’.

Selected Answer: ✓

```
append([X|Y],Z,[X|W]) :- append(Y,Z,W).
append([],X,X).
```

Answers:

✓

```
append([X|Y],Z,[X|W]) :- append(Y,Z,W).
append([],X,X).
```

```
append([X|Y],Z,[X|W]) :- append(Y,Z,W).
append(X,[],[]).
```

```
append([X|Y],Z,[X|W]) :- append(X,Z,W).
append([],X,X).
```

```
append([X|Y],Z,[X|W]) :- append(Y,Z,W).
append([],[],X).
append([X|Y],[X|Z],[X|W]) :- append(Y,Z,W).
append([],X,X).
```

Question 5

2 out of 2 points

2. Write a prolog program (factorial/3 or factorial(N,A,F)) to compute a factorial F of an integer N, in tail-recursion with an accumulating variable A.

Selected Answer:

factorial(0,F,F).
✓ factorial(N,A,F) :- N > 0, A1 is N*A, N1 is N -1, factorial(N1,A1,F).

Answers:

factorial(0,1,1).
factorial(N,A,F) :- N > 0, A1 is N*A, N1 is N -1, factorial(N1,A1,F).

factorial(0,F,F).
✓ factorial(N,A,F) :- N > 0, A1 is N*A, N1 is N -1, factorial(N1,A1,F).

factorial(0,1,F).
factorial(N,A,F) :- N > 0, A1 is N*A, N1 is N -1, factorial(N1,A1,F).

factorial(0,F,F).
factorial(N,A,F) :- N > 0, A1 is N1*A, N is N1 -1, factorial(N1,A1,F).

factorial(0,F,F).
factorial(N1,A,F) :- N1 > 0, A is N*A1, N1 is N -1, factorial(N,A1,F).

Question 6

2 out of 2 points

6. Given member/2 where member(X, Y) checks whether X is an element of a list Y, write a Prolog program union/3 where union(A, B, C) will establish a "union" relationship where a list C is a union of a list A and a list B.

Selected Answer:

union([X|Y],Z,W) :- member(X,Z), union(Y,Z,W).
union([X|Y],Z,[X|W]) :- \+ member(X,Z), union(Y,Z,W).
✓ union([],Z,Z).

Answers:

union([X|Y],Z,W) :- member(X,Y), union(Y,Z,W).
union([X|Y],Z,[X|W]) :- \+ member(X,Z), union(Y,Z,W).
union([],Z,Z).

union([X|Y],Z,W) :- member(X,Z), union(Y,Z,W).
union([X|Y],Z,[X|W]) :- member(X,Z), union(Y,Z,W).
union([],Z,Z).

union([X|Y],Z,W) :- member(X,Z), union(Y,Z,W).
union([X|Y],Z,[X|W]) :- \+ member(X,Z), union(Y,Z,W).
✓ union([],Z,Z).

union([X|Y],Z,W) :- member(X,Z), union(Y,Z,W).
union([X|Y],Z,W) :- \+ member(X,Z), union(Y,Z,W).
union([],[],Z).

union(X,[Y|Z],W) :- member(X,Z), union(Y,Z,W).
union(X,Z,[X|W]) :- \+ member(X,Z), union(Y,Z,W).
union(_,Z,Z).

Question 7

2 out of 2 points

5. Given member/2 where member(X, Y) checks whether X is an element of a list Y, write a Prolog program subset/2 where subset(A, B) will establish a relationship of A being a subset of B.

Selected Answer:

✓
```
subset([X|R],S) :- member(X,S), subset(R,S).
subset([ ],_).
```

Answers:

✓
```
subset([X|R],S) :- member(X,S), subset(R,S).
subset([ ],_).
```

```
subset(X,S) :- member(X,R), subset(R,S).
subset([ ],_).
```

```
subset([R],S) :- member(X,S), subset(R,S).
subset([ ],_).
```

```
subset(S, [X|R]) :- member(X,S), subset(R,S).
subset([ ],_).
```

```
subset(X,[S|R]) :- member(X,S), subset(R,S).
subset(_,[ ]).
```

Question 8

2 out of 2 points

3. Write a prolog program for member/2 where member(X, Y) checks whether X is an element of a list Y.

Selected Answer:

✓
```
member(X,[X|R]).
member(X,[Y|R]) :- member(X,R).
```

Answers:

```
member(X,[X]).
member(X,[Y|R]) :- member(X,R).
```

```
member(X,X).
member(X,[Y|R]) :- member(X,R).
```

```
member(X,[_]).
member(X,[Y|R]) :- member(Y,R).
```

```
member(X,[X|R]).
member(X,[Y|R]) :- member(X,[R]).
```

✓
```
member(X,[X|R]).
member(X,[Y|R]) :- member(X,R).
```

Question 9

2 out of 2 points

1. Write a prolog program (factorial/2) to compute a factorial F of an integer N, where factorial of 0 is 1.

Selected Answer:

✓
```
factorial(0,1).
factorial(N,F) :- N>0, N1 is N-1, factorial(N1,F1), F is N * F1.
```

Answers:

```
factorial(0,1).
factorial(N,F) :- N>0, N is N1-1, factorial(N1,F1), F is N * F1.
```

```
factorial(0,0).
factorial(N,F) :- N>0, N1 is N-1, factorial(N1,F1), F is N * F1.
```

```
factorial(0,1).
factorial(N,F) :- N>0, N1 is N1-1, factorial(N1,F1), F is N1 * F1.
```

✓

```
factorial(0,1).
factorial(N,F) :- N>0, N1 is N-1, factorial(N1,F1), F is N * F1.
```

```
factorial(0,1).
factorial(N,F) :- N>0, N1 is N-1, factorial(N1,F), F1 is N * F.
```

Saturday, October 31, 2015 8:20:29 PM CDT

← OK