CSc 372 Quiz/ICA 8: Concepts from Prolog Intro

Name	
UA Email	

Keep your eyes on your own quiz or exam and study guide. Do not access the internet, any other person, or AI to help you during the quiz. When you are done, raise your hand so someone can pick up your quiz and study guide. Once your quiz has been picked up, you can quietly use any devices, but do not communicate with others who are still taking the quiz.

Question 1 [2 pts]. Given the following Prolog facts:

```
parent(grandmama,pancho).
parent(grandmama,gomez).
parent(hester,morticia).
parent(hester,ophelia).
```

In the space provided below, write down the result of the query

```
parent(grandmama,pancho).
```

Question 2 [2 pts]. Using the same above Prolog facts, write all the outputs for the query

```
parent(grandmama,Child).
```

Question 3 [1pt]. True or False …….....

The query `parent(P,C).` will provide all possible parent-child pairs.

Question 4 [3 pt]. Put the letter for the best answer or a ? in this box ……..... ☐

```
      ?- trace.
true.
[trace]  ?- sibling(pancho,X).
   Call: (10) sibling(pancho, _28130) ? creep
   Call: (11) parent(_30234, pancho) ? creep
   Exit: (11) parent(grandmama, pancho) ? creep
   Call: (11) parent(grandmama, _28130) ? creep
   Exit: (11) parent(grandmama, pancho) ? creep
^  Call: (11) not(pancho=pancho) ? creep
^  Fail: (11) not(user:(pancho=pancho)) ?
   Redo: (11) parent(grandmama, _12198) ?
   Exit: (11) parent(grandmama, gomez) ?
^  Call: (11) not(pancho=gomez) ? creep
^  Exit: (11) not(user:(pancho=gomez)) ? creep
   Exit: (10) sibling(pancho, gomez) ? creep
X = gomez.
```

Given the parent facts from Question 1, which of the below sibling facts will result in the above trace?

A. `sibling(X,Y) :- not(X=Y), parent(P,X), parent(P,Y).`
B. `sibling(X,Y) :- parent(P,X), parent(P,Y), not(X=Y).`
C. `sibling(X,Y) :- not(X=Y), parent(X,P), parent(Y,P).`
D. `sibling(X,Y) :- parent(X,P), parent(Y,P), not(X=Y).`

Question 5 [2 pt]. Put the letter for the best answer or a ? in this box ……..... ☐

Which of the following best describes Prolog as a programming language?
Reference: ChatGPT conversation 2/23/25

A. Prolog is an imperative programming language that requires the programmer to specify algorithms explicitly.
B. Prolog is a functional programming language that focuses on lambda calculus and higher-order functions.
C. Prolog is a logical programming language that uses facts and rules to describe solutions rather than specifying explicit algorithms.
D. Prolog is an object-oriented programming language that organizes code into classes and objects.