Questions with one correct answer

Question 1. In Prolog, suppose that the following clauses

$ancestor(X, Y) :- parent(X, Z), ancestor(Z, Y).$
$ancestor(amy, bob).$
$parent(eve, amy).$

have been entered into the database, then which of the following queries would cause the "yes" response?

- ☐ $? - ancestor(bob, amy).$
- ☐ $? - ancestor(amy, eve).$
- ☐ $? - ancestor(eve, bob).$
- ☐ $? - ancestor(eve, amy).$

Question 2. Which of the following Pascal programs causes a syntax error?

- ☐ var i: Integer; begin Writeln; i:=1.0; end.
- ☐ var i: Integer; begin Writeln; i:=1; end.
- ☐ var i: Integer; begin Writeln(i=1); end.
- ☐ var i: Integer; begin Writeln(i:=1); end.

Question 3. In Ada, which of the following statements is legal?

- ☐ I = I + 1;
- ☐ while i <= 5 do J := J + 1; end while;
- ☐ while i <= 5 do J := J + 1; end loop;
- ☐ integer: boolean;

Question 4. In Java, which of the following statements is legal?

- ☐ System.out.println("Hello World");
- ☐ int v; if (v == 0) v=v+1;
- ☐ System.out.println(Hello World);
- ☐ System.out.println('Hello World');

Question 5. In C#, which of the following statements is legal?

- ☐ Console.WriteLine("Hello World");
- ☐ Console.out.println("Hello World");
- ☐ if (int v == 0) return v;
- ☐ int v; if (v == 0) v=v+1;

Question 6. In Python, which of the following statements is legal?

- ☐ if (v == 0) v=v+1;
- ☐ printf ('Hello World');
- ☐ Console.out.println("Hello World");
- ☐ println('Hello World');
- ☐ sum := float(1) + float(2);
- ☐ print ("Hello World");

Constructed-response questions

Question 7. Describe briefly your contribution to your group project (*i.e. the project that your group has taken in this course*).

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Question 8. Explain shortly why C is more memory-efficient than Python (*i.e. 1.1 vs 3.9* for space).

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Question 9. Give a functional form of the following Pascal code.

```
function sum (n: Integer): Integer;
  var i,s: Integer;
begin
   s:=0;
   if n<=0 then
      sum:=0;
   else
      for i := 1 to n do
         s:=s+i;
   sum:=s;
end
```

Question 10. Explain in detail the meaning of the following code in C++.

```
enum Disc {IsInt,IsReal};
struct IntOrReal {
   enum Disc which;
   union {
      int i;
      double r;
   };
};
```

HANOI UNI. OF SCI. AND TECH. FACULTY OF MATH. AND INFORMATICS

MIDTERM TEST, SPRING 2026 Course: CS370 - Nat. of PL Duration: 60 minutes	Student name: ..... Student Id: .....Order. ... Class Id:	
Evaluators' name and signature	Proctors' name and signature	Total score

Test Id: 2 (This test consists of 10 questions)

Note: *No electronic devices (laptops, smart devices, etc. except calculators) are allowed.*

Questions with one correct answer

Question 1. In Prolog, suppose that the following clauses

$ancestor(X, Y) :- parent(X, Z), ancestor(Z, Y).$
$ancestor(amy, bob).$
$parent(eve, amy).$

have been entered into the database, then which of the following queries would cause the "no" response?

- ☐ $? - parent(eve, amy).$
- ☑ $? - ancestor(eve, bob).$
- ☐ $? - ancestor(amy, bob).$
- ☐ $? - ancestor(bob, eve).$

Question 2. Which of the following Pascal programs causes an incompatible type error?

- ☑ var i: Integer; begin Writeln(i:=1); end.
- ☐ var i: Integer; begin Writeln; i:=1.0; end.
- ☐ var i: Integer; begin Writeln(i=1); end.
- ☐ var i: Integer; begin Writeln; i:=1; end.

Question 3. In Ada, which of the following statements is legal?

- ☐ while I >= 5 do J := J - 1; end while;
- ☐ while I <= 5 do J := J + 1; end loop;
- ☐ while J <= 5 loop J := J + 1; end loop;
- ☐ I = I + 1;

Question 4. In Java, which of the following statements is legal?

- ☐ if (int v = 0) return v;
- ☐ int v; if (v == 0) v=v+1;
- ☐ System.out.println(Hello World);
- ☑ int v=1; if (v != 0) v=v+1;

Question 5. In C#, which of the following statements is legal?

- ☐ System.out.println("Hello World");
- ☑ Console.WriteLine("Hello World");
- ☐ System.out.println('Hello World');
- ☐ int v; if (v != 0) v=v+1;

Question 6. In Python, which of the following statements is legal?

- ☐ if (v != 0) v=v+1;
- ☐ printf ("Hello World");
- ☑ Console.println("Hello World");
- ☐ sum = float(1.0) + float(2);
- ☐ sum := float(1) + float(2);
- ☑ println('Hello World');

Constructed-response questions

Question 7. Describe briefly your role and tasks in your group project (i.e. the project that your group has taken in this course).

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Question 8. Explain shortly why C is faster than Python (i.e. 1.0 vs 6.5 for speed).

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Question 9. Give an imperative form of the following Pascal code.

```
function prod (n: Integer): Real;
  begin
     if n>=1 then
        prod:=n*prod(n-1)
     else
        prod:=1.0;
  end
```

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Question 10. Explain in detail the meaning of the following code in Java.

```
class A
{ A A(A A)
  { A:
     for(;;)
     { if (A.A(A) == A) break A; }
     return A;
  }
}
```

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