LTP > Exámenes

Exámenes

Self-Assessment Test Theme 2

Volver a la Lista de Examenes

Parte 1 de 3 - Second 2.0/ 2.0 Puntos

Preguntas 1 de 10

1.0/ 1.0 Puntos. Puntos descontados por fallo: 0.33

Given a *wrong* program sentence like:

```
if (x>0) else x:=x+1 then x:=x-1
```

which of the compiling phases detects its incorrectness?

- A. Lexical analysis.
- B. Syntactic analysis.
- C. Semantic analysis.
- D. Static analysis.

Preguntas 2 de 10

1.0/ 1.0 Puntos. Puntos descontados por fallo: 0.33

Which of the following statements is TRUE?

- A. The static semantics analyzes the most stable part of the code.
- B. Errors due to type incompatibilities are detected during the semantic analysis.
- C. Syntactic errors in programs are detected during the linking phase.
- D.
  The static semantics detects all errors in compilation time; hence the dynamic semantics is executed with no error.

Parte 2 de 3 - First 1.84/ 3.5 Puntos

Preguntas 3 de 10

-0.33/ 0.5 Puntos. Puntos descontados por fallo: 0.33

Given a Hoare triple {P} S {Q}:

- A. P and Q are programs and S is a machine state.
- B. P is called the precondition, Q the postcondition, and P ⇒ Q always holds.
- C. The correctness of the triple is guaranteed if P ⇒ pmd(S,Q) holds.
- D. The correctness of the triple is guaranteed if pmd(S,Q) ⇒ P holds.

Preguntas 4 de 10

0.5/ 0.5 Puntos. Puntos descontados por fallo: 0.33

Consider the following axiomatic definitions for the assignment and conditional instructions

wp(X := exp, Q) = Q[X ↦ exp]

wp(if B then i1 else i2, Q)=(B∧wp(i1,Q))∨(not(B)∧wp(i2, Q))

Which of the following expressions corresponds to the weakest precondition P of the following program with respect to the postcondition Q

{P}={?}
if x<0
  then y:= -x
  else y:= x+y
{Q}={y=0}

- A. P = (x ≥ 0 ∧ x + y = 0)
- B. P = (x ≥ 0 ∧ y ≥ 0)
- C. P = (x ≥ 0 ∧ x = y)
- D. P = (x = 0 ∧ x = y)

Preguntas 5 de 10

-0.33/ 0.5 Puntos. Puntos descontados por fallo: 0.33

Which of the following semantic descriptions of a programming language is the most useful in compiler design?

- A. Axiomatic semantics.
- B. Hoare's triples.
- C. Static semantics.
- D. Operational semantics.

Preguntas 6 de 10

0.5/ 0.5 Puntos. Puntos descontados por fallo: 0.33

Mark the kind of semantics definition to which next rule belongs:

$$\frac{\langle i_0,e\rangle \Downarrow e'' \ \wedge \ \langle i_1,e''\rangle \Downarrow e'}{\langle i_0;i_1,e\rangle \Downarrow e'}$$

$$\frac{\langle i_0,e\rangle \Downarrow e'' \ \wedge \ \langle i_1,e''\rangle \Downarrow e'}{\langle i_0;i_1,e\rangle \Downarrow e'}$$

- A. Axiomatic semantics.
- B. Big-step operational semantics.
- C. Small-step operational semantics.
- D. Its own semantics.

Preguntas 7 de 10

0.5/ 0.5 Puntos. Puntos descontados por fallo: 0.33

Which is the function of the following operation *X+:a* defined by the following semantic rule:

$$\frac{\langle X,e\rangle \Rightarrow n_0 \qquad \langle a,e\rangle \Rightarrow n_1}{\langle X +: a, e\rangle \rightarrow \langle \text{skip}, e[X \mapsto n_0 + n_1]\rangle}$$

- A. The value of expression a is assigned two times to the variable *X*.
- B. The value of variable X is incremented by the value of expression *a*.
- C. Variable X receives the double of the value of expression *a*.
- D. Variable X receives the value of expression *a*.

Preguntas 8 de 10

0.5/ 0.5 Puntos. Puntos descontados por fallo: 0.33

Which configuration is required (in *) to make the following evaluation complete by using the small-step operational semantics?

⟨if X>Y then Y:=Y+X else Y:=0, {X ↦→ 42, Y ↦ 0}⟩
⟨X>Y, {X ↦ 42, Y ↦ 0}⟩ ⇒ true
⟨X, {X ↦ 42, Y ↦ 0}⟩ ⇒ 42
⟨Y, {X ↦ 42, Y ↦ 0}⟩ ⇒ 0
→ ⟨Y:=Y+X, {X ↦ 42, Y ↦ 0}⟩
⟨Y+X, {X ↦ 42, Y ↦ 0}⟩ ⇒ 42
⟨Y, {X ↦ 42, Y ↦ 0}⟩ ⇒ 0
⟨X, {X ↦ 42, Y ↦ 0}⟩ ⇒ 42
→ (*

- A. ⟨ Y:=0, {X ↦ 42, Y ↦ 0} ⟩
- B. ⟨ skip, {X↦ 42, Y ↦ 0} ⟩
- C. ⟨ if X>Y then Y:=Y+X else Y:=0, {X ↦ 42, Y ↦ 0} ⟩
- D. ⟨ skip, {X ↦ 42, Y ↦ 42} ⟩

Preguntas 9 de 10

0.5/ 0.5 Puntos. Puntos descontados por fallo: 0.33

Given the following transition rules for the small-step semantics associated to the conditional instruction

$$\frac{\langle b,e\rangle \Rightarrow \text{true}}{\langle \text{if } b \text{ then } i0 \text{ else } i1,e\rangle \rightarrow \langle i0,e\rangle} \qquad \frac{\langle b,e\rangle \Rightarrow \text{false}}{\langle \text{if } b \text{ then } i0 \text{ else } i1,e\rangle \rightarrow \langle i1,e\rangle}$$

determine which is the next configuration for ⟨if X<4 then X:=X-1 else X:=X+1,{X→3}⟩

- A. ⟨skip,{X↦2}⟩
- B. ⟨skip,{X↦4}⟩
- C. ⟨X:=X-1,{X↦3}⟩
- D. ⟨X:=X+1,{X↦3}⟩

Parte 3 de 3 - Third -0.33/ 1.0 Puntos

Preguntas 10 de 10

-0.33/ 1.0 Puntos. Puntos descontados por fallo: 0.33

Indicate which of the following sentences is **FALSE**:

- ○ A. The mix implementation of a language combines the advantages of compilation and interpretation.
- ○ B. Interpreters are mainly used in script languages such as Perl or Postscript.
- ○ C. Intermediate code is generated by a compiler (e.g. P-code) providing portability to any platform.
- ○ D. Usually, an interpreter generates intermediate code that it is compiled into machine code.