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Test Information

Description The test consists of 9 multiple choice questions.

You may refer to any materials when answering the questions.

The weightage of the test is 3% of the final grade of the course. The contribution to your final grade from this test is round(no. of questions correctly answered/3).

Instructions You do not have to complete all 9 questions in one attempt. Just leave the test without submitting. Then the next time you click on the test, you will be able to continue answering questions and/or modify your previous answers. You are also allowed unlimited number of attempts till the test deadline.

Multiple Attempts This test allows multiple attempts.

Force Completion This test can be saved and resumed later.

Question Completion Status:

→ Moving to another question will save this response.

Question 1 of 9 [>](#) [»](#)

Question 1

1 points Saved

Which of the following statements is correct?

- 1. In our abstract grammar, Stmt is a subclass of Block.
- 2. In our abstract grammar, Block is a subclass of Stmt.
- 3. In our abstract grammar, VarDecl is a subclass of VarDeclStmt.
- 4. In our abstract grammar, LHS is a subclass of RHS.

→ Moving to another question will save this response.

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« « Question 2 of 9 » »

Question 2

1 points Save Answer

Which of the following statements is correct?

- 1. In our abstract grammar, ArithCompExpr is a subclass of CompExpr and CompExpr is a subclass of BinaryExpr.
- 2. In our abstract grammar, BinaryExpr is a subclass of CompExpr and ComprExpr is a subclass of ArithCompExpr.
- 3. In our abstract grammar, BinaryExpr is a subclass of CompExpr and ArithComprExpr is a subclass of CompExpr.
- 4. In our abstract grammar, ArithComprExpr is a subclass of CompExpr and BinaryExpr is a subclass of ArithCompExpr.

→ Moving to another question will save this response.

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 Question 3 of 9

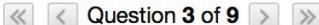
Question 3

1 points 

Which of the following statements is correct?

- 1. Attributes/methods for name analysis (name lookup) compute the types of the variable/parameter/function names.
- 2. Attributes/methods for name analysis (name lookup) search the declaration nodes of the names of variables/functions/types in the enclosing block.
- 3. Attributes/methods for name analysis (name lookup) search the declaration nodes of the names of variables/functions/types in the AST.
- 4. Attributes/methods for name analysis (name lookup) check for scoping errors.

 Moving to another question will save this response.

 Question 3 of 9

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« « Question 4 of 9 » »

Question 4

1 points Save Answer

Consider the following statements

- a. Lookup for types (lookupType) works exactly the same as field lookup.
- b. Lookup for variables (lookupVar) works exactly the same as function lookup.
- c. Lookup for functions (lookupFunction) works exactly the same as field lookup.
- d. Lookup for types (lookupType) works exactly the same as function lookup.

Which ones above are correct?

- 1. Statements a), b) and c).
- 2. Statements b), c) and d).
- 3. Statements c), d) and a).
- 4. Statements d), a) and b).

→ ! Moving to another question will save this response.

« « Question 4 of 9 » »

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▼ Question Completion Status:

→ Moving to another question will save this response.

« ‹ Question 5 of 9 › »

Question 5

1 points [Save Answer](#)

Consider the following statements

- a. VarName.namecheck() checks if a variable name is undeclared.
- b. VarDecl.namecheck() checks if a variable name has multiple declarations.
- c. VarName.namecheck() checks if a variable name has multiple declarations.
- d. VarDecl.namecheck() checks if a variable name is undeclared.

Which ones above are correct?

- 1. Statements a) and b).
- 2. Statements c) and d).
- 3. Statements a), b), c) and d).
- 4. None of the statements.

→ Moving to another question will save this response.

« ‹ Question 5 of 9 › »

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 **Question Completion Status:**

 Moving to another question will save this response.

 Question 6 of 9

Question 6

1 points 

Which of the following statements is correct?

- 1. A node of type TypeDescriptor is attached to AST nodes by the parser.
- 2. A node of type TypeDescriptor is attached to AST nodes by the semantic analyser.
- 3. A node of type IntType/BooleanType/VoidType/ArrayType is attached to AST nodes by the parser.
- 4. A node of type IntType/BooleanType/VoidType/ArrayType is attached to AST nodes by the semantic analyser.

 Moving to another question will save this response.

 Question 6 of 9

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« « Question 7 of 9 » »

Question 7

1 points ✓ Saved

Consider the following statements

- A type descriptor node `IntType` will be attached to each of the AST node `AddExpr`, `SubExpr`, `MulExpr`, `DivExpr` and `ModExpr` in an AST.
- The same descriptor node `IntType` will be attached to each of the AST node `AddExpr`, `SubExpr`, `MulExpr`, `DivExpr` and `ModExpr` in an AST.
- The type descriptor node `IntType` will be attached to each of the AST node `IntTypeName` in an AST.
- The type descriptor node `IntType` will be attached to each of the AST node `VarDecl` in an AST.

Which ones above are correct?

- 1. Statements a) and c).
- 2. Statements b) and c).
- 3. Statements a) and d).
- 4. Statements b) and d).

→ ⚠ Moving to another question will save this response.

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be able to continue answering questions and/or modify your previous answers. You are also allowed unlimited number of attempts till the test deadline.

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Question Completion Status:

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« « Question 8 of 9 » »

Question 8

1 points Save Answer

Consider the following statements

- a. The type check of a source program starts with the leaf nodes of an AST and after the children nodes are checked, the parent node will be checked, until the root node.
- b. The type check of a source program starts with the method Program.typecheck().
- c. The type check of a source program starts with the root of an AST and the typecheck() method of an AST node calls the typecheck() method of its children node.
- d. The typecheck() method of leaf nodes in an AST does not do anything.

Which ones above are correct?

- 1. Statements a), b) and c).
- 2. Statements b), c) and d).
- 3. Statements c), d) and a).
- 4. Statements d), a) and b).
- 5. Statements a), c) and d).

⚠ Moving to another question will save this response.

« « Question 8 of 9 » »

Question 9

1 points Save Answer

In the following set of tests for return statements, which case is not tested?

```
@Test
public void test_a() {
    runtest(false,
        "module M {" +
            "  int foo() {" +
                "    return true;" +
            "  }" +
        "}" );
}

@Test
public void test_b() {
    runtest("module M {" +
        "  void foo() {" +
            "    return;" +
        "  }" +
    "}" );
}

@Test
public void test_c() {
    runtest("module M {" +
        "  int foo() {" +
            "    return 0;" +
        "  }" +
    "}" );
}

@Test
public void test_d() {
    runtest(false,
        "module M {" +
            "  int bar() {}" +
            "  void foo() {" +
                "    return bar();" +
            "  }" +
        "}" );
}
```

- 1. the function is of void type and returns nothing;
- 2. the function is of a non-void type and returns an expression of the correct type;
- 3. the function is of void type but returns an expression of some other type;
- 4. the function is of a non-void type but returns nothing;
- 5. the function is of a non-void type but returns an expression of a type different from the function type.