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NPTEL (<https://swayam.gov.in/explorer?ncCode=NPTEL>) » Software Testing (course)

Course outline

How does an NPTEL online course work? ()

Pre-requisite Assignment ()

Week 1 ()

Week 2 ()

Week 3 ()

Week 4 ()

Week 5 ()

Week 6 ()

Week 7 ()

Week 8 ()

● Syntax-Based Testing (unit? unit=66&lesson=67)

● Mutation Testing (unit?

Week 8 : Assignment 8

The due date for submitting this assignment has passed.

Due on 2022-09-21, 23:59 IST.

Assignment submitted on 2022-09-21, 21:16 IST

1) Consider the regular expression $(a + b) \cdot (a + b)^*$ over the alphabet $\Sigma = \{a, b\}$. **1 point**
Which of the following options represents a list of words generated by this regular expression?

- ☐ $ab, a, aab.$
- ☐ $abab, babab.$
- ☐ $aaa, bbb.$
- ☒ All of the above.

Yes, the answer is correct.
Score: 1

Accepted Answers:
All of the above.

2) For the same regular expression $(a + b) \cdot (a + b)^*$, which of the following options **1 point**
represents the language corresponding to the regular expression?

- ☐ The language is the set of all words over a and b that have at least one a and at least one b in them.
- ☒ The language is the set of all words over a and b that have at least one a or at least one b in them.

Yes, the answer is correct.
Score: 1

Accepted Answers:
The language is the set of all words over a and b that have at least one a or at least one b in them.

unit=66&lesson=68)

● Mutation
Testing for
Programs
(unit?
unit=66&lesson=69)

● Mutation
Testing:
Mutation
Operators for
Source Code
(unit?
unit=66&lesson=70)

● Mutation
Testing Vs.
Graphs and
Logic Based
Testing (unit?
unit=66&lesson=71)

● Practice: Week
8 : Assignment
8 (Non
Graded)
(assessment?
name=118)

● Quiz: Week 8
: Assignment
8
(assessment?
name=143)

○ Week 8
Feedback
Form:
Software
Testing (unit?
unit=66&lesson=131)

Week 9 ()

Week 10 ()

Week 11 ()

Week 12 ()

Learning
Materials ()DOWNLOAD
VIDEOS ()

3) While parsing a program to extract syntactic information, which of the following defines how characters form tokens?

1 point

- ☒ Regular expressions.
☐ Context-free grammars.
☐ Context-sensitive grammars.
☐ The normal form of the grammar.

Yes, the answer is correct.

Score: 1

Accepted Answers:

Regular expressions.

4) Consider the context-free grammar given by $G = (N, T, P, S)$ where $N = \{S, X\}$, $T = \{a, b\}$, $P = \{S \rightarrow aXb, X \rightarrow ab\}$. Which of the following is the language generated by this grammar?

1 point

- ☒ The language generated by G is $\{w | w = aabb\}$.
☐ The language generated by G is $\{w | w \text{ is of the form } a^n b^n, n \geq 1\}$

Yes, the answer is correct.

Score: 1

Accepted Answers:

The language generated by G is $\{w | w = aabb\}$.

5) State yes or no: Is the ground string in mutation testing the same as the program under test?

1 point

- ☒ Yes.
☐ No.

Yes, the answer is correct.

Score: 1

Accepted Answers:

Yes.

6) Which of the following is a mutant that can be killed by any test case?

1 point

- ☐ Dead mutant.
☐ Equivalent mutant.
☒ Trivial mutant.
☐ Idempotent mutant.

Yes, the answer is correct.

Score: 1

Accepted Answers:

Trivial mutant.

7) Suppose a decision statement like if $(x < 0 \ \&\& \ z == 5)$ is mutated to get if $(x > 0 \ \&\& \ z == 5)$ then it is an example of which kind of mutation operator?

1 point

- ☐ Replacing a logical operator.
☒ Replacing a relational operator.
☐ Replacing a decision statement.

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☐ Replacing a condition statement.

Yes, the answer is correct.

Score: 1

Accepted Answers:

Replacing a relational operator.

8) As per the lectures, replacing a particular assignment statement with a statement like `failOnZero()` is an example of a mutation operator applied at which of the levels in testing? **1 point**

- ☒ Program level.
- ☐ Integration level.
- ☐ Statement level.
- ☐ De-bugging level.

Yes, the answer is correct.

Score: 1

Accepted Answers:

Program level.

9) A programmer decides to save time and apply two or three mutation operators together to increase the chances of finding many errors together. Is this considered to be a useful strategy in mutation testing? **1 point**

- ☐ Yes, it will find many errors early.
- ☒ No, mutation operators work best when applied one at a time.

Yes, the answer is correct.

Score: 1

Accepted Answers:

No, mutation operators work best when applied one at a time.

10) State true or false: Mutation testing can be used to show that a program behaves identically when a particular operation is replaced or removed. **1 point**

- ☐ True.
- ☒ False.

No, the answer is incorrect.

Score: 0

Accepted Answers:

True.