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Week 8 : Assignment 8

Your last recorded submission was on 2022-09-21, 21:16 Due date: 2022-09-21, 23:59 IST. 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?

- $ab, a, aab.$
- $abab, babab.$
- $aaa, bbb.$
- (selected) 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.
- (selected) 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.

3) While parsing a program to extract syntactic information, which of the following ***1 point***
defines how characters form tokens?

- (selected) Regular expressions.
- Context-free grammars.
- Context-sensitive grammars.
- The normal form of the grammar.

4) Consider the context-free grammar given by $G = (N, T, P, S)$ where ***1 point***
$N = \{S, X\}, T = \{a, b\}, P = \{S \to aXb, X \to ab\}$. Which of the following is the language generated by this grammar?

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

5) State yes or no: Is the ground string in mutation testing the same as the program under test? ***1 point***

- [x] Yes.
- [ ] No.

6) Which of the following is a mutant that can be killed by any test case? ***1 point***

- [ ] Dead mutant.
- [ ] Equivalent mutant.
- [x] Trivial mutant.
- [ ] Idempotent 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.
- [x] Replacing a relational operator.
- [ ] Replacing a decision statement.
- [ ] Replacing a condition statement.

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***

- [x] Program level.
- [ ] Integration level.
- [ ] Statement level.
- [ ] De-bugging 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.
- [x] 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.
- [x] False.

You may submit any number of times before the due date. The final submission will be considered for grading.

Submit Answers