Assignment 7

Unit 9 - Week 7

<<Assignment Details>>

Due: 2019-04-08 20:00 UTC

1. If a function is defined as $f(x) = \frac{1}{x} \forall x \in \mathbb{R}$, which of the following statements is true?
   a. The function is continuous for all real numbers.
   b. The function has a discontinuity at $x = 0$.
   c. The function is differentiable for all real numbers.
   d. None of the above.

2. In a certain algorithm, if $n$ is odd, output $n^2 + 1$. If $n$ is even, output $n^2$. What is the condition for $n$ to be even?
   a. $n$ is divisible by 2
   b. $n$ is not divisible by 2
   c. $n$ is a prime number
   d. None of the above.

3. In the following code, two processes are using semaphore S1 and S2, both initialized to 1. In which process is the semaphore $S1$ initialized?
   a. Process P1
   b. Process P2
   c. Both
   d. Neither

4. What is the purpose of a semaphore?
   a. To control access to a shared resource
   b. To synchronize processes
   c. Both
   d. None of the above.

5. What is the following invariants?
   a. A rule that must be true at all times
   b. A rule that is true at some point
   c. A rule that is never true
   d. None of the above.

6. In the following code, three processes are using a semaphore $S$.
   a. Process P1
   b. Process P2
   c. Both
   d. None of the above.

7. What is the following invariants?
   a. A rule that must be true at all times
   b. A rule that is true at some point
   c. A rule that is never true
   d. None of the above.

8. In the following code, what is the purpose of the semaphore $S$?
   a. To control access to a shared resource
   b. To synchronize processes
   c. Both
   d. None of the above.

9. In the following code, what is the purpose of the variable $x$?
   a. To store a counter
   b. To store a shared resource
   c. Both
   d. None of the above.

10. In the following code, what is the purpose of the function $f(x)$?
    a. To compute the factorial of $x$
    b. To compute the sum of $x$
    c. Both
    d. None of the above.

11. In the following code, what is the purpose of the semaphore $S$?
    a. To control access to a shared resource
    b. To synchronize processes
    c. Both
    d. None of the above.

12. In the following code, what is the purpose of the variable $x$?
    a. To store a counter
    b. To store a shared resource
    c. Both
    d. None of the above.

13. In the following code, what is the purpose of the function $f(x)$?
    a. To compute the factorial of $x$
    b. To compute the sum of $x$
    c. Both
    d. None of the above.

14. In the following code, what is the purpose of the semaphore $S$?
    a. To control access to a shared resource
    b. To synchronize processes
    c. Both
    d. None of the above.

15. In the following code, what is the purpose of the variable $x$?
    a. To store a counter
    b. To store a shared resource
    c. Both
    d. None of the above.