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NPTEL

Unit 3 - Week 2

Assignment 2

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2018-09-12, 23:59 IST.

1) Which of the following statements is true about first year students in science and engineering? ***1 point***

- We do not expect them to know anything about computers and several may not know anything about computers.
- We do not expect them to know much about algorithms and several may not know anything about algorithms.
- In school they may have learned some algorithms but those algorithms are not relevant for programming.
- A fifth standard student is not expected to know any algorithms and indeed does not know any algorithms.

No, the answer is incorrect.
Score: 0

Accepted Answers:
We do not expect them to know anything about computers and several may not know anything about computers.

2) Suppose $A[0...n-1]$ and $B[0...n-1]$ contain (decimal) digits of two numbers, in least significant to most significant order. The product needs to be computed in $C[0...2n-1]$, also in least to most significant digit order. Suppose we set $C[i+j]$ to be the sum of all possible products $A[i] * B[j]$. Which of the following is true? ***1 point***

- C correctly contains the digits of the product.
- C does not contain the digits, but the product does equal $\sum_i 10^i C[i]$.

Score: 0

Accepted Answers:

C does not contain the digits, but the product does equal $\sum_i 10^i C[i]$.

3) When we use manual algorithms, which of the following is generally false? ***1 point***

- We use iteration.
- We use recursion.
- We use conditional evaluation.
- We store values in variables.

No, the answer is incorrect.
Score: 0

Accepted Answers:

We store values in variables.

4) Suppose I am calculating e using the series: $1 + \frac{1}{1!} + \frac{1}{2!} + \cdots$. In this, 1 is the zeroth term, $\frac{1}{i!}$ is the ith term. Note that $0! = 1$. Suppose at the beginning of any iteration variable i contains the number of iterations that have happened so far, s contains the sum $1 + \frac{1}{1!} + \cdots + \frac{1}{(i-1)!}$, and t contains $\frac{1}{i!}$. Then, before the loop, the variables should be initialized as: ***1 point***

- $s = 1; i = 1; t = 1;$
- $s = 0; i = 1; t = 1;$
- $s = 1; i = 0; t = 0;$
- $s = 1; i = 0; t = 1;$
- None of the above.

No, the answer is incorrect.
Score: 0

Accepted Answers:

$s = 1; i = 0; t = 1;$

5) Suppose I am calculating e using the series: $1 + \frac{1}{1!} + \frac{1}{2!} + \cdots$. In this, 1 is the zeroth term, $\frac{1}{i!}$ is the ith term. Note that $0! = 1$. Suppose at the beginning of any iteration variable i contains the number of iterations that have happened so far, s contains the sum $1 + \frac{1}{1!} + \cdots + \frac{1}{(i-1)!}$, and t contains $\frac{1}{i!}$. Then, the code inside the loop should be: ***1 point***

- $t = t/i; s = s + t; i = i + 1;$
- $i = i + 1; t = t/i; s = s + t;$
- $t = t/i; i = i + 1; s = s + t;$
- $i = i + 1; s = s + t; t = t/i;$
- None of the above.

No, the answer is incorrect.
Score: 0

Accepted Answers:
$i = i + 1; t = t/i; s = s + t;$

6) "Being able to appreciate the beauty of object oriented programming" is closest to which of the following levels in Bloom's taxonomy of learning objectives? ***1 point***

- Knowledge
- Comprehension
- Applying
- Analyzing
- Synthesizing
- Evaluating

No, the answer is incorrect.
Score: 0

Accepted Answers:
Evaluating

7) Which of the following attributes of real computer hardware is least important to discuss in an introductory programming course? ***1 point***

- Numbers are represented in binary.
- Memory is organized in bytes each of which has an address.
- The CPU of a computer has registers which hold numbers and which are faster to access than main memory.
- A machine language program consists of sequence of instructions which are represented using numeric codes.

No, the answer is incorrect.
Score: 0

Accepted Answers:
The CPU of a computer has registers which hold numbers and which are faster to access than main memory.

8) Suppose p is an int variable. Consider the expressions "p++" and "p+1" and "++p". Which of the following is true? ***1 point***

- You should avoid using expressions "p++" or "++p" for their values.
- Only expressions "p+1" and "p++" have the same value.
- All three expressions have the same value.
- The value of p after executing "p+1" and "p++" is the same.

No, the answer is incorrect.
Score: 0

Accepted Answers:
You should avoid using expressions "p++" or "++p" for their values.

9) Suppose I have an array of length 10 containing numbers. I want to find the maximum number that can be obtained by adding up elements in any subarray of A. A subarray is simply a sequence of consecutive elements of the array starting at any index and ending at any index. ***1 point***

Suppose I find the solution by considering all possible subarrays, finding the sum of each subarray, and picking the maximum. How many subarrays do I need to consider?

- 55
- 45
- 110
- 90

No, the answer is incorrect.
Score: 0

Accepted Answers:
55

10) Suppose x is an integer. Then (x/1000)%10 evaluates to: ***1 point***

- third least significant digit of x
- third most significant digit of x
- fourth least significant digit of x
- fourth most significant digit of x

No, the answer is incorrect.
Score: 0

Accepted Answers:
fourth least significant digit of x

11) Which of the following is false? ***1 point***

- Students should be encouraged to design a manual algorithm before writing a computer program.
- We should teach strategies to translate common idioms found in manual algorithms to the corresponding programming language equivalents.
- We should teach students how to design divide and conquer algorithms.
- We should take programming examples from many different areas.

No, the answer is incorrect.
Score: 0

Accepted Answers:
We should teach students how to design divide and conquer algorithms.

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