True/False Assignment 2

Name:

Decide whether each statement is True or False and write your answer in the column at the right. Submit the document with your answers to me at Sharon.persinger@bcc.cuny.edu before class on Monday 12/9/2019. The assignment is worth 20 points.

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|  |  | True or False? |
| 1 | The depth of a tree node is the number of nodes between it and the root of a tree. |  |
| 2 | A tree has exactly one root node. |  |
| 3 | A full binary tree has $2^{n}-1$ nodes for some integer $n\geq 1$. |  |
| 4 | The worst-case search time for a binary search tree is $Θ(n)$. |  |
| 5 | Since binary trees are non-linear, they cannot be easily stored in an array. |  |
| 6 | Any variable used in a C++ program must be declared with a type before it can be used. |  |
| 7 | Every C++ function must return a value. |  |
| 8 | A C++ program that does not compile can still be executed. |  |
| 9 | If you compile a C++ program using the Linux operating system on an Intel chip, you can execute the generated program on a computer running the Windows operating system on the same Intel chip. |  |
| 10 | For simple text-based programs you can usually recompile a C++ program on different architectures and operating systems without changing your code. |  |
| 11 | The constructor for a C++ class is a method that has the same name as the class. |  |
| 12 | C++ constructors are called automatically. |  |
| 13 | In C++, you must write code for the constructor of every class you write. |  |
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| 15 | All C++ arrays should be created using dynamic memory |  |
| 16 | Dynamic memory errors are a common source of errors in programs and are often difficult to track down. |  |
| 17 | Never deallocating dynamic memory will never cause problems since all the memory a program uses is reclaimed when the program ends. |  |
| 18 | A C++ program that uses dynamic memory and runs once without crashing will never crash. |  |
| 19 | A C++ class that allocates dynamic memory does need to have a copy constructor and operator=. |  |
| 20 | Templates allow you to write code once and reuse it with multiple types. |  |
| 21 | For each data type a template is called with, the compiler generates a separate copy of the machine language instructions for the function. |  |
| 22 | A binary heap always stores the elements in an array in sorted order. |  |
| 23 | Inserting an element into a hash table may require $Θ(1)$ time. |  |
| 24 | Inserting an element into a hash table may require $Θ(n)$ time. |  |
| 25 | Inserting an element into a hash table may require $Θ(n^{2})$ time. |  |