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C++ Programming I

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CSIS 45 - Final Exam - Fall 2015

1. An algorithm is a step-by-step sequence of \_\_\_\_ that describes how a computation is to be performed.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | data | c. | objects |
| b. | instructions | d. | classes |

2. In object-oriented terms, a particular Ford Taurus with its own specific attributes of color, engine size, body type, and so on, can be considered as a car \_\_\_\_ from the broader class of all possible Ford Tauruses that could have been built.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | object | c. | input |
| b. | element | d. | data point |

3. The first character of an identifier must be a \_\_\_\_ or an underscore (\_).

|  |  |  |  |
| --- | --- | --- | --- |
| a. | number | c. | letter |
| b. | mnemonic | d. | special character |

4. A programming language’s \_\_\_\_ is the set of rules for formulating statements that are grammatically correct for the language.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | syntax | c. | dictionary |
| b. | namespace | d. | format |

5. A data \_\_\_\_ is defined as a set of values and a set of operations that can be applied to these values.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | type | c. | base |
| b. | set | d. | dictionary |

6. The set of values supported by the int data type are \_\_\_\_ numbers.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | positive | c. | real |
| b. | whole | d. | rounded |

7. The backslash, \, is referred to as the \_\_\_\_ character.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | tab | c. | escape |
| b. | quotient | d. | separator |

8. In C++, the bool data type is used to represent \_\_\_\_ data.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | complex | c. | imaginary |
| b. | real | d. | logical |

9. The arithmetic operator % is the C++ symbol for the \_\_\_\_ operation.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | addition | c. | modulus |
| b. | percentage | d. | division |

10. Dividing the integer 15 by the integer 2 yields the result \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 7 | c. | 7.500 |
| b. | 7.5 | d. | 152 |

11. When parentheses are used within parentheses, the expressions in the innermost parentheses are always evaluated \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | from left to right | c. | first |
| b. | from right to left | d. | last |

12. Naming a variable and specifying the \_\_\_\_ that can be stored in it are accomplished by using declaration statements.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | data type | c. | precision |
| b. | value | d. | range |

13. When a declaration statement is used to store a value in a variable, the variable is said to be \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | created | c. | initialized |
| b. | declared | d. | referenced |

14. Any expression that is terminated by a \_\_\_\_ becomes a C++ statement.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | colon | c. | curly bracket |
| b. | semicolon | d. | period |

15. If b is an integer and d is a double-precision number, the answer to the expression b\*d is a(n) \_\_\_ value.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | integer | c. | real |
| b. | float | d. | double-precision |

16. sum = sum + 10 can be rewritten using \_\_\_\_ as a shortcut operator.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | /= | c. | += |
| b. | %= | d. | -= |

17. The value of pow(x1, x2) is \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | x1 raised to the x2 power | c. | the square of x1 + the square of x2 |
| b. | x2 raised to the x1 power | d. | x1 \* x2 |

18. The cin object is used to enter data into a program while it is \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | compiling | c. | interpreting |
| b. | running | d. | loading |

19. When a cout statement prints a string that tells the person at the terminal what should be typed, the output string used in this manner is called a(n) \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | prompt | c. | interrupt |
| b. | checkpoint | d. | pause |

20. Professional programmers understand that it is their responsibility to ensure that a program \_\_\_\_ any and all input that a user can possibly enter.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | reads and stores | c. | anticipates and appropriately handles |
| b. | double checks | d. | converts |

21. The const qualifier specifies that the declared identifier is read-only after it is \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | defined | c. | edited |
| b. | initialized | d. | validated |

22. Using \_\_\_\_ letters is customary in C++ to make const identifiers easy to identify.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | lowercase | c. | bold |
| b. | italic | d. | uppercase |

23. Using the abs() function requires including the \_\_\_\_ header file.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | iostream | c. | cmath |
| b. | system | d. | math |

24. If *age* is initialized to equal 18, the statement age == 40 has a value of \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 0 | c. | 18 |
| b. | 1 | d. | 30 |

25. C++ treats any nonzero value as \_\_\_\_.

|  |  |
| --- | --- |
| a. | true |
| b. | false |
| c. | either true or false |
| d. | None of the above; you cannot make a general statement about this |

26. Including one or more if statements inside an existing if statement is called a \_\_\_\_ if statement.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | compound | c. | nested |
| b. | complex | d. | chain |

27. In an if-else chain, the final else is \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | a default or catch-all case | c. | required |
| b. | recommended | d. | not used |

28. \_\_\_\_ case labels may be contained within a switch statement.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Up to 1 | c. | Up to 100 |
| b. | Up to 10 | d. | Any number of |

29. If break statements are omitted from a switch statement, \_\_\_\_ cases following the matching case value are executed.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | no | c. | all |
| b. | some | d. | two |

30. The while statement literally loops back on itself to recheck the expression until \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | the program is terminated | c. | instructed to stop |
| b. | it evaluates to zero | d. | new data is entered |

31. A(n) \_\_\_\_ loop is one that never ends.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | broken | c. | variable-condition |
| b. | infinite | d. | fixed-count |

32. The \_\_\_\_ statement performs the same function as the while statement but uses a different form.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | if | c. | continue |
| b. | if-else | d. | for loop |

33. Within the parentheses of the for statement are \_\_\_\_ items separated by semicolons.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | two | c. | four |
| b. | three | d. | five |

34. All statements in a do-while loop are executed at least \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | once | c. | three times |
| b. | twice | d. | four times |

35. The \_\_\_\_ statement is particularly useful in filtering user-entered input and providing validity checks.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | if | c. | do-while |
| b. | for | d. | while |

36. Checking to see that a user enters an identification number within a specified range is called \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | debugging | c. | tracing |
| b. | validity checking | d. | error checking |

37. A do-while statement with an expression that always evaluates to 1 causes a(n) \_\_\_\_, unless a break statement is encountered within the loop.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | compile error | c. | infinite loop |
| b. | logic error | d. | program termination |

38. Consider the following do-while loop, whose job is to check for a valid customer identification number between the numbers 100 and 1999:

do

{

cout << "\nEnter an identification number: ";

cin >> idNum;

} while ( // Missing expression goes here);

Which of the following is the correct missing expression?

|  |  |
| --- | --- |
| a. | idNum >= 100 && idNum <= 1999 |
| b. | idNum < 100 || > 1999 |
| c. | idNum < 100 || idNum != 2000 |
| d. | idNum < 100 || idNum > 1999 |

39. The parentheses following a function call enclose \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | the number of function variables | c. | the data type of function variables |
| b. | data passed to the function | d. | the processing instructions |

40. The argument names in a function header are referred to as \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | formal parameters | c. | passed data |
| b. | input data | d. | function components |

41. A function returning a value must specify, in its header line, the \_\_\_\_ of the value that will be returned.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | size | c. | address |
| b. | data type | d. | use |

42. After a value is returned from a called function, program control reverts to the \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | compiler | c. | in-line function |
| b. | called function | d. | calling function |

43. The scope of a variable is determined by the placement of the \_\_\_\_ statement that reserves storage for it.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | assignment | c. | comparison |
| b. | reservation | d. | declaration |

44. Once a global variable is created, it exists until \_\_\_\_.

|  |  |
| --- | --- |
| a. | control is returned to the calling function |
| b. | the program in which it is declared is finished running |
| c. | control is returned to the called function |
| d. | the computer is turned off |

45. If a(n) \_\_\_\_ technique is not used, rand() will always produce the same series of random numbers.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | randomization | c. | seeding |
| b. | optimizing | d. | efficient |

46. A one-dimensional array is a list of related values with the same \_\_\_\_ that is stored using a single group name.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | size | c. | value |
| b. | data type | d. | offset |

47. The statements const int NUMELS = 4;and char code[NUMELS]; create an array with storage reserved for \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | one byte | c. | four characters |
| b. | four bytes | d. | four words |

48. If an array is declared with the statements const int AA = 3; and double arrayA[AA]; the index of the last element in the array is \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 0 | c. | 2 |
| b. | 1 | d. | 3 |

49. Any expression that evaluates to a(n) \_\_\_\_ may be used as a subscript.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | integer | c. | scalar |
| b. | constant | d. | offset |

50. The structure often used to sequence through an array is the \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | do loop | c. | for loop |
| b. | do while loop | d. | linked list |

51. The statement cin >> grade[4] >> prices[6];causes \_\_\_\_ values to be read and stored.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 2 | c. | 6 |
| b. | 4 | d. | 10 |

52. Using \_\_\_\_ helps to eliminate the problem of using out of bounds indices.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | subroutines | c. | constants |
| b. | functions | d. | interactive input |

53. Consider the declarations const int ARRAYSIZE = 7; and double length[ARRAYSIZE] = {7.8, 6.4, 4.9, 11.2};*.* How many elements will be initialized to zero?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | none | c. | two |
| b. | one | d. | three |

54. When passing an array to a called function, the function receives \_\_\_\_ array.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | a copy of the | c. | the first element of the |
| b. | selected elements of the | d. | access to the actual |

55. In a bubble sort, on each pass through the list, the largest element \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | is eliminated | c. | moves to the left of the array |
| b. | moves to the right of the array | d. | is combined with the next largest |

56. To store and retrieve data outside a C++ program, two things are needed: a file and a(n) \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | storage device | c. | file stream object |
| b. | buffer | d. | I/O command |

57. A file stream that receives or reads data from a file to a program is called a(n) \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | input file stream | c. | input command |
| b. | input data path | d. | read statement |

58. For each file that a program uses, a distinct \_\_\_\_ must be created.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | path mode | c. | transmission path |
| b. | I/O stream object | d. | file stream object |

59. The classes ifstream and ofstream are made available to a program by inclusion of the \_\_\_\_ header file.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | fstream | c. | iofstream |
| b. | iostream | d. | stream |

60. The \_\_\_\_ method is used to check that a file has been successfully opened.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | eof() | c. | fail() |
| b. | good() | d. | bad() |

61. Reading data from a character-based file is almost identical to reading data from a standard keyboard, except that the cin object is replaced by the \_\_\_\_ object declared in the program.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | fstream | c. | iostream |
| b. | ifstream | d. | ostream |

62. Data variables of a *class* are also known as \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | member variables | c. | manipulators |
| b. | data elements | d. | initializers |

63. Class functions declared as public \_\_\_\_ be called by any objects and functions not in the class.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | can | c. | must only |
| b. | cannot | d. | should rarely |

64. When a new object is defined, memory is allocated for the object, and its data members are initialized automatically by a call to the class \_\_\_\_ method.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | implementation | c. | constructor |
| b. | declaration | d. | extension |

65. Functions that change an object’s data values are commonly referred to as \_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | accessor functions | c. | mutator functions |
| b. | destructive functions | d. | non-member functions |

66. Write a **for** loop that prints out the characters in a string (or character array) one at a time, separated by a space. For example, if *myString = "Gavilan"*, output would be G a v i l a n

string myString;

cin >> s;

ANSWER\_\_\_\_\_\_\_\_\_\_

const int size=10;

char name[size] = "Malinda";

for (int i=0; i<size; i++)

cout << name[i] << " ";

67. Write a **while** loop that prints the numbers from and integer *n* down to zero, separated by commas. The user should provide the value *n*.

ANSEWR\_\_\_\_\_\_\_\_\_

int n;

cin >> n;

while ( n >= 0)

cout << n << ",";

n--;

68. Rewrite the following switch structure as an if structure:

char letter;

switch(letter)

{

case 'm':

case 'M': cout << "Monday\n";

break;

case 't':

case 'T': cout << "Tuesday\n";

break;

default: cout << "Another day.\n;

}

ANSWER\_\_\_\_\_\_\_\_\_

if (letter=='M' || letter =='m')

cout << "Monday\n"; // System.out.printIn("Monday\n");

esle if(letter=='T' || letter=='t')

cout << "Tuesday\n"; // System.out.printIn("Tuesday\n");

else

cout << "Another day. \n"; //System.out.printIn("Another day\n");

69. Write a function computes the distance traveled by a car on a trip. The user has input the number of minutes traveled (as an integer) and the average speed traveled. The function should accept the minutes and speed as parameters and return the distance traveled.

ANSWER\_\_\_\_\_\_\_\_\_\_\_

int miles;

int hours;

int i = 1;

cout << "Enter the car speed in miles per hour: ";

cin >> miles;

cout << "Enter number of hours traveled: ";

cin >> hours;

while(i != hours){

cout << "At " << i << " hours, you traveled " << miles \* i << " miles." << endl;

i= i+1;

70. Write a function to fill an array of floats with values input by the user. This is the function call:

fill\_array(numbers, SIZE);

float fill\_array(int numbers, int SIZE)

{

// int SIZE;

cout << "Enter array size: ";

cin >> SIZE;

fill\_array(numbers, SIZE);

int array[size];

for (i=0; i<SIZE; i++)

{

cout << "Enter elements: " ;

cin << array[i];

}

Extra Credit:

The *median* of a sorted array is the value in the middle. If the length of the array is odd, the median is the value in the center position. If the length of the array is even, the median is the average of the two numbers in the middle. Write a funcion *median* that takes an array of integers and the number of values in the array as parameters of the function, and returns the median value. You may assume the array is already sorted.

For example, if there is an array, *sortedAra*, and the function call

answer = median(sortedAra, num\_values);

if the array contained 2 7 10 15 22, the median would be 10;

if the array contained 3 8 9 15, the median would be 8.5 (average of 8 and 9).