

# CS 161 Exam I Fall 2018 **FORM 2**

Please put your name and form number on the scantron.  
For this exam you are allowed to use only a calculator and pencil.  
Read each question carefully and choose the best answer.

Useful Formulas (assuming N binary bits):

maximum signed int:  $\frac{2^N}{2} - 1$

minimum signed int:  $-\frac{2^N}{2}$

maximum unsigned int:  $2^N - 1$

## **True (A)/False (B) (2 pts each)**

1. A `string` is considered to be a C++ primitive data type.
2. The compiler will catch all syntax errors.
3. Any C++ program can be designed without the use of `for` loops (using `while` loops instead).
4. In hexadecimal, the characters A-F are used to represent numeric values.
5. Errors in a program can be classified into three types: logic, syntax, and runtime.
6. Conditionals are used when we need our program to make a choice between two or more things.
7. Variable names cannot begin with a number.
8. `if-else` statements that are inside other `if-else` statements are said to be nested.
9. A `break` statement inside a loop immediately exits the program.
10. ~~The types of parameters are optional in the function declaration.~~
11. The minimum value of an `unsigned int` depends on the number of bits used to represent the number.
12. Functions may return multiple variable types simultaneously.
13. It is possible to have a function with no parameters.
14. It is possible to have a function that does not return any value.

## **Multiple Choice (3 pts each)**

15. What punctuation indicates the end of a C++ statement?
  - a. A semicolon ( ; )
  - b. A colon ( : )
  - c. A period ( . )
  - d. A question mark ( ? )
16. The ability to write multiple functions, all having the same name, but with different parameter types is known as:
  - a. default argumentation
  - b. overloading
  - c. pre-incrementing
  - d. post-incrementing

17. Which of the following statements is NOT legal?

- a. `char ch = 'e';`
- b. `char ch = '0';`
- c. `char ch = 65;`
- d. `char ch = "cs";`

18. What is the value of x after the following statements?

```
double x;  
x = 3/2;
```

- a. 1.5
- b. 3.0
- c. 1.0
- d. 6.0

19. Given the following code fragment, which of the following expressions is always true?

```
int x;  
cin >> x;
```

- a. `if (x < 3)`
- b. `if (x == 2)`
- c. `if ((x / 3) > 2)`
- d. `if (x = 2)`

20. Which of the following is not a good reason for choosing a certain loop control?

- a. What the loop does
- b. The minimum number of iterations of the loop
- c. If the loop is in a function
- d. The condition for ending the loop

21. The \_\_\_\_\_ contains the code that provides the compiler with the algorithm that a function should implement.

- a. function declaration
- b. function prototype
- c. function definition
- d. function call

22. Given the following code, what is the final value of i?

```
int i;  
for (i=0; i<=4; i++) {  
    cout << i << endl;  
}  
i++;
```

- a. 3
- b. 4
- c. 5
- d. 6

23. Given the following code fragment and the input value of 3.0, what output is generated?

```
float discount;  
float total;  
cout << "enter the cost of the item\n";  
cin >> total;  
  
if (total >= 5.0) {  
    discount = 2.0;  
} else {  
    discount = 0.5;  
}  
cout << total - discount << endl;
```

- a. 5.0
- b. 2.5
- c. 1.5
- d. 1.0

24. What is the correct conditional statement to determine if x is outside the range of 21 and 25?

- a. (x < 21 && x > 25)
- b. (x > 21 && x < 25)
- c. (x < 21 || x > 25)
- d. (x > 21 || x < 25)

25. Which of the following is not a valid name for a variable?

- a. myRetVal
- b. my\_return\_val
- c. return
- d. return\_val

26. What is the output of the following program fragment?

```
cout << pow(4,2) << endl;
```

- a. 2
- b. 4
- c. 8
- d. 16

27. The unsigned decimal value 963 requires how many binary bits in order to be accurately represented?

- a. 10
- b. 11
- c. 12
- d. Decimal values greater than 512 cannot be represented in binary

28. If you need to write a do-while loop that will ask the user to enter a number between 3 and 7 inclusive, and will keep asking until the user enters a correct number, what is the loop condition?
- $(3 < 7 < \text{number})$
  - $(3 \leq \text{number} \ \&\& \ \text{number} \leq 7)$
  - $(3 > \text{number} \ || \ \text{number} > 7)$
  - $(3 \leq \text{number} \leq 7)$
29. What will the following for loop display?
- ```
for (int i=1; i == 1; i++) {  
    cout << "Hello\n";  
}
```
- It will print "Hello" 1 time
  - It will print "Hello" 5 times
  - The loop will never end and will keep printing "Hello"
  - This code will print nothing at all
30. What will the following for loop display?
- ```
for (int i=0; i > 5; i++) {  
    cout << "Hello\n";  
}
```
- It will print "Hello" 1 time
  - It will print "Hello" 5 times
  - The loop will never end and will keep printing "Hello"
  - This code will print nothing at all
31. What will the following for loop display?
- ```
for (int i=0; i >= 5; i++) {  
    cout << "Hello\n";  
}
```
- It will print "Hello" 1 time
  - It will print "Hello" 5 times
  - The loop will never end and will keep printing "Hello"
  - This code will print nothing at all
32. What is the value returned by the following function?
- ```
int function() {  
    int value = 17;  
    return value + 5;  
    value += 10;  
}
```
- 10
  - 17
  - 22
  - 32
33. Multiple arguments to a function are separated by
- comments
  - semicolons
  - colons
  - commas

34. If you need to write a function that will compute the total cost of some candy, where each piece costs 50 cents, which of the following would be an appropriate function declaration?

- a. `double calculateCost(char name);`
- b. `char calculateCost(int count);`
- c. `char calculateCost(string count);`
- d. `int calculateCost(int count);`

35. If you have the following variable declaration in your program,

```
const int SIZE=54;
```

then which of the following statements is legal?

- a. `SIZE++;`
- b. `x = SIZE--;`
- c. `cout << SIZE;`
- d. `cin >> SIZE;`

36. When a variable is assigned a number that is too large for its data type, it

- a. Reverses
- b. Converts
- c. Underflows
- d. Overflows

37. Which statement is equivalent to the following?

```
number -= 1;
```

- a. `number = number - 1;`
- b. `number = number + 1;`
- c. `number = 1;`
- d. `number = ++1;`

38. Which of the following statements is true?

- a. Floating point division uses the `//` operator, rather than the `/` operator
- b. Floating point division doesn't work with any of the C++ primitive data types
- c. Integer division only works with numbers less than 512
- d. Integer division truncates the result and ignores anything past the decimal point

39. Extra Credit: What will the following code print?

```
int n = 7;
if ( n > 4 ) {
    int n = 5;
    cout << n++;
}
for (int n = 0; n == 1; n++)
    cout << n;
    cout << n;
```

- a. 5
- b. 6
- c. 57
- d. 507