

# CSC 1103 - Midterm Exam 2

## Version B

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### Student Information

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Name: \_\_\_\_\_

ID Number: \_\_\_\_\_

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### Instructions:

- Answer all questions in the space provided.
- Total points: 100.
- Topics: Loops, Strings, Math Methods, Static/Recursive Methods.
- **This exam contains 8 pages.**

## Part I: Multiple Choice Questions (60 Points)

**Instructions:** Circle the letter of the single best answer. (3 Points Each)

1. Which keyword immediately stops the execution of a loop?
  - (A) `continue`
  - (B) `return`
  - (C) `break`
  - (D) `exit`
  
2. Which of the following is true regarding **method overloading**?
  - (A) Methods must share the same name but different parameters
  - (B) Methods must have distinct names
  - (C) Methods must be in separate classes
  - (D) Methods must have the exact same signature
  
3. What is the output of: `System.out.println(4 + 5 + " Rules");`?
  - (A) 9 Rules
  - (B) 45 Rules
  - (C) Error
  - (D) 9Rules
  
4. What is the result of `"Student".charAt(0)`?
  - (A) `'t'`
  - (B) `'S'`
  - (C) `'u'`
  - (D) `'d'`
  
5. Which is a valid static method header?
  - (A) `void static name()`
  - (B) `static void name()`
  - (C) `public name static()`
  - (D) `name void static()`

6. What is the output of `Math.min(20, Math.max(5, 10))`?
- (A) 5
  - (B) 10
  - (C) 20
  - (D) 15
7. Which `Scanner` method reads a full line of text?
- (A) `next()`
  - (B) `read()`
  - (C) `nextLine()`
  - (D) `getString()`
8. Attempting to access a negative index in a `String` results in:
- (A) Returns first char
  - (B) Returns last char
  - (C) `StringIndexOutOfBoundsException`
  - (D) Returns `null`
9. Which method converts a `String` to an `int`?
- (A) `Integer.parseInt()`
  - (B) `String.toInt()`
  - (C) `Math.toInt()`
  - (D) `Integer.valueOf()`
10. What is the output of the following recursive method if called as `rec(3)`?

```
public static void rec(int n) {  
    if (n > 0) {  
        rec(n - 1);  
        System.out.print(n + " ");  
    }  
}
```

- (A) 3 2 1
- (B) 1 2 3
- (C) 3 2 1 0
- (D) 0 1 2 3

11. What is the output of `Math.sqrt(25)`?
- (A) 5.0
  - (B) 2.5
  - (C) 12.5
  - (D) 625.0
12. In `for(init; cond; update)`, which part executes first?
- (A) `cond`
  - (B) `update`
  - (C) `init`
  - (D) `body`
13. Ambiguous invocation of a method results in a:
- (A) Runtime Error
  - (B) Compile Error
  - (C) Logical Error
  - (D) Warning
14. What is the index of the first character in a `String`?
- (A) 1
  - (B) 0
  - (C) -1
  - (D) `size`
15. A recursive method without a base case typically causes:
- (A) Compiler Error
  - (B) `StackOverflowError`
  - (C) Infinite Loop (runtime)
  - (D) `NullPointerException`

16. Which method converts a string to all lowercase letters?
- (A) `toLowerCase()`
  - (B) `toLower()`
  - (C) `lowerCase()`
  - (D) `changeCase(false)`
17. What does `Math.ceil(2.1)` return?
- (A) 2.0
  - (B) 3.0
  - (C) 2.1
  - (D) 2
18. Which loop might NOT execute its body at all?
- (A) `do-while`
  - (B) `while`
  - (C) Both A and B
  - (D) None
19. What is the value of `"Java".length()`?
- (A) 3
  - (B) 4
  - (C) 5
  - (D) 0
20. The method `indexOf('x')` returns \_\_\_ if 'x' is not found.
- (A) 0
  - (B) 1
  - (C) -1
  - (D) Error

## Part II: Short Answer Questions (40 Points)

1. **(Fill in Blank)** The \_\_\_\_\_ class is used for math operations like square roots and absolutes.
2. **(Code)** Write a statement to cast `double d = 9.99` to an `int` variable `i`.
3. **(Code)** Write a `for` loop printing: 10, 20, 30, 40.

4. **(Fill in Blank)** The `Math.random()` method returns a **double** value greater than or equal to 0.0 and less than \_\_\_\_\_.
  
5. **(Fill in Blank)** Recursion requires a \_\_\_\_\_ case to stop the process.
  
6. **(Code)** Write a static method `sum` that takes two integers (`a`, `b`) and returns their sum.

7. **(Code)** Write a loop printing numbers from **1 to 500** divisible by **both 2 and 5**.

8. **(Completion)** Fill in:

```
int k = 1;
while (_____) { // Run until 5
    System.out.println(k);
    _____;
}
```

9. **(Tracing)** What is the output of "Val: " + (4 + 5)?

10. **(Code)** Write a statement to parse "10.5" into a double.