



University of Maryland College Park

Dept of Computer Science

CMSC131 Spring 2011

Midterm I

First Name (PRINT): _____

Last Name (PRINT): _____

University ID: _____

Section/TAName: _____

I pledge on my honor that I have not given or received any unauthorized assistance on this examination.

Your signature: _____

Instructions

- This exam is a closed-book and closed-notes exam.
- Total point value is 100 points.
- The exam is a 50 minutes exam.
- For coding problems you do not need to provide pseudocode and you don't need to specify import statements.
- Please use a pencil to complete the exam.
- **WRITE NEATLY.** If we cannot understand your answer, we will not grade it (i.e., 0 credit).

Grader Use Only

#1	Problem 1 (Short Answers)	(36)	
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Total		(100)	

Problem 1 (36 pts)

1. (2 pts) How many bits are in a byte?
2. (2 pts) How many different combinations of 0's and 1's can be represented with 4 bits?
3. (2 pts) Write a single statement that declares two variables, a and b, and initializes them with the values 7.3 and "Goodbye". (Choose an appropriate type.)
4. (2 pts) Java programs are "portable" because the Java compiler translates your source code into what?
5. (2 pts) Name two primitive types used to store integers.
6. (2 pts) What value would Java compute for the following Java code fragments?
 - a) `int x = 1; int y = x / 2; // What is the value of y?`
 - b) `int w = 17 % 3; // What is the value of w?`
7. (2 pts) Which of the following could be used to name variables in Java? We're not asking if they are good style, just whether or not they are permissible. (Circle all that apply.)

Gone# element2 10bridges water@basement

8. (4 pts) Re-write (in the box) the following code fragment using a *for-loop*.

```
int x = 2;
while (x <= 400) {
    System.out.println(x);
    x += 7;
}
```

9. (2 pts) Write the binary representation of 7.

10. (2 pts) What is an assembler?

11. (2 pts) What is pseudocode?

12. (2 pts) What is **null**?

13. (2 pts) Complete the following assignment so we are able to print the message:

Richard "Rick" Smith

```
String name =  
System.out.println(name);
```

14. (2 pts) How many distinct String object instances are created in the following code segment?

```
String value = "Baseball";  
value = "GoodBye";  
String valueTwo = value;
```

Answer: _____

15. (2 pts) Define an integer constant named MAX_OK_TEMP that has as value 99.

16. (2 pts) Write the output generated by the following statements.

```
int y = 10;  
int x = y++;  
System.out.println(y);  
System.out.println(x);
```

17. (2 pts) Will the value of x change in the following code? Briefly explain (yes or no answer with no explanation will receive no credit)

```
int x = 20, y = 10;  
if ( (y >= 10) || (++x > 20)) { }
```

18. (2 pts) The following code fragment generates an error when run. Why?

```
String k = null;  
int x = k.length();
```

Problem 2 (22 pts)

Fill in the method below in order to complete a program called **IdProgram**. The program reads a number of credits (using the Scanner class) and prints the student classification ("A", "B", "C") based on the number of credits associated with a student. Students are classified as follows:

Number of Credits	Type
Less than 40	A
Between 40 (inclusive) and 80 (inclusive)	B
Greater than 80	C

Restrictions/Assumptions

- Use the message “Enter credits” to read the number of credits.
- You must use `System.out.println` to print the total.
- You should use the `Scanner` class (`Scanner sc = new Scanner(System.in);`) to read values.

```
import java.util.Scanner;
public class IdProgram {
    public static void main(String[] args) {
```

Problem 3 (24 pts)

Fill in the method below in order to complete a program called **ReadAge**. The program will keep asking an age value (using the message “Enter age”) as long as the user provides a negative value or a value larger than 120. Each time an invalid value is provided, the program will print the message “Invalid value”. Once a valid value has been provided, the program will print the provided value using the message “Age: “ followed by the value. Use the Scanner class to read the value.

```
import java.util.Scanner;
public class ReadAge {
    public static void main(String[] args) {
```

THERE IS ANOTHER PROBLEM ON THE REVERSE SIDE OF THE PAGE

Problem 4 (18 pts)

Fill in the method below. The method will display the following diagram based on the size value provided in the parameter. For example, for a size value of 4, the diagram will be:

*
* *
* * *
* * * *

Your solution must handle different size values (not just 4).

```
public static void printDiagram(int size) {
```