

For the following short-answer questions, check your work carefully, since no partial credit can be given on the questions asking for output. Note that "output" means what will be printed on the display screen.

1. (5 points) Given the following code fragment, state clearly and precisely what the output will be:

```
int j = 9;
int k = 4;
k = j;
System.out.println(j + " and " +
k);
```

9 and 9

2. (5 points) Given the following code fragment, state clearly and precisely what the output will be:

```
int b = 13;
System.out.println("First " + ++b);
System.out.println("Then " + b);
```

First 14
Then 14

3. (5 points) What is the output of the following statements?

```
System.out.print("Hello ");
System.out.println("World");
```

Hello World

4. (5 points) Given the following while loop, write it as a for loop.

```
int total = 0;
int counter = 5;
while (counter >= 1){
    total += counter;
    counter--;
}
```

```
/*for version*/
int total = 0;
for (int counter = 5; counter >= 1; counter--){
    total += counter;
}
```

5. (5 points) Write the following if statement using a logical operator.

```
if (age >= 21) {
    if (money >= 5) {
        ++beer;
    }
}
```

```
if ((age >= 21) && (money >= 5)){
    ++beer;
}
```

6. (5 points) What's the difference between a while loop and a do...while loop?

do ... while loop will execute the code inside the loop at least once.

7. (5 points) Using 5 different primitive datatypes, declare and initialize a variable for each.

- a. `int num = 0;`
- b. `char letter = 'a';`
- c. `float num = 0;`
- d. `double num = 0;`
- e. `boolean pass = true;`
- f. `byte num = 0;`
- g. `short num = 0;`
- h. `long num = 0;`

8. (5 points) What's the difference between these 2 logical operators?

&&

&

The && means that short circuiting will happen. If the first statement is false, then the second statement will not execute because both need to be true. A single & means that both statements will execute no matter what.

9. (9 points) Describe the following logical operators. State the rule or explain what happens when you use it.

- a. && - Conditional AND - Both statements must be true
- b. || - Conditional OR - if both statements are false, then it is false, otherwise it's true.
- c. ! - Logical NOT - reverses outcome. ! makes true, false, and vice versa.

10. (5 points) Write the following Java statement using a compound operator:

`catTotal = catTotal + newCats;`

`catTotal += newCats;`

11. (6 points) Counter-controlled iteration requires what 3 things?

- a. control variable with initial value
- b. a control variable increment (or decrement)
- c. a condition that tests for the final value of the control variable

12. (5 points) What is the result after the following Java statements execute?

`int a = 1;`

`int b = 2;`

`int c = 3;`

`int d = 4;`

`result = d / b * c + d / b + a`

`4 / 2 * 3 + 4 / 2 + 1 =`

`2 * 3 + 2 + 1 =`

`6 + 2 + 1 =`

`9`

- 13. (5 points) What's the difference between prefix and postfix increment and decrement operators?**

For example: ++num vs. num++

Prefix adds or subtracts 1 to the variable before it is used in the statement on that line of code.

Postfix adds or subtracts 1 to the variable after it is used in the statement on that line of code.

- 14. (10 points) Below, within the given program "shell," write the code fragment that asks the user for a number grade. Get the number grade as input. Then, create an if statement to print out the equivalent letter grade.**

```
import java.util.Scanner;

public class LetterGrade {
    public static void main(String[] args) {

        int numberGrade = 0;

        Scanner input = new Scanner(System.in);

        // code your if statement below:

        System.out.println("Please enter your grade: ");
        numberGrade = input.nextInt();

        if (numberGrade >= 90){
            System.out.println("A");
        } else if (numberGrade >= 80) {
            System.out.println("B");
        } else if (numberGrade >= 70){
            System.out.println("C");
        } else if (numberGrade >= 60){
            System.out.println("D");
        } else {
            System.out.println("F");
        }
    }
}
```

- 15. (5 points) What would you name the file of the above program?**

LetterGrade.java

16. (10 points) Below, within the given program "shell," write the code fragment that asks the user to pick a number between 1 and 4. Get the number as input. Then, create a switch statement that prints out a color based on what number was entered. (hint: don't forget to include a default).

```
import java.util.Scanner;

public class AssignColor {
    public static void main(String[] args) {

        int num = 0;

        Scanner input = new Scanner(System.in);

        // code your switch statement below:
        System.out.println("Please enter a number between 1 and 4");
        num = input.nextInt();

        switch (num) {
            case 1:
                System.out.println("You are red");
                break;
            case 2:
                System.out.println("you are blue");
                break;
            case 3:
                System.out.println("You are green");
                break;
            case 4:
                System.out.println("You are yellow");
                break;
            default:
                System.out.println("NO COLOR FOR YOU!");
        }
    }
}
```

17. (5 points) What would you name the file of the above program?

AssignColor.java

Bonus

1. (5 points) Who is headlining the 25th Annual Presidential Scholarship Gala?

Gladys Knight!