Please read Sections 4.1 through 4.7 of the textbook and then answer the following, trying not to look at your notes or at the textbook. Quiz #5, on Fri. 23 Sep., will consist exclusively of questions taken from the Part 1 of this homework.

Part I — Questions

Ex. 1. What is the scope of a field variable?

Ex. 2. What is shadowing? Does it cause a problem during compilation?

Ex. 3. What is a package?

Ex. 4. What is a decision structure? What is sequential processing?

Ex. 5. What is the relational operator used to determine whenever two values are different?

Ex. 6. What would be printed on the screen?

```
if (1 > 2)
    System.out.print("Good morning!\n");
System.out.print("You took the quiz.");
```

Ex. 7. Is there a simpler way to write the following Boolean expression, assuming that `over21` is a Boolean variable?

```
if(over21 == true)
```

Ex. 8. Assume that `x` and `y` are two `int` variables that have already been initialized (i.e., declared and assigned), write an `if` statement that assigns 10 to `x` if `y` is (strictly) greater than 5.

Ex. 9. Is there any difference between = and ==? Write a statement that uses them both.

Ex. 10. Is the following statement correct, i.e., would it compile, assuming `myFlag` and `myAge` are initialized? If you think this statement would compile, give the possible type of the `myAge` and `myFlag` variables, otherwise, tell what the error is.

```
if ( myAge > 20 ){myFlag = true};
```

Ex. 11. Write an `if` statement that prints "Bonjour !" if the value of the `char` variable `lang` is `'f'`.

Ex. 12. Write an `if-else` statement that assigns 0.1 to `z` if `y` is greater or equal than 0, and that assigns -0.1 to `z` otherwise.

Ex. 13. What will be printed by the following program?

```
    int x = 3, y = 2, z = 4;
    if (x > y) {z += y;}
    if (x > z) {y -= 4;}
    System.out.printf("x is %d, y is %d, and z is %d.", x, y, z);
```

Ex. 14. What will be printed by the following program?

```
int x = 3, y = 2, z = 4;
if (x >= z) {z += y;} else if (x != y) {z *= y;}
y -= 4;
System.out.printf("x is %d, y is %d, and z is %d.", x, y, z);
```

Ex. 15. Say if the following boolean expressions will evaluate to `true` or `false`:

- `3 > 2.0 && false`

- `(4 != 3) || false`

- `'A' == 'a' && !  false`

- `(!  false) == (true || 4 == 3)`

Ex. 16. (*We'll use the 24-hour clock, sometimes called the "military time".*) Assuming that an `int` variable `time` has been initialized, write a program that prints "Good morning" if `time` is less than or equal to 12, and "Hello" otherwise.

Ex. 17. Assuming that `myString` is a String variable, write two statements that print "Hello, Mike!" if the value of `myString` is equal to `Mike`. One should use the `compareTo` method, and the other should use the `equals` method.

Ex. 18. What will be printed by the following program?

```
int x = 3, y = 2, z = 4;
if (y >= z) {z += y;}
else if (x != y) { if (false) {z -= 3;} else {z += x;}}
System.out.printf("x is %d, y is %d, and z is %d.", x, y, z);
```

Ex. 19. What is the name of the method to check if a String is equal to another that ignores the case?

Part II — Programming Exercises

Ex. 1. Write a program that asks the user to write a country name and stores the user's input into a string variable. Then, convert that string to lower case, and compare it to `"france"`: if it is equal, then print "Bienvenue en France !". Then, compare that string to `"usa"`: if it is equal, then print "Welcome to the US!". If the string is different from both `"france"` and `"usa"`, then print "Welcome to" followed by the name of the country the user typed in.
Can you think of two ways to implement this program, one using `if-else-if` statements, the other using logical operators?
When you think your programs are flawless, type them and compile them in BlueJ.

Ex. 2. A 10×15 centimeters picture costs \$0.20, printing a 8×11 inches picture costs \$0.25. Write a program that asks the user to chose a format, asks if it is the first time (s)he order through your company, and a number of copies. Calculate the total cost of printing those pictures, knowing that a new customer gets a \$3 coupon if the order is more than \$5, and that a 10% discount is given if more than 50 copies were ordered, no matter if this is a new customer or not.

Listing 1: A first example

```
Enter 'c' for 10x15cm, anything else for 8x11in.
c
Is this your first time here? Type 'y' for 'yes'.
y
Enter a number of copies.
90
Welcome!
We cherish our new customers, so we're giving you a $3 discount!
Your total is $13,50. You had a 10% discount!
```

Listing 2: A second example

```
Enter 'c' for 10x15cm, anything else for 8x11in.
p
Is this your first time here? Type 'y' for 'yes'.
Not at all
Enter a number of copies.
120
Your total is $27,00. You had a 10% discount!
```

Print a message starting by "Welcome!", then a new line, then "We cherish our new customers" if it is the first time the user uses your company, ", so we're giving you a $3 discount!" if the user is allowed to get the coupon, then print the total and "You had a 10% discount!" if the user ordered more than 50 copies.

See Listing 1 and Listing 2 for examples of execution. When you think your program is flawless, type it, compile it and execute it in BlueJ.

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