

Assignment #1

Answer the following questions

1. Who invented Java? Which company owns Java now? Is Java case sensitive? What is the case for Java keywords?
2. What are the input and output of a Java compiler?
3. Suppose, you write a program for computing the perimeter of a rectangle and you mistakenly write your program so that it computes the area of a rectangle. What kind of error is this?
4. Are there any performance differences between the following two import statements?
import java.util.Scanner;
import java.util.*;
5. Which of the following identifiers are valid? Which are Java keywords?
miles, Test, a++, --a, 4#R, \$4, #44, apps, class, public, int, x, y, radius
6. Identify and fix the errors in the following code:

```
1  public class Test {  
2      public static void main(String[] args) {  
3          int i = j = k = 2;  
4          System.out.println(i + " " + j + " " + k);  
5      }  
6  }
```

7. What are the naming conventions for class names, method names, constants, and variables? Which of the following items can be a constant, a method, a variable, or a class according to the Java naming conventions?
MAX_VALUE, Test, read, readDouble
8. If today is Tuesday, what will be the day in 100 days? Describe how can you calculate it.
9. Will overflow cause a runtime error? What is a round-off error? Can integer operations cause round-off errors? Can floating-point operations cause round-off errors?
10. Is it correct to write code like this?
int sum = 0;
sum += 4.5;

11. What is wrong in the following code? Consider variable 'score' is defined already.

```
if (score >= 60.0)
    System.out.println("D");
else if (score >= 70.0)
    System.out.println("C");
else if (score >= 80.0)
    System.out.println("B");
else if (score >= 90.0)
    System.out.println("A");
else
    System.out.println("F");
```

12. Write a switch statement that displays Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, if day is 0, 1, 2, 3, 4, 5, 6, accordingly.

13. Rewrite the following conditional expressions using if-else statements.

a. `score = (x > 10) ? 3 * scale : 4 * scale;`

b. `tax = (income > 10000) ? income * 0.2 : income * 0.17 + 1000;`

c. `System.out.println((number % 3 == 0) ? i : j);`

14. What are the 'bugs' of the computer program?

15. Write a program that randomly generates an integer between 1 and 12 and displays the English month name January, February, ..., December for the number 1, 2, ..., 12, accordingly.

16. What does the following statement do?

```
for ( ; ; ) {
    // Do something
}
```

17. What is the keyword 'break' for? What is the keyword 'continue' for? Will the following programs terminate? If so, give the output.

```
int balance = 10;
while (true) {
    if (balance < 9)
        break;
    balance = balance - 9;
}

System.out.println("Balance is "
    + balance);
```

(a)

```
int balance = 10;
while (true) {
    if (balance < 9)
        continue;
    balance = balance - 9;
}

System.out.println("Balance is "
    + balance);
```

(b)

18. Write a program that prompts the user to enter the number of students and each student's name and score, and finally displays the name of the student with the highest score.

19. What is off-by-one error? Show an example.

20. Write a program that simulates flipping a coin 100 times and displays the number of heads and tails.