

QUESTIONS AND EXERCISES

1. Present the concept of Java Virtual Machine. Write the process to run a Java program.
2. Write a program in Java that shows the text “Welcome to Object-Oriented Programming” ten times to the standard output.
3. Write a program in Java that shows to the screen the following 21 lines:

```
10 exams, we take in one week,  
Now one exam has the result,  
9 exams, we take in one week,  
Now one exam has the result,  
...  
1 exam, we take in one week,  
Now one exam has the result,  
Thanks god, no exam this week.
```

4. Write and explain the output given by each of the following commands.

```
System.out.println(10 + 5 + "OK");  
System.out.println("OK" + 10 + 5);
```

5. What do the following commands give? Explain the reason.

```
int weight;  
boolean b = 60 <= weight <= 90;  
System.out.println(b);
```

6. What do the following commands give? Explain the reason.

```
float t = (float) (18/4);  
System.out.println(t);
```

7. What do the following commands give? Explain the reason.

```
boolean b = (Math.sqrt(6) * Math.sqrt(6) == 6);  
System.out.println(b);
```

8. What do the following commands give? Explain the reason.

```
float t;  
System.out.println(t);
```

9. What do the following commands give? Explain the reason.

```
int t = 10^2;  
System.out.println(t);
```

10. What do the following commands give? Explain the reason.

```
for (;;) {  
    System.out.println("Welcome to OOP course");  
}
```

11. Why does 100/3 give the output of 33 and not 33.333333333333336? Explain the reason.

12. Which of the following commands is correct?

```
boolean t = 1;
boolean t = true;
boolean t = True;
boolean t = "1";
boolean t = "true";
boolean t = "True";
```

13. What do the following commands give? Explain the reason.

```
boolean t = false;
while (t = false) {
    System.out.println("OOP course");
}
```

14. Write a program in Java that gets a mark as an integer number between 0 and 20 from a command-line argument and classifies the level of the mark based on the following table:

Level	Mark
A	18-20
B	16-17
C	13-15
D	12-14
E	10-11
F	<10

15. What do the following commands give? Explain the reason.

```
int[] t = { 21, 33, 45, 57, 69};  
int[] k = { 21, 33, 45, 57, 69};  
System.out.println(t == k);
```

16. Write a program in Java that gets three integer numbers from command-line arguments, then prints a false value if the three numbers are equal or a true value otherwise.

17. Write a program in Java to solve the linear equation:

$$ax + b = 0$$

where the coefficients a and b are real numbers obtained from the command-line arguments. The program should print the root/roots of the linear equation to the standard output.

18. Write a program in Java that gets ten uniform random values between 0 and 1, then calculate their mean and median. The input values are read from command-line arguments.

19. Write a program in Java that gets an integer n ($n > 1$) from a command-line argument and prints a random integer number between $n/2$ and n to the standard output.

20. Write a program in Java to convert a Celsius degree to a Fahrenheit degree. The input is taken from a command-line argument.

$$^{\circ}\text{F} = (^{\circ}\text{C} \times 9/5) + 32$$

21. Write a program in Java that computes the sum of squares of integer numbers from 1 to n . The number $n > 1$ is obtained from a command-line argument.

22. Write a program in Java that converts an integer number n ($n > 1$) into its binary representation. The number n is obtained from a command-line argument.
23. Write a program in Java that computes min the max of three real numbers obtained from command-line arguments.
24. Write a program in Java that finds the string “OOP” in a string given by the user from a command-line argument.
25. Write a program in Java that reads n integer numbers ($n > 1$) from the command-line argument, then prints the number that occurs most frequently.