

Dear Applicant, Thank you for your interest in the Position “Java Programmer” at Analytic-Company GmbH.

The following test serves us as an assessment of your level of knowledge in Java. If necessary, please outline/formulate your answers in detail. The test is really easy and you can finish it in less than an hour.

If you have any questions, we will be happy to help you.

Good luck.

Analytic Company HR.

Applicant Name:

1. **Regular expressions**

Define a regular expression that matches the phrases:

“damage”, “minor damages” and “heavy damage” but not the phrase “no damages”.

Write a method with a string as an argument. The output has to be the result whether the string matches or not.

1. **Objects**

Define a class Student with the reference variables: studentId and name constructor and default methods. It is given:

| ID | Name |
| --- | --- |
| 0054 | Albert Einstein |
| 1234 | Gottfried Wilhelm Leibniz |
| 5421 | Carl Friedrich Gauss |

Write code for a console output (Name and ID) that is sorted by the student names.

1. Design pattern

What is a singleton pattern and when do you use it? Please use an example.

1. **Inheritance**

Look at the following class:

public class Product {

String name;

String description;

double price;

public Product ( String name, String desc, double price ) {

this.name = name;

this.description = desc;

this.price = price;

}

public final double getPriceWithTax() {

return price \* 1.19;

}

public String toString() {

return name + " \_ " + description + " \_ " + price + " EUR";

}

}

1. Write a subclass Clothing that extends the class Product. The subclass must have additional attributes for the size (as int) and the material (as String). The new attributes shall be initialized in the constructor like the other attributes name, description and price, as well as implemented in the method toString() to override the output stream.

**5. Threads**

Imagine a simple robot that can randomly move forward and backward as well as left and right. The task is to show the movement of the robot in the form of a console output (e.g., System.out.println(“left...”), System.out.println(“right...”), ...).

Define two classes: HorizontalThread and VerticalThread as threads.

The class HorizontalThread processes the robot's movement left and right, the class VerticalThread processes the robot's movement forward and backward.

The movements have to be displayed in the console. Now, implement a class Robot that starts both threads.

**6 Correct the code**

1: public class carThread implements Thread {

2: final String brand;

3: final String model;

4: final double price;

5:

6: public carThread ( String brand, String model) {

7: this.brand = brand;

8: this.model = model;

9: }

10:

11: public void run() {

12: while(true) {

13: System.out.println(“hello my name is this.brand”);

14: Thread.sleep(300);

15: }

16: }

17:

18: public static void main(String[] args) {

19: new carThread(“Audi”).run();

20: new carThread(“BMW”).run();

21: System.out.println(“carThreads are running... “);

22: }

23:

1. What's wrong with this class? Correct all errors.

**7. Bonus**

Write a method with only one boolean parameter. Depending on the parameter the method has to return “a”, “b”, or “c”.

\*\*Thank you for taking your time to answer the test.