

## Homework 6 Requirements

In the context of **Black-box testing design techniques**, you are required to solve the following problems using **equivalence class partitioning** and **boundary value analysis**. For each problem, you must **justify** your chosen option or problem solution.

*Tasks that only include a selected option (like a, b, c, d) without a full explanation of the reasoning or solution will **not** be accepted!*

You can submit your answers in a **.txt** file and provide a link to the file.

### 1. The system calculates taxes based on salary

Employees with a salary up to **\$4,000 (inclusive)** do **not** pay tax.

- The **next \$1,500** is taxed at **10%**
- The **next \$28,000** is taxed at **22%**
- All amounts **above that** are taxed at **40%**

**Question:** Which of the following groups of values belong to the **same equivalence class**?

- a) \$4,800, \$14,000, \$28,000
- b) \$5,200, \$5,500, \$28,000
- c) \$28,001, \$32,000, \$35,000
- d) \$5,800, \$28,000, \$32,000

### 2. Bonus calculation based on employee tenure

Bonuses are calculated based on how long the employee has worked at the company:

- Less than or equal to **2 years** → **0 bonus**
- More than **2 years**, but less than **5 years** → **1,000 lei bonus**
- From **5 years** up to **less than 10 years** → **1,500 lei bonus**
- **10 years or more** → **2,000 lei bonus**

**Question:** How many test cases are required to cover all **equivalence classes**?

### 3. Test a grading software for homework

Based on the number of points received, the grading software assigns:

- 1–49 → Grade C
- 50–74 → Grade B
- 75–100 → Grade A

**Question:** What are the necessary values to achieve **boundary value analysis** coverage?

### 4. Create Test Cases Based on the Techniques Learned

Using your solution from **exercise 3**, create the **necessary test cases** to test the homework grading software.