

# Problem-Based Questions on ArrayIndexOutOfBoundsException & ArithmeticException

## Problem 1: Handling Invalid Task Index

A to-do list app allows users to update tasks by index. Handle invalid indexes gracefully.

### Sample Input:

Sample Input:

Tasks: ['Task1', 'Task2', 'Task3']

Input Index: 5

### Sample Output:

Sample Output:

Error: Invalid index! Please try again.

## Problem 2: Marks Management System

A system stores marks for 5 subjects. Handle invalid array indexes while viewing/updating marks.

### Sample Input:

Sample Input:

Marks: [85, 90, 78, 88, 76]

Input Index: 7

### Sample Output:

Sample Output:

Error: Index out of bounds! Valid range is 0 to 4.

## Problem 3: E-Commerce Order Processing

Orders are stored in an array. Handle attempts to access invalid order indices.

### Sample Input:

Sample Input:

Orders: ['Order1', 'Order2']

Input Index: 3

**Sample Output:**

Sample Output:

Error: No order exists at this index.

**Problem 4: Weather App Temperature Data**

Daily temperatures are stored in an array. Handle access to non-existent days.

**Sample Input:**

Sample Input:

Temperatures: [30, 31, 29, 28]

Input Day: 5

**Sample Output:**

Sample Output:

Error: Day does not exist!

**Problem 5: Card Deck Simulation**

A deck of cards is represented as an array. Handle invalid card index inputs.

**Sample Input:**

Sample Input:

Deck: ['Ace', 'King', 'Queen']

Input Index: 10

**Sample Output:**

Sample Output:

Error: Invalid card index!

**Problem 6: Simple Calculator**

A calculator divides two numbers. Handle division by zero.

**Sample Input:**

Sample Input:

Enter numerator: 10

Enter denominator: 0

**Sample Output:**

Sample Output:

Error: Division by zero is not allowed.

**Problem 7: Tax Calculation**

Taxable income is divided by the number of dependents. Handle division by zero.

**Sample Input:**

Sample Input:

Income: 50000

Dependents: 0

**Sample Output:**

Sample Output:

Error: Dependents cannot be zero.

**Problem 8: Average Calculation**

Calculate the average of numbers in an array. Handle empty arrays.

**Sample Input:**

Sample Input:

Numbers: []

**Sample Output:**

Sample Output:

Error: Cannot divide by zero.

### **Problem 9: Bank Interest Calculation**

Calculate interest by dividing balance by months. Handle months being zero.

#### **Sample Input:**

Sample Input:

Balance: 10000

Months: 0

#### **Sample Output:**

Sample Output:

Error: Months cannot be zero.

### **Problem 10: Sports Winning Percentage**

Winning percentage is calculated by dividing wins by matches played. Handle matches being zero.

#### **Sample Input:**

Sample Input:

Wins: 5

Matches: 0

#### **Sample Output:**

Sample Output:

Error: Matches cannot be zero.

### **Problem 11: Combined Array and Arithmetic Exception**

Access invalid array indices or divide by zero based on user input.

#### **Sample Input:**

Sample Input:

Array: [1, 2, 3]

Index: 5

Denominator: 0

**Sample Output:**

Sample Output:

Error: Invalid index or division by zero.

**Problem 12: Payroll Management**

Average salary is calculated. Handle no employees or invalid array indices.

**Sample Input:**

Sample Input:

Salaries: []

**Sample Output:**

Sample Output:

Error: No employees or invalid index.

**Problem 13: Matrix Operations**

Perform division of matrix elements and handle invalid indices or division by zero.

**Sample Input:**

Sample Input:

Matrix: [[1, 2], [3, 4]]

Index: (2,2)

**Sample Output:**

Sample Output:

Error: Invalid index or division by zero.

**Problem 14: Quiz Application**

Access scores in an array or divide scores. Handle invalid indices or zero divisions.

**Sample Input:**

Sample Input:

Scores: [10, 20, 30]

Index: 5

**Sample Output:**

Sample Output:

Error: Invalid index or division by zero.

**Problem 15: Marks Percentage Calculation**

Handle invalid array indices or zero divisions in marks percentage calculation.

**Sample Input:**

Sample Input:

Marks: [90, 80]

Index: 5

Divisor: 0

**Sample Output:**

Sample Output:

Error: Invalid index or division by zero.