Random Assignment

Overview

This repository contains three assignments focused on using Java's `Random` class:

1. **RandomPercentage** - Generate random numbers and format them as percentages
2. **DiceRoller** - Create dice rolling simulation with multiple Random objects
3. **PhoneNumberGenerator** - Generate random phone numbers with specific constraints

Learning Objectives

- Understand the difference between seeded and unseeded Random objects
- Generate random double values using `nextDouble()`
- Generate random integer values using `nextInt()`
- Format numbers to specific decimal places
- Convert values to percentages
- Simulate dice rolling with proper ranges
- Apply constraints to random number generation
- Format output with specific patterns

Assignments

Assignment 1: Random Percentage Generator

Create a Java program that:

1. **Create Two Random Objects:**
    - One `Random` object without a seed (unseeded)
    - One `Random` object with a a specific seed value
2. **Generate Random Values:**
    - Generate random double values from both Random objects
    - Use `nextDouble()` method to get values between 0.0 and 1.0
3. **Format as Percentages:**
    - Format the values to exactly 2 decimal places
    - Display with `%` symbol
4. **Output Format:**
    - Display both unseeded and seeded random values

Example Output

```
Unseeded Random: 45.67%
Seeded Random: 23.45%
```

Key Concepts

Random Class

- `Random()` - Creates unseeded and seeded random number generator
- `nextDouble()` - Returns random double between 0.0 and 1.0

Seeded vs Unseeded

- **Unseeded**: Produces different values each time program runs
- **Seeded**: Produces same sequence of values each time (deterministic)

Assignment 2: Dice Roller

Create a Java program that simulates rolling dice:

1. **Create Four Random Objects:**
    - Three `Random` objects without seeds (unseeded dice)
    - One `Random` object with a seed of any value
2. **Generate Dice Rolls:**
    - Get values 1-6 (like a die)
    - Generate rolls from all four Random objects
3. **Display Results:**
    - Show all four dice rolls with clear labels
    - Demonstrate seeded vs unseeded behavior

Example Output

```
Unseeded Die 1: 4
Unseeded Die 2: 2
Unseeded Die 3: 6
Seeded Die: 3
```

Assignment 3: Phone Number Generator

Create a Java program that generates random phone numbers with specific constraints:

1. **Generate Phone Number Format:**
    - Display as XXX-XXX-XXX (include dashes)

- Three groups of three digits each

2. **First Three Digits (Area Code):**
    - Cannot contain digits 8 or 9
    - Valid digits: 0, 1, 2, 3, 4, 5, 6, 7
3. **Second Three Digits (Exchange):**
    - Must be less than or equal to 742
    - Range: 000-742
4. **Third Three Digits (Subscriber):**
    - No constraints
    - Range: 000-999

Example Output

```
123–456–789
```