

## Loop Statement Challenges in Java

*Java Learning Hub!..* 

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### Q: Automated Coffee Machine ☕

♦ **Scenario:** A coffee machine serves different cups of coffee based on customer demand. A user inputs the number of cups they need, and the machine dispenses coffee accordingly!..

#### Task:

1. Take the number of cups as input.
2. Use a **for loop** to print “Serving coffee ☕ ” for each cup.
3. After all servings, print "**Enjoy your coffee!..**"
- 4.

✅ **Challenge:** Modify the code so that if more than 5 cups are ordered, the machine prints "**Sorry, only 5 cups allowed at a time!**" instead of serving.

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### Q: The Haunted House Countdown!.. 👻 🏠

♦ **Scenario:** A haunted house tour has a countdown before the spooky experience begins. The countdown starts from **10 to 1** and then displays "**BOO! Welcome to the haunted house!..**"

#### Task:

1. Use a **while loop** to print the countdown from 10 to 1.
2. Display “BOO! Welcome to the haunted house!” at the end.

✅ **Challenge:** Make sure the countdown **only accepts numbers  $\geq 1$**  (i.e., no negative numbers).

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### Q: Marathon Runner Energy Tracker 🏃 🏃

◆ **Scenario:** A fitness tracker records a marathon runner's energy level every 2 kilometers until they reach the finish line.

#### Task:

1. Assume the race is **10 km long**.
2. Use a **for loop** to print energy status at every 2 km (Example: "**At 2km: Energy 90%**").
3. At the end, print "**Congratulations! You finished the marathon!**"

✅ **Challenge:** Modify the loop so that if the energy drops below **40%**, the tracker warns "**Drink water! Energy low!**"

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### Q: The Robot Dance Challenge 🤖 🕺

◆ **Scenario:** A robot can repeat a dance move **N times** as per user input!..

#### Task:

1. Take **N (number of dance moves)** as input.
2. Use a **do-while loop** to print "🤖 **Dancing step [Step Number]**" for each step.
3. End with "**Dance complete!**"

✅ **Challenge:** Ensure the robot performs at least **one dance move**, even if  $N = 0$ .

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### Q: The Password Lock System

◆ **Scenario:** A security system allows **3 attempts** to enter the correct password. If the user fails, they get locked out!..

#### Task:

1. Use a **while loop** to allow up to 3 attempts.
2. If the user enters the correct password, print "**Access Granted!**" and exit.
3. If they fail 3 times, print "**Access Denied. Try again later!**"

✅ **Challenge:** Allow the user to reset the password **if they remember a secret security question!**

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### Q: The Magic Multiplication Table Generator

◆ **Scenario:** A magician reveals **multiplication tables** to amazed audiences!..

#### Task:

1. Ask for a **number (N)** from the user.
2. Use a **for loop** to print its multiplication table up to 10.
3. If the number is **0 or negative**, print "**Invalid input! Please enter a positive number.**"

✅ **Challenge:** Modify the code to generate **tables up to any limit set by the user.**

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### Q: The UFO Landing Countdown 🛸🚀

◆ **Scenario:** A UFO is about to land! The countdown begins, and an emergency system checks if landing conditions are safe!..

#### Task:

1. Start a countdown from 15 to 1 using a **while loop**.
2. If the countdown reaches **5**, print **"Check fuel levels!"**
3. At 1, print **"UFO has landed safely!"**

✅ **Challenge:** If the user inputs a faulty countdown (e.g., **20 instead of 15**), restart the countdown.

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### Q: The Fortune Cookie Dispenser 🍪

◆ **Scenario:** A fortune cookie machine gives **3 random fortunes** to customers!..

#### Task:

1. Use a **for loop** to print 3 random fortunes from a list (e.g., **"Great things are coming!"**).
2. Display **"Hope you like your fortune!"** at the end.

✅ **Challenge:** Let users **choose how many fortunes they want!..**

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### Q: The Grocery Billing System 🛒

- ◆ **Scenario:** A grocery store prints a **bill** for purchased items!..

#### Task:

1. Ask the user how many items they bought.
2. Use a **for loop** to take input for each item's price.
3. At the end, display the **total bill amount**.
- 4.

- ✅ **Challenge:** Apply a **10% discount** if the **total bill** is above **₹2000**.
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### Q: The Secret Vault Puzzle 🔒

- ◆ **Scenario:** A secret vault unlocks only if the user enters a **correct series of numbers**!..

#### Task:

1. Use a **nested for loop** to ask the user for **3 correct numbers** in sequence.
2. If all 3 match the vault password, unlock the vault. Otherwise, try again.

- ✅ **Challenge:** Give a **hint** if the first two numbers are correct!
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