```java
import java.io.*;
import java.util.*;

class TokenRing {
    public static void main(String args[]) throws Throwable {
        Scanner scan = new Scanner(System.in);

        System.out.println("Enter the number of nodes:");
        int n = scan.nextInt(); // Number of nodes in the ring
        int token = 0; // Initial token position
        int ch = 0, flag = 0;

        // Display the nodes forming the ring
        System.out.print("Ring topology: ");
        for (int i = 0; i < n; i++) {
            System.out.print(i + " ");
        }
        System.out.println(0);

        do {
            System.out.println("\nEnter sender:");
            int sender = scan.nextInt();

            System.out.println("Enter receiver:");
            int receiver = scan.nextInt();

            System.out.println("Enter Data:");
            int data = scan.nextInt();

            // Token passing process
            System.out.print("Token passing:");
            for (int i = token, j = token; (i % n) != sender; i++, j = (j + 1) % n) {
                System.out.print(" " + j + "->");
            }
            System.out.println(" " + sender);

            System.out.println("Sender " + sender + " sending data: " + data);
```

```java
        // Forwarding the data through intermediate nodes
        for (int i = (sender + 1) % n; i != receiver; i = (i + 1) % n) {
            System.out.println("Data " + data + " forwarded by " + i);
        }

        System.out.println("Receiver " + receiver + " received data: " + data + "\n");

        // Update token position
        token = sender;

        // Asking user if they want to send again
        do {
            try {
                if (flag == 1)
                    System.out.println("Invalid Input! Please enter 1 or 0.");

                System.out.print("Do you want to send again? Enter 1 for Yes and 0 for No: ");
                ch = scan.nextInt();

                if (ch != 1 && ch != 0)
                    flag = 1;
                else
                    flag = 0;

            } catch (InputMismatchException e) {
                System.out.println("Invalid Input! Please enter a valid number.");
                scan.next(); // Clear buffer
            }
        } while (ch != 1 && ch != 0);

    } while (ch == 1);

    scan.close();
    }
}
```

EXPLORER   ···   J TokenRing.java ×

∨ DS LABS   LAB5 > J TokenRing.java > 🔩 TokenRing > ⬡ main(String[])
  ∨ LAB4   4   class TokenRing {
    🐍 client.py
    🐍 server.py   31   System.out.print(s:"Token passing:");
  ∨ LAB5   32   for (int i = token, i = token: (i % n) != sen
    J TokenRing.class
    J TokenRing.java   PROBLEMS ❷   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

                                 PS D:\DS LABS\LAB5> java TokenRing
                                 Enter the number of nodes:
                                 4
                                 Ring topology: 0 1 2 3 0

                                 Enter sender:
                                 0
                                 Enter receiver:
                                 1
                                 Enter Data:
                                 1234
                                 Token passing: 0
                                 Sender 0 sending data: 1234
                                 Receiver 1 received data: 1234

                                 Do you want to send again? Enter 1 for Yes and 0 for No: 1

                                 Enter sender:
                                 0
                                 Enter receiver:
                                 3
                                 Enter Data:
                                 12345678
                                 Token passing: 0
                                 Sender 0 sending data: 12345678
                                 Data 12345678 forwarded by 1
                                 Data 12345678 forwarded by 2
                                 Receiver 3 received data: 12345678

                                 Do you want to send again? Enter 1 for Yes and 0 for No: 0
  > OUTLINE   PS D:\DS LABS\LAB5> █
  > TIMELINE
  > JAVA PROJECTS

⊗ 2 ⚠ 0   Java: Ready

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