

Date: 10/09/2025

### Lab Practical #14:

Implementation of parity bit check Using C/Java language with example.

### Practical Assignment #14:

#### 1. C/Java Program: Implementation of parity bit check Using C/Java language.

```
import java.util.Scanner;

public class ParityCheck {

    // Method to calculate parity bit
    static int calculateParity(int[] data, int size, boolean isEvenParity) {
        int count = 0;
        for (int bit : data) {
            if (bit == 1) {
                count++;
            }
        }

        if (isEvenParity) {
            return (count % 2 == 0) ? 0 : 1; // Even parity
        } else {
            return (count % 2 == 0) ? 1 : 0; // Odd parity
        }
    }

    // Method to verify parity bit
    static boolean verifyParity(int[] data, int size, int receivedParityBit, boolean isEvenParity) {
        int oneCount = 0;
        for (int bit : data) {
            if (bit == 1) {
                oneCount++;
            }
        }

        if (receivedParityBit == 1) {
            oneCount++;
        }

        if (isEvenParity) {
            return (oneCount % 2 == 0);
        } else {
            return (oneCount % 2 != 0);
        }
    }
}
```

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```
}  
}  
  
public static void main(String[] args) {  
    Scanner sc = new Scanner(System.in);  
  
    int[] data = {1, 0, 1, 1, 0, 1};  
    int size = data.length;  
  
    System.out.println("Choose the parity type:");  
    System.out.println("  Enter 1 for Even Parity");  
    System.out.println("  Enter 0 for Odd Parity");  
    System.out.print("Your choice: ");  
    int choice = sc.nextInt();  
  
    if (choice != 0 && choice != 1) {  
        System.out.println("Invalid choice. Please run again and enter 0 or 1.");  
        sc.close();  
        return;  
    }  
  
    boolean isEvenParity = (choice == 1);  
  
    System.out.print("\nOriginal Data: ");  
    for (int bit : data) {  
        System.out.print(bit);  
    }  
    System.out.println();  
  
    System.out.println("Parity Type Selected: " + (isEvenParity ? "Even" :  
"Odd"));  
  
    int parityBit = calculateParity(data, size, isEvenParity);  
    System.out.println("Sender: Calculated Parity Bit is " + parityBit);  
  
    System.out.print("Sender: Full message to send is ");  
    for (int bit : data) {  
        System.out.print(bit);  
    }  
    System.out.println(parityBit);  
  
    System.out.println("\n--- Simulating Data Reception ---");  
  
    int[] receivedData = new int[size];  
    System.out.println("Enter the " + size + " bits of the data you  
'received':");
```

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```
for (int i = 0; i < size; i++) {  
    System.out.print("Enter bit " + (i + 1) + ": ");  
    receivedData[i] = sc.nextInt();  
}  
  
int receivedParityBit = parityBit;  
  
System.out.print("\nReceiver: Checking received message ");  
for (int bit : receivedData) {  
    System.out.print(bit);  
}  
System.out.println(receivedParityBit);  
  
if (verifyParity(receivedData, size, receivedParityBit, isEvenParity)) {  
    System.out.println("Result: Parity check PASSED. (Data is considered  
correct)");  
} else {  
    System.out.println("Result: Parity check FAILED. (Error detected)");  
}  
  
sc.close();  
}  
}
```