

Lab Final Exam

**Prepared for**

**Prof. Mukhtiar Zamin**

**Prepared by**

**Faizan (FA21-BSE-011)**

Department of Computer Science

COMSATS University Islamabad, Lahore Campus

05 July 2024

Table of Contents

[Algorithm 3](#_Toc171063865)

[Equivalence Partitioning 3](#_Toc171063866)

[Boundary Value Analysis 4](#_Toc171063867)

[Test Cases 4](#_Toc171063868)

# Algorithm

public class PrimeChecker {

public static boolean isPrime(int n) {

if (n <= 1) {

return false;

}

for (int i = 2; i <= Math.sqrt(n); i++) {

if (n % i == 0) {

return false;

}

}

return true;

}

}

# Equivalence Partitioning

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Partition** | **Description** | |  | | --- | | **Test Case** |  |  | | --- | |  | | **Input** | **Expected Output** |
| Negative numbers | n < 0 | Test with a negative number | -1 | false |
| Non-prime numbers | n is not prime | Test with zero | 0 | false |
| Non-prime numbers | n is not prime | Test with one | 1 | false |
| Prime numbers | |  | | --- | |  |  |  | | --- | | n is prime | | Test with a small prime | 2 | True |
| Prime numbers | n is prime | Test with a larger prime | 17 | true |

# Boundary Value Analysis

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Boundary** | **Description** | **Test Case** | **Input** | **Expected Output** |
| Lower boundary | n = 0 | Test with zero | 0 | False |
| Lower boundary | n = 1 | Test with one | 1 | False |
| Smallest prime number | n = 2 | Test with a small prime | 2 | True |
| Just above a prime number | n = 4 | Not included in tests | 4 | False |
| Larger prime number | n = 17 | Test with a larger prime | 17 | True |

# Test Cases

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Test Case ID** | **Description** | **Input** | **Expected Output** | **Partition** | **Boundary** | **Actual Outcome** | **Status** |
| TC1 | Test with a negative number | -1 | False | Negative numbers | N/A | False | PASS |
| TC2 | Test with zero | 0 | False | Non-prime numbers | Lower boundary | False | PASS |
| TC3 | Test with one | 1 | False | Non-prime numbers | Lower boundary | False | PASS |
| TC4 | Test with a small prime number | 2 | True | Prime numbers | Smallest prime number | True | PASS |
| TC5 | Test with a larger prime number | 17 | True | Prime numbers | Larger prime number | True | PASS |
| TC6 | Test with a Non-Prime Number | 4 | False | Non-Prime numbers | Non-Prime numbers | False | PASS |