

## LAB #1 AED

Antonio José Cadavid– A00354484  
Juan David Hernández - A00356210  
Alejandro Suarez – A00359653

### 1) Functional Requirements

<b>Name:</b>	R. #1 Generate prime numbers.
<b>Description:</b>	The program must be able to generate (n) prime numbers. It must have three algorithms that can perform this task.
<b>Input:</b>	Amount (n) of prime numbers
<b>Output:</b>	A table bidimensional with de first (n) prime numbers

<b>Name:</b>	R. #2 Get input
<b>Description:</b>	<p>The program must be able to receive the input from the user via a GUI.</p> <p>This input must be an integer (n) &gt;0 and will be used to generate the prime numbers and create a matrix containing them in order to display them on the screen.</p>
<b>Input:</b>	An input (n) that represents the maximum amount of prime numbers that must be generated.
<b>Output:</b>	<None>

<b>Name:</b>	R. #3 Generate Matrix
<b>Description:</b>	The program must generate a matrix containing all the integers from 0 to (n) where (n) is an input given by the user.
<b>Input:</b>	Input (n)
<b>Output:</b>	A matrix containing all the numbers from 0 to (n)

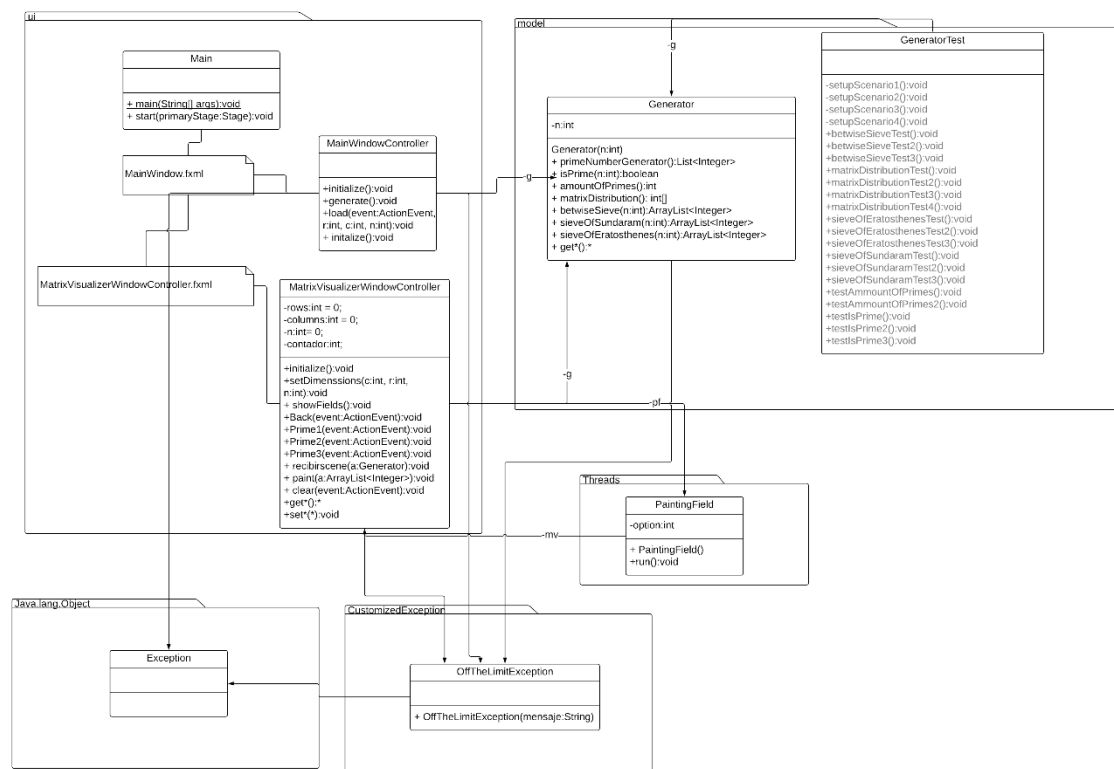
## LAB #1 AED

Antonio José Cadavid– A00354484  
 Juan David Hernández - A00356210  
 Alejandro Suarez – A00359653

--	--

<b>Name:</b>	R. #4 Difference the primes numbers
<b>Description:</b>	as the algorithm finds that the number is or is not a prime, that is, that allows to show in real time the process performed by the algorithm to find these prime numbers.
<b>Input:</b>	<None>
<b>Output:</b>	Green: Prime numbers Red: Numbers not prime

## 2) Class Diagram



## LAB #1 AED

Antonio José Cadavid– A00354484  
Juan David Hernández - A00356210  
Alejandro Suarez – A00359653

### 3) Test cases design

#### Stage configuration

Name	Class	Stage
setupScenario1	GeneratorTest	An object of the Generator class with n=9
setupScenario2	GeneratorTest	An object of the Generator class with n=18
setupScenario3	GeneratorTest	An object of the Generator class with n=74
setupScenario4	GeneratorTest	An object of the Generator class with n=45

#### Test Case Design

**Test Objective:** verify that the testIsPrime method works correctly by calculating if 5 is a prime number

Class	Method	Stage	Input	Outcome
GeneratorTest	testIsPrime	setupScenario1	n = 5	5 is a prime number

**Test Objective:** verify that the testIsPrime2 method works correctly by calculating if 100 is a prime number

Class	Method	Stage	Input	Outcome
GeneratorTest	testIsPrime2	setupScenario1	n = 100	100 is not a prime number

**Test Objective:** verify that the testIsPrime3 method works correctly by calculating if 1 is a prime number

Class	Method	Stage	Input	Outcome
GeneratorTest	testIsPrime3	setupScenario1	n = 1	1 is not a prime number

**Test Objective:** Verify that the number of primes found by testAmountOfPrimes is as expected

Class	Method	Stage	Input	Outcome
GeneratorTest	testAmountOfPrimes	setupScenario1	n = 9	There are 4 prime numbers

## LAB #1 AED

Antonio José Cadavid– A00354484  
 Juan David Hernández - A00356210  
 Alejandro Suarez – A00359653

**Test Objective:** Verify that the number of primes found by testAmountOfPrimes2 is as expected

Class	Method	Stage	Input	Outcome
GeneratorTest	testAmountOfPrimes2	setupScenario2	n = 18	There are 7 prime numbers

**Test Objective:** Verify if the matrix distribution is the expected

Class	Method	Stage	Input	Outcome
GeneratorTest	matrixDistributionTest	setupScenario1	n = 9	The matrix will have 3 rows and 3 columns

**Test Objective:** Verify if the matrix distribution is the expected

Class	Method	Stage	Input	Outcome
GeneratorTest	matrixDistributionTest2	setupScenario2	n = 18	The matrix will have 5 rows and 4 columns

**Test Objective:** Verify if the matrix distribution is the expected

Class	Method	Stage	Input	Outcome
GeneratorTest	matrixDistributionTest3	setupScenario3	n = 45	The matrix will have 8 rows and 6 columns

**Test Objective:** Verify if the matrix distribution is the expected

Class	Method	Stage	Input	Outcome
GeneratorTest	matrixDistributionTest4	setupScenario4	n = 74	The matrix will have 10 rows and 8 columns

**Test Objective:** Verify that the betwiseSieve method finds the expected prime numbers

Class	Method	Stage	Input	Outcome
GeneratorTest	betwiseSieveTest	setupScenario2	n = 18	Prime numbers are: 2,3,5,7,11,13,17

## LAB #1 AED

Antonio José Cadavid– A00354484  
 Juan David Hernández - A00356210  
 Alejandro Suarez – A00359653

**Test Objective:** Verify that the betwieseSieve2 method finds the expected prime numbers

Class	Method	Stage	Input	Outcome
GeneratorTest	betwieseSieveTest2	setupScenario4	n = 45	Prime numbers are: 2,3,5,7,11,13,17,19,23,29,31,37,41,43

**Test Objective:** Verify that the betwieseSieve3 method finds the expected prime numbers

Class	Method	Stage	Input	Outcome
GeneratorTest	betwieseSieveTest3	setupScenario1	n = 9	Prime numbers are: 2,3,5,7

**Test Objective:** Verify that the sieveOfSundaramTest method finds the expected prime numbers

Class	Method	Stage	Input	Outcome
GeneratorTest	sieveOfSundaramTest	setupScenario2	n = 18	Prime number are: 2,3,5,7,11,13,17

**Test Objective:** Verify that the sieveOfSundaramTest2 method finds the expected prime numbers

Class	Method	Stage	Input	Outcome
GeneratorTest	sieveOfSundaramTest2	setupScenario4	n = 45	Prime number are: 2,3,5,7,11,13,17,19,23,29,31,37,41,43

**Test Objective:** Verify that the sieveOfSundaramTest3 method finds the expected prime numbers

Class	Method	Stage	Input	Outcome
GeneratorTest	sieveOfSundaramTest3	setupScenario1	n = 9	Prime number are: 2,3,5,7

**Test Objective:** Verify that the sieveOfEratosthenesTest method finds the expected prime numbers

Class	Method	Stage	Input	Outcome
GeneratorTest	sieveOfEratosthenesTest	setupScenario2	n = 18	Prime number are: 2,3,5,7,11,13,17

## LAB #1 AED

Antonio José Cadavid– A00354484  
Juan David Hernández - A00356210  
Alejandro Suarez – A00359653

**Test Objective:** Verify that the sieveOfEratosthenesTest2 method finds the expected prime numbers

Class	Method	Stage	Input	Outcome
GeneratorTest	sieveOfEratosthenesTest2	setupScenario4	n = 45	Prime number are: 2,3,5,7,11,13,17,19,23,29,31,37,41,43

**Test Objective:** Verify that the sieveOfEratosthenesTest3 method finds the expected prime numbers

Class	Method	Stage	Input	Outcome
GeneratorTest	sieveOfEratosthenesTest3	setupScenario1	n = 9	Prime number are: 2,3,5,7