Algoritmos y Programación I
Entrega de laboratorio
Sebastián García Acosta

Problem Analysis

Content

Algoritmos y Programación I
Entrega de laboratorio
Sebastián García Acosta

Statement

A friend of your Algorithm teacher likes angels very much and has commented that it would be interesting to have a small application that reminds her of their important dates, type, representative color, among others. Her teacher, having the need to pose a problem to her APO1 students, began asking her friend and this is what she told her:

Angels are categorized into several types: archangels, cherubs, seraphim.

All angels of the same type are grouped into a legion, for example: the archangel angels are grouped into a legion called "Highest Maxim." The cherub angels are grouped in a legion called "Liberi" and finally the seraphim are grouped in the legion "Seraphim".

Note: For this exercise we are only interested in the legion of the archangels.

Each archangel has a name (which ends in the syllable "el"), a photo, a prayer, a date of celebration (day and month) and a power. Among some of the recognized powers are: protection, health, abundance, justice, loyalty, but the user can create more powers. Each archangel is assigned a special candle, which has a color, a size, an essence and a degree of illuminance.

Algoritmos y Programación I
Entrega de laboratorio
Sebastián García Acosta

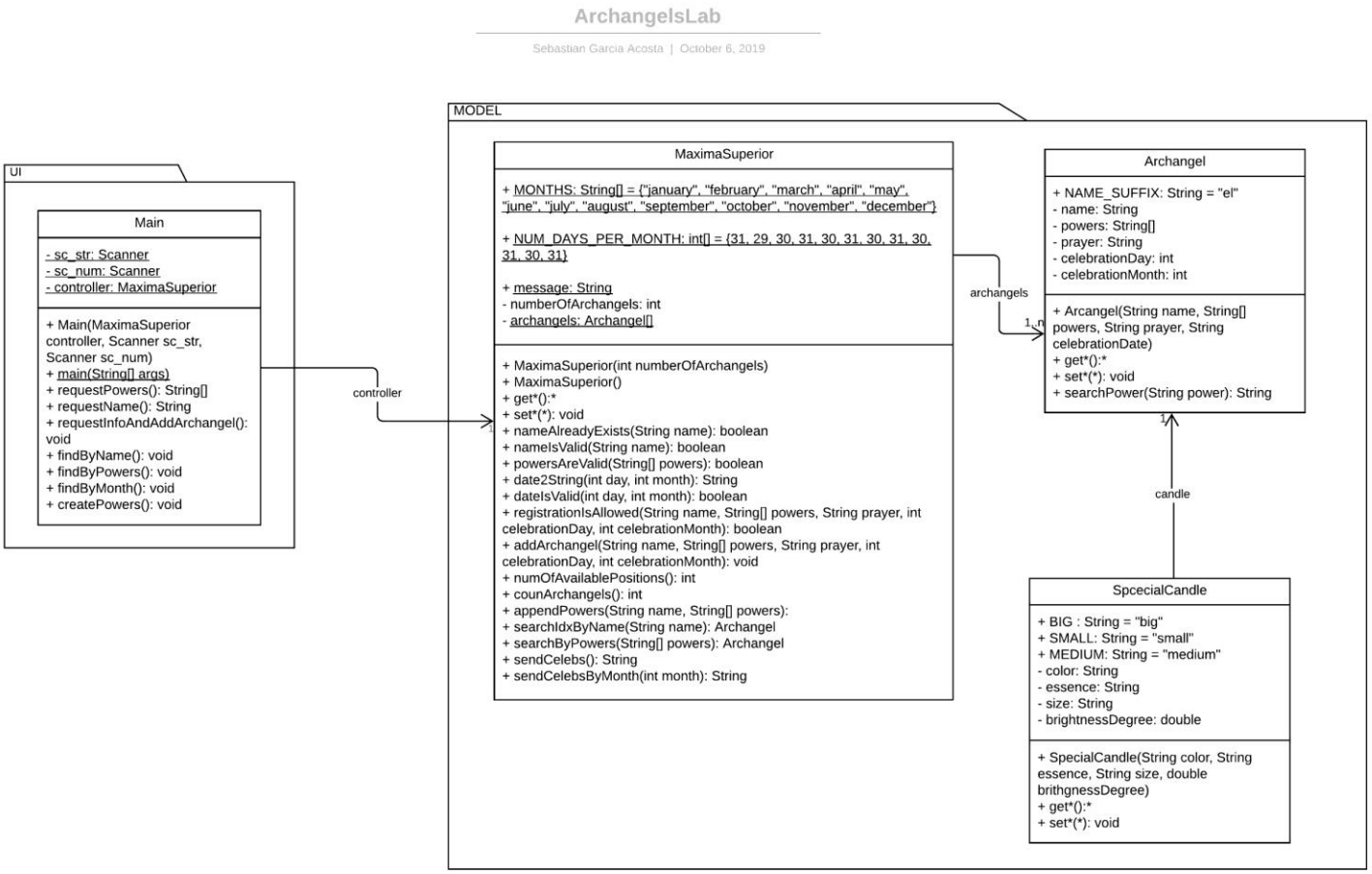
Functional Requirements

Table 1 Functional Requirements

Name	Description
FR1	Enter the archangels (there is only one archangel per name and there is only one archangel per power)
FR2	Count the archangels entered
FR3	Display the archangel's information given its name
FR4	Display the archangel's information given its power
FR5	Display the celebrations to be held given one month (you must show the name of the archangel, the day of the celebration, the color and the essence of your candle)
FR6	Display all celebrations: Review each of the created angels and concatenate the response with the date of celebration, like this: name of the angel: date of celebration, name of the angel: date of celebration. Example: Miguel: September 29, Rafael: June 10.
FR7	Application should allow the user to add more powers to an archangel specified.

Algoritmos y Programación I
Entrega de laboratorio
Sebastián García Acosta

UML Class Diagram

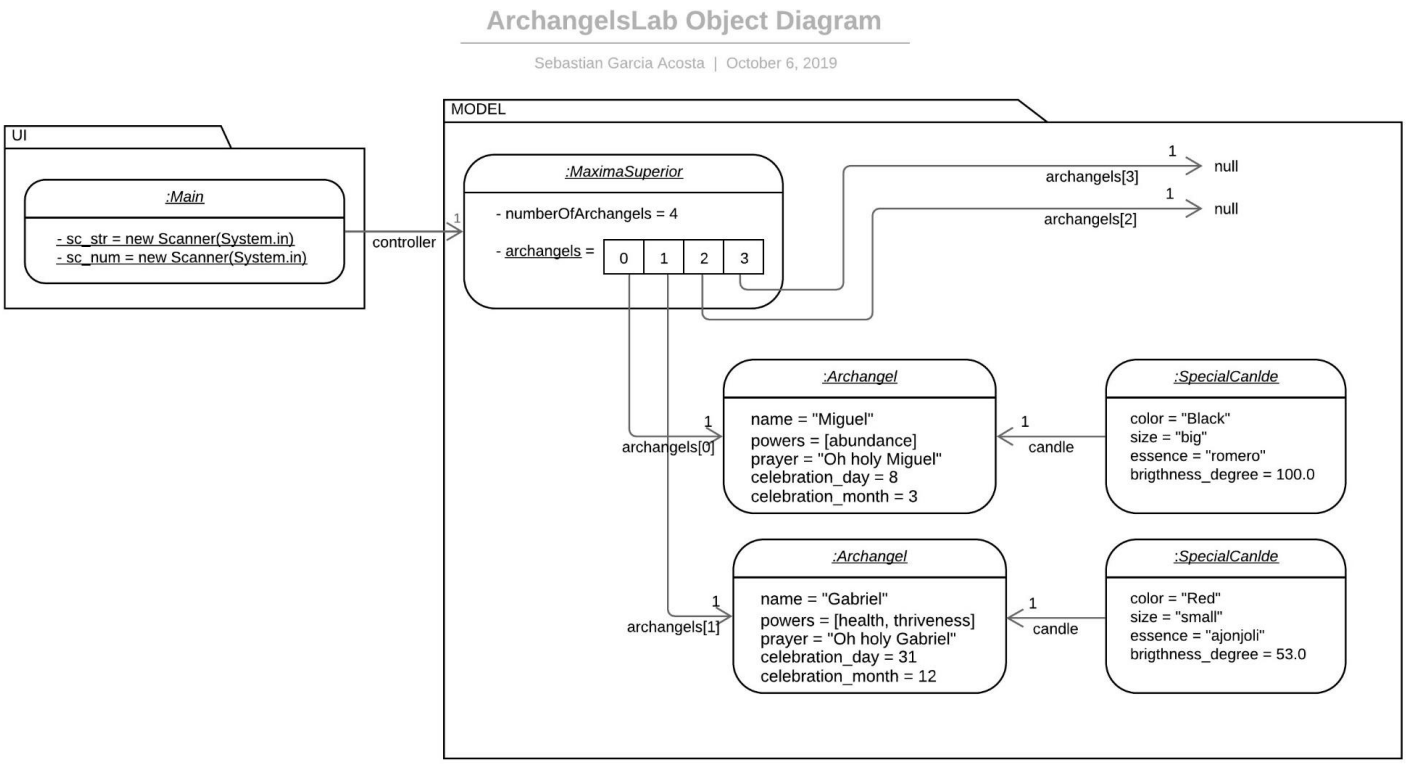


You can find this UML Class Diagram on lucidchart:

https://www.lucidchart.com/invitations/accept/06bfcad1-247e-4908-86e0-1db9629a2bb7

Algoritmos y Programación I
Entrega de laboratorio
Sebastián García Acosta

Object diagram



You can find this UML Object Diagram on lucidchart:

https://www.lucidchart.com/invitations/accept/10d22738-d62a-4f5f-8528-0f363a2620c4

Algoritmos y Programación I
Entrega de laboratorio
Sebastián García Acosta

Traceability

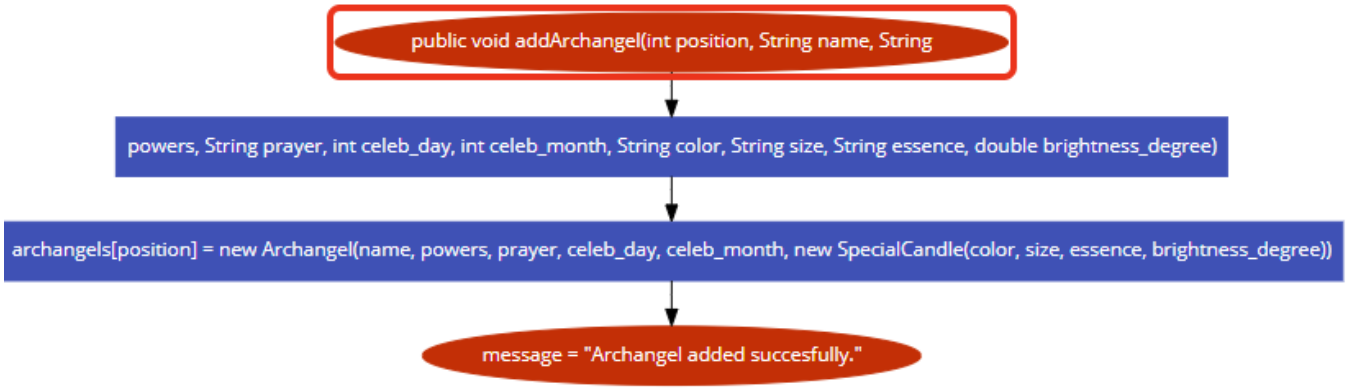
FUNCTIONAL REQUIREMENT	CLASS	METHOD
FR1	Main	requestInfoAndAddArchangel()
	Main	requestName(String name)
	MaximaSuperior	nameIsValid(String name)
	MaximaSuperior	nameAlreadyExists(String name)
	MaximaSuperior	searchIdxByName(String name)
	Main	requestPowers()
	MaximaSuperior	powersAreValid(String[] powers)
	MaximaSuperior	searchByPowers(String[] powers)
	Archangel	searchPower(String power)
	MaximaSuperior	RegistrationIsAllowed(String name, String[] powers, int celebration_day, int celebration_month)
	MaximaSuperior	addArchangel(int position, String name, String[] powers, String prayer, int celeb_day, int celeb_month, String color, String size, String essence, double brightness_degree)
	MaximaSuperior	getNumArchangels()
	MaximaSuperior	numOfAvailablePositions()
FR2	MaximaSuperior	countArchangels()
FR3	Main	findByName()
	MaximaSuperior	searchIdxByName(String name)
	Archangel	getArchangels()
	Archangel	toString()
FR4	Main	findByPowers()
	MaximaSuperior	searchByPowers(String[] powers)
	Archangel	searchPower(String power)
	Archangel	toString()

FR5	Main MaximaSuperior Archangel Archangel Archangel Archangel SpecialCandle SpecialCandle	findByMonth(int month) searchCelebsByMonth(int month) getCelebrationMonth() getName() getCelebrationDay() getCandle() getColor() getEssence()
FR6	MaximaSuperior MaximaSuperior Archangel Archangel Archangel MaximaSuperior	showAllCelebs() countArchangels() getName() getCelebrationDay() getCelebrationMonth() date2String(int day, int month)
FR7	Main MaximaSuperior MaximaSuperior Main MaximaSuperior MaximaSuperior Archangel MaximaSuperior MaximaSuperior Archangel Archangel	createPowers() nameAlreadyExists(String name) searchIdxByName(String name) requestPowers() powersAreValid(String[] powers) searchByPowers(String[] powers) searchPower(String power) appendPowers(String name, String[] powers) searchIdxByName(String name) getPowers() setPowers()

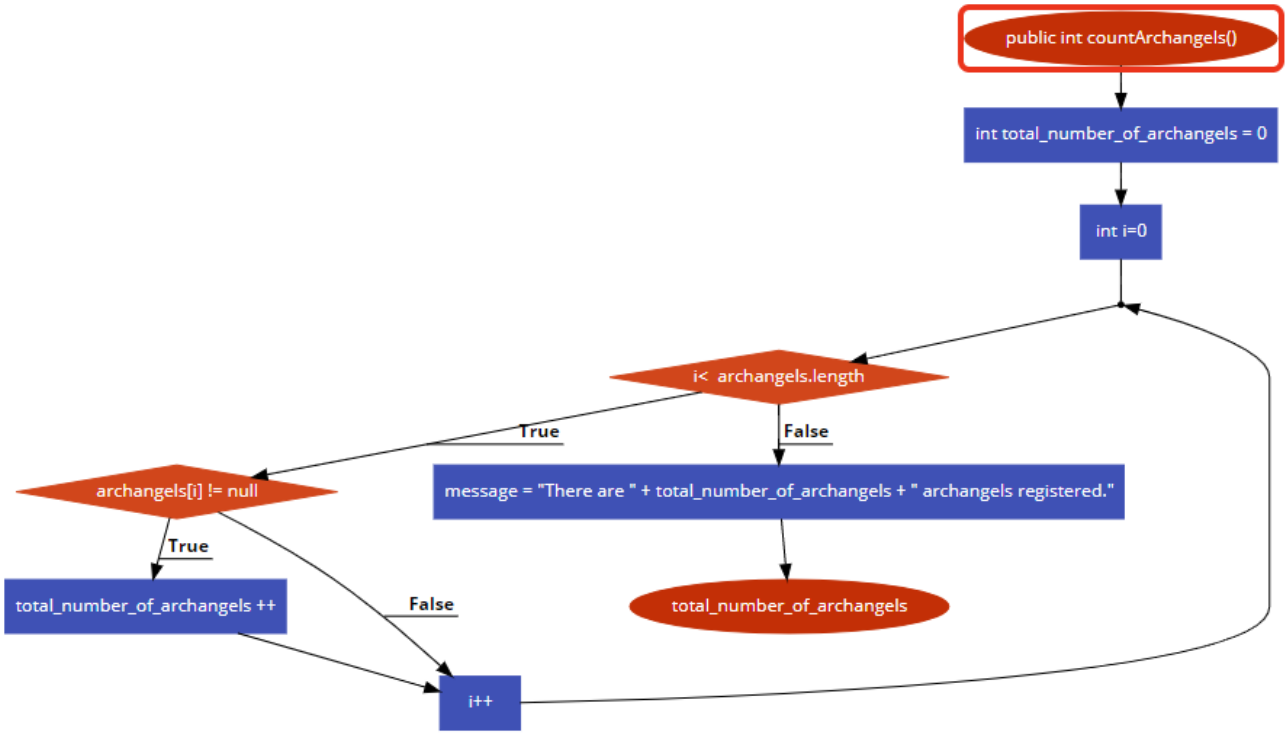
Algoritmos y Programación I
Entrega de laboratorio
Sebastián García Acosta

Flowcharts

FR1

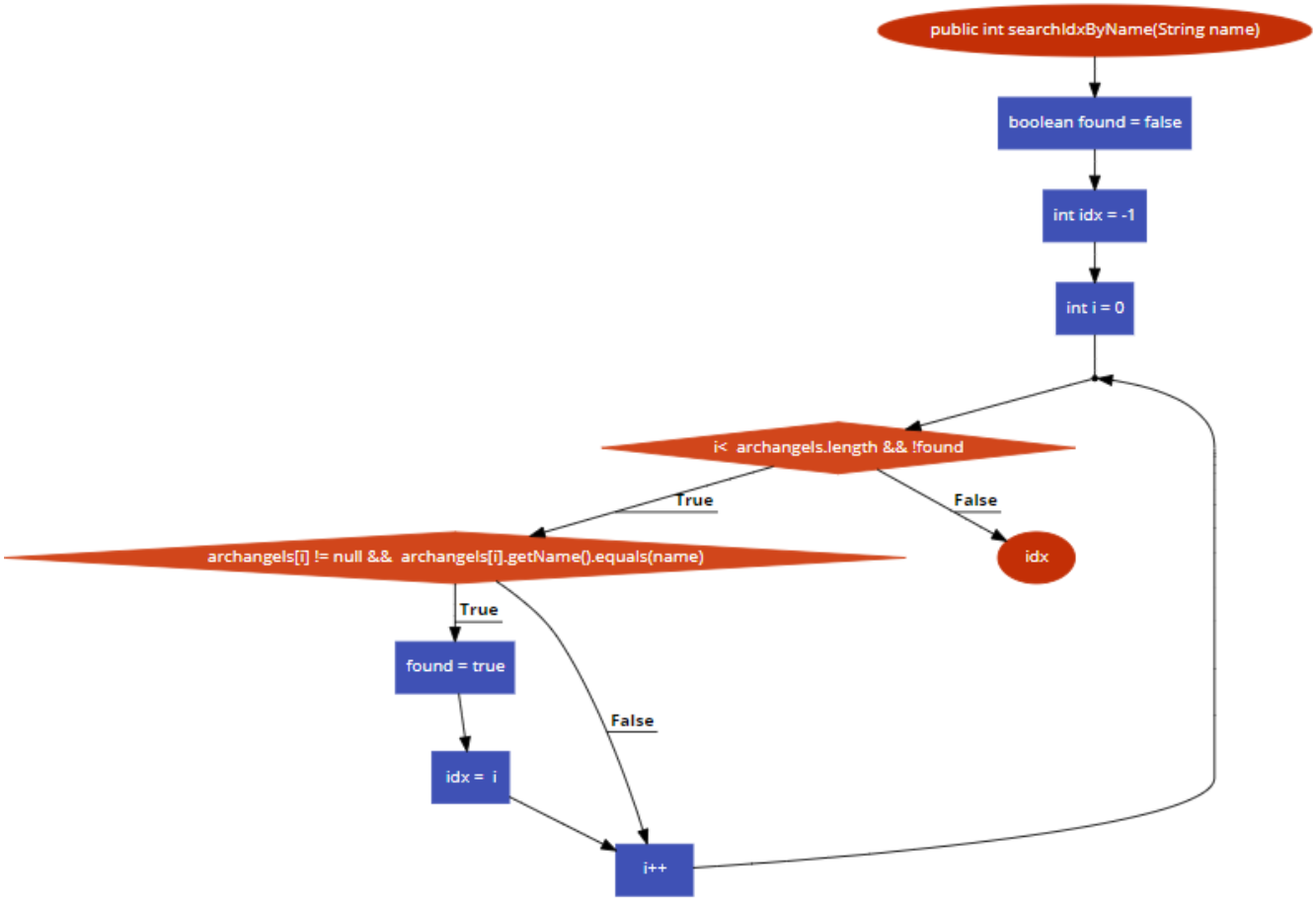


FR2



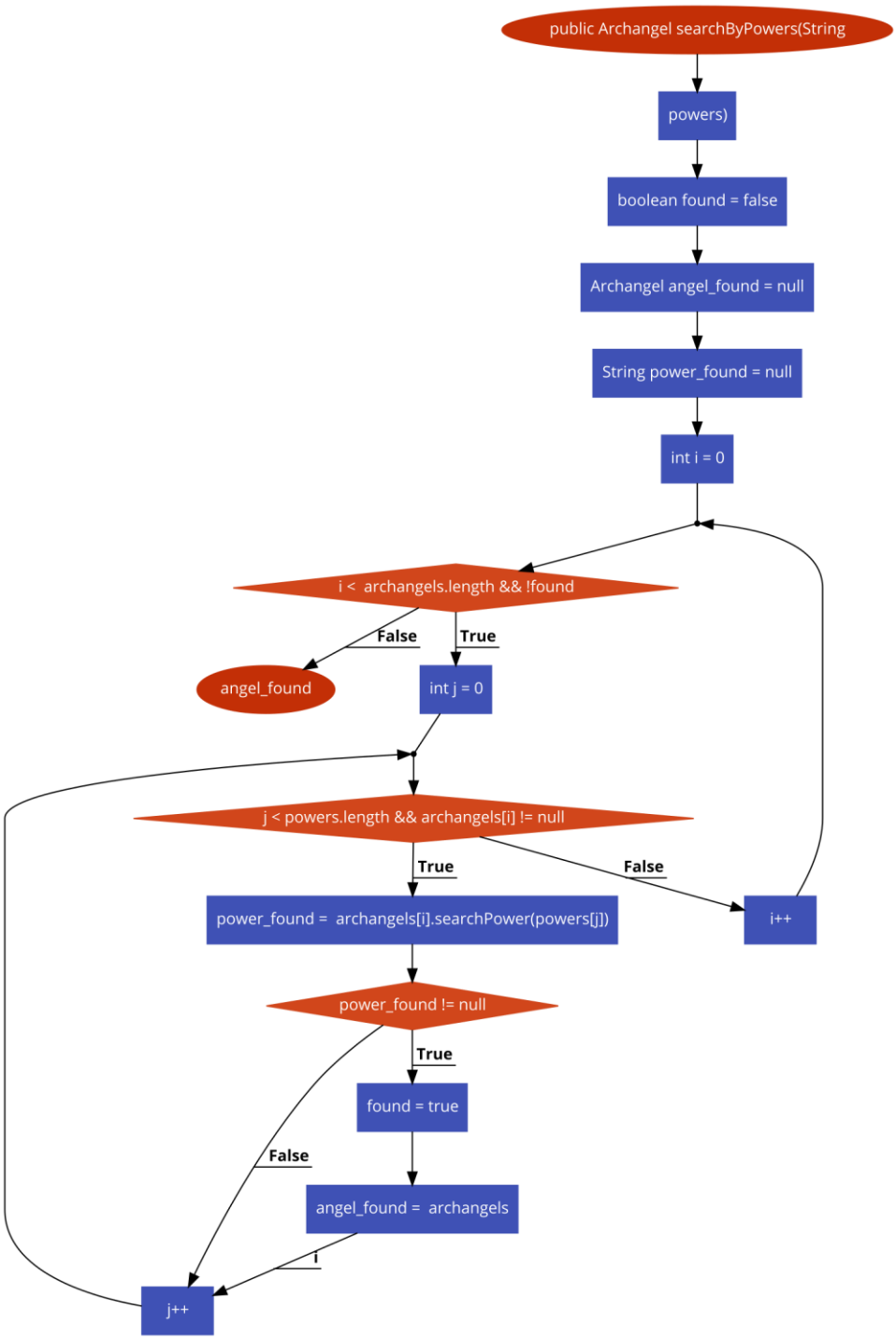
Algoritmos y Programación I
Entrega de laboratorio
Sebastián García Acosta

FR3



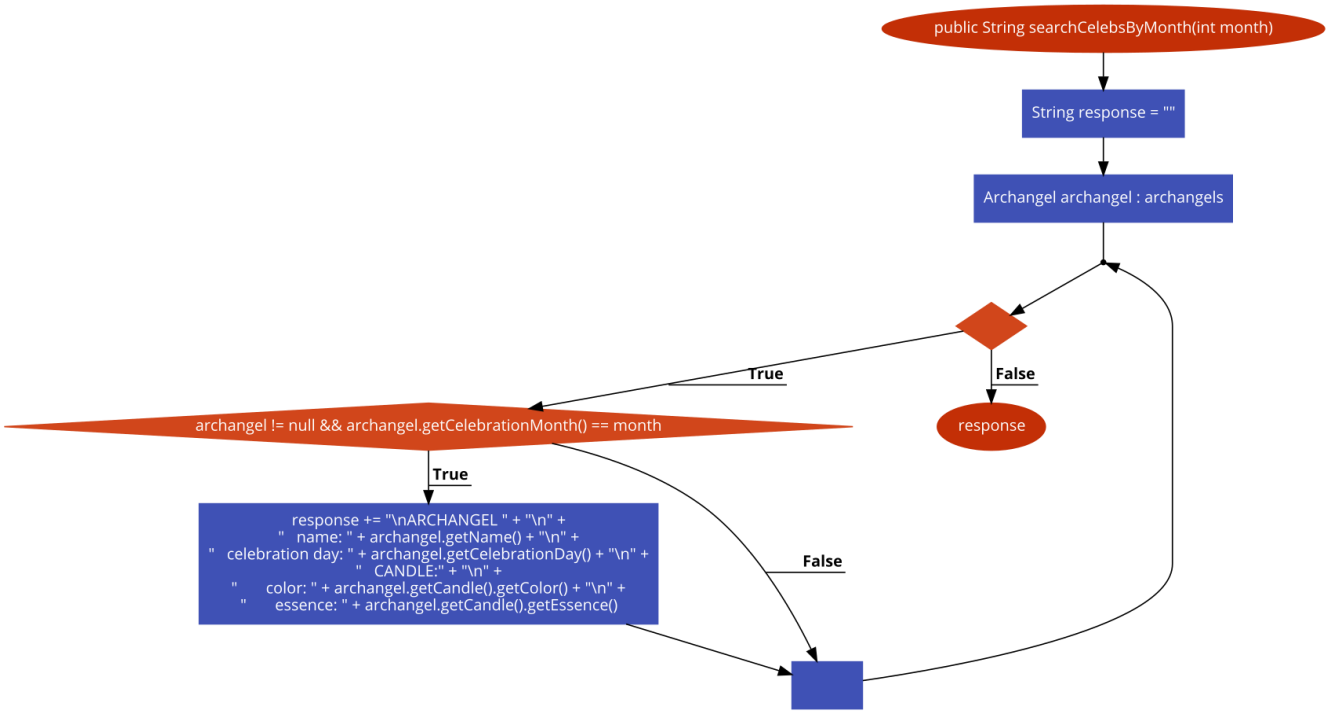
Algoritmos y Programación I
Entrega de laboratorio
Sebastián García Acosta

FR4

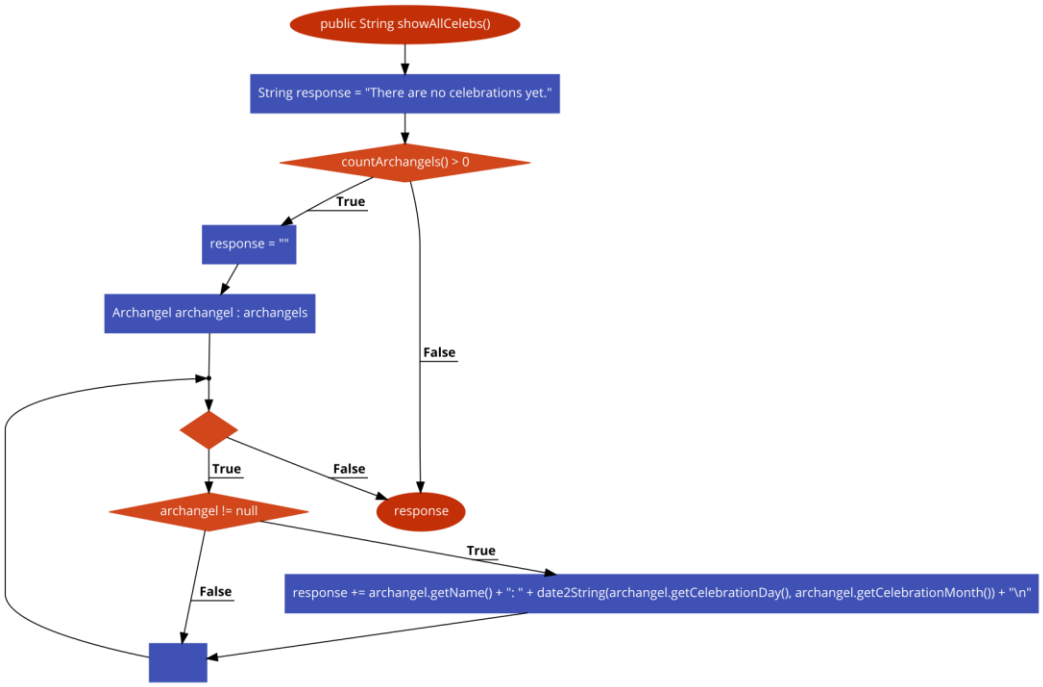


Algoritmos y Programación I
Entrega de laboratorio
Sebastián García Acosta

FR5

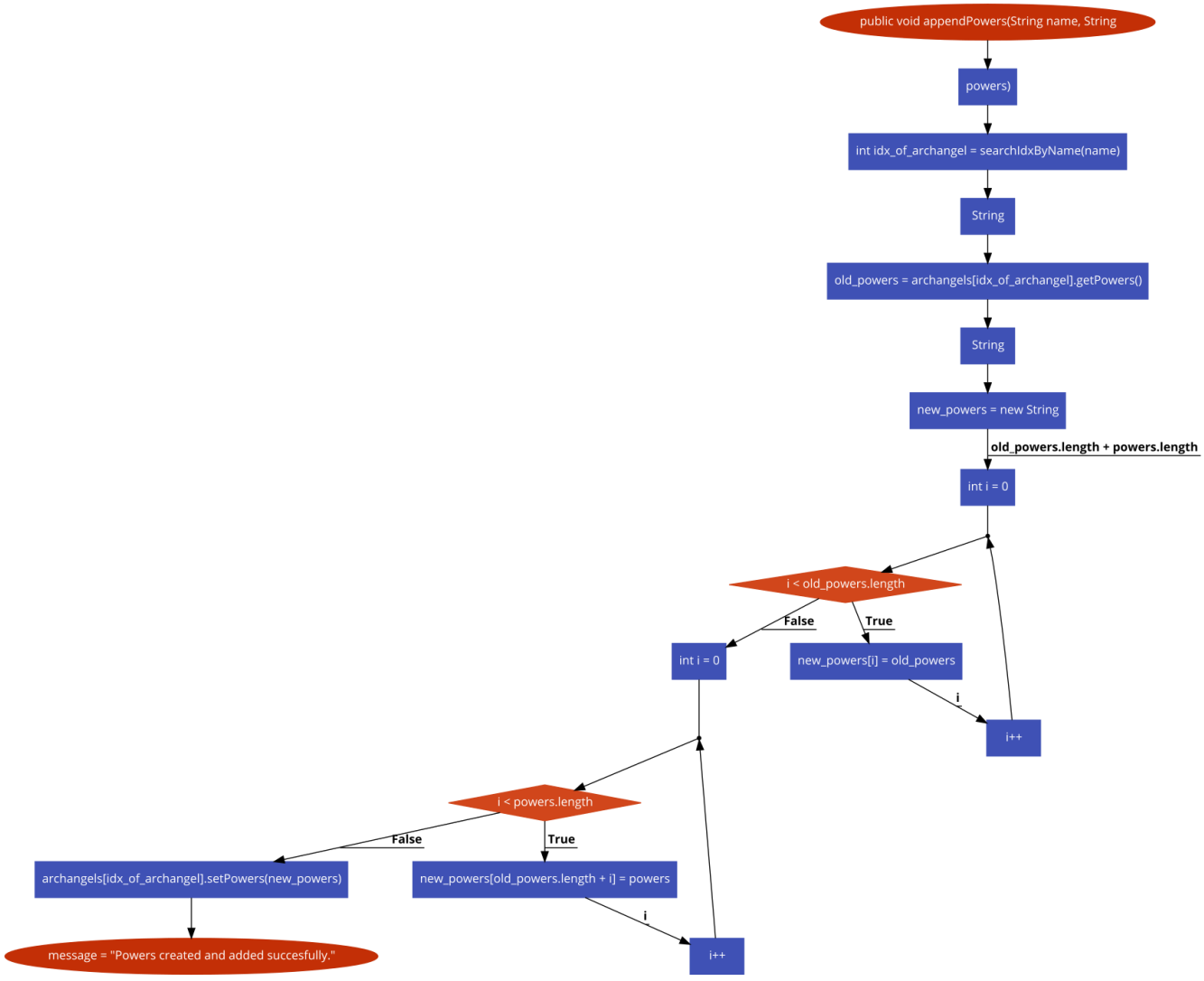


FR6



Algoritmos y Programación I
Entrega de laboratorio
Sebastián García Acosta

FR7



Algoritmos y Programación I
Entrega de laboratorio
Sebastián García Acosta