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Assignment Cover Letter

(Individual Work)

Student Information:		Surname	Given Names	Student ID Number
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	: COMP650	**Course Name**	**: Introduction to Programming**
Class	**: L1BC**	**Name of Lecturer(s)**	**:** 1. Monica Hidajat
Major	**: CS**		

Title of Assignment : Lissajous Curve
(if any)

Type of Assignment   : **Final Project**

Submission Pattern

Due Date	**: 20-11-2018**	**Submission Date**	**: 20-11-2018**

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2. Soft copy assignment also requires the signed (hardcopy) submission of this form, which automatically validates the softcopy submission.
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Signature of Student: (Name of Student)
1.   Michael Berlian

# Lissajous Curve

Name : Michael Berlian
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1. Description

Concept:

This program was developed to simulate the Lissajous curve. The Lissajous curve is a unique pattern that created by two circles that rotating above and beside it. The coordinate of both circles was used by the system to draw the unique pattern. It means the different size and speed of both circles will create a unique pattern

2. Design
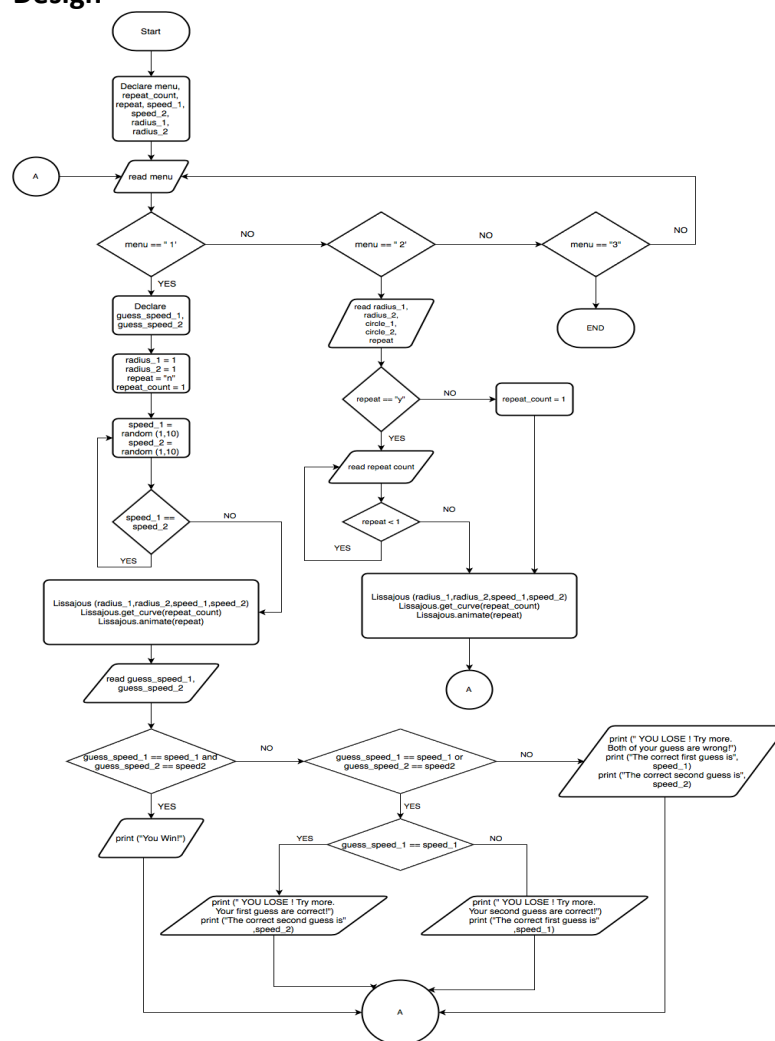
3. **Discussion**

Implementation:

There are a couple of libraries that were implemented:

- Matplotlib is a library in python3 that used for plotting 2 dimension figures. Besides it functions to plot figures it also able to animate a figure. Matplotlib in this program was used to animate the unique Lissajous curves
- Numpy is a great package for scientific computing in python. This program uses two numpy functions linspace, arrange, and trigonometry. Both of the functions implemented in this program in order to get the coordinate for the Lissajous curve before it animated by matplotlib. the arrange function used to help to animate the curve

How it works:

The first appearance of this program when it starts will shows the menus. The are two main menu play and view. Quit menu also available to quit the program. Play and view menu will go into some process and will have a return of 6 important variables: radius_1, radius_2, speed_1, speed_2, repeat, and repeat_count. As the program gets all the variables, the program will jump into the class and there are 2 main function get_curve and animate.

the get_curve function was made to obtain all the coordinate that needed to animate the curve and save it in two different lists. The way its run, it will get a certain amount of numbers by linspace function from 0 to 360 times the speed of each circle, the 360 mean a whole circle degree. After the program get the whole degree of both circle, it will transform the degrees into x and y coordinates by the trigonometry function of numpy. There the program already has all the coordinate of the Lissajous curve and the program will return all the coordinate into two lists. As the program got all the coordinate, the program will start the animate function of the class. It will animate the curve based on the certain number that the program assigned before, begin from 0 until the end.

Class Explanation:

The class of Lissajous was made to make the program easier to understand. Besides that it also makes it easier to get the curve and to animate it. As most of the program main process is inside the class, it will reduce the error of the program.

4. Evidence
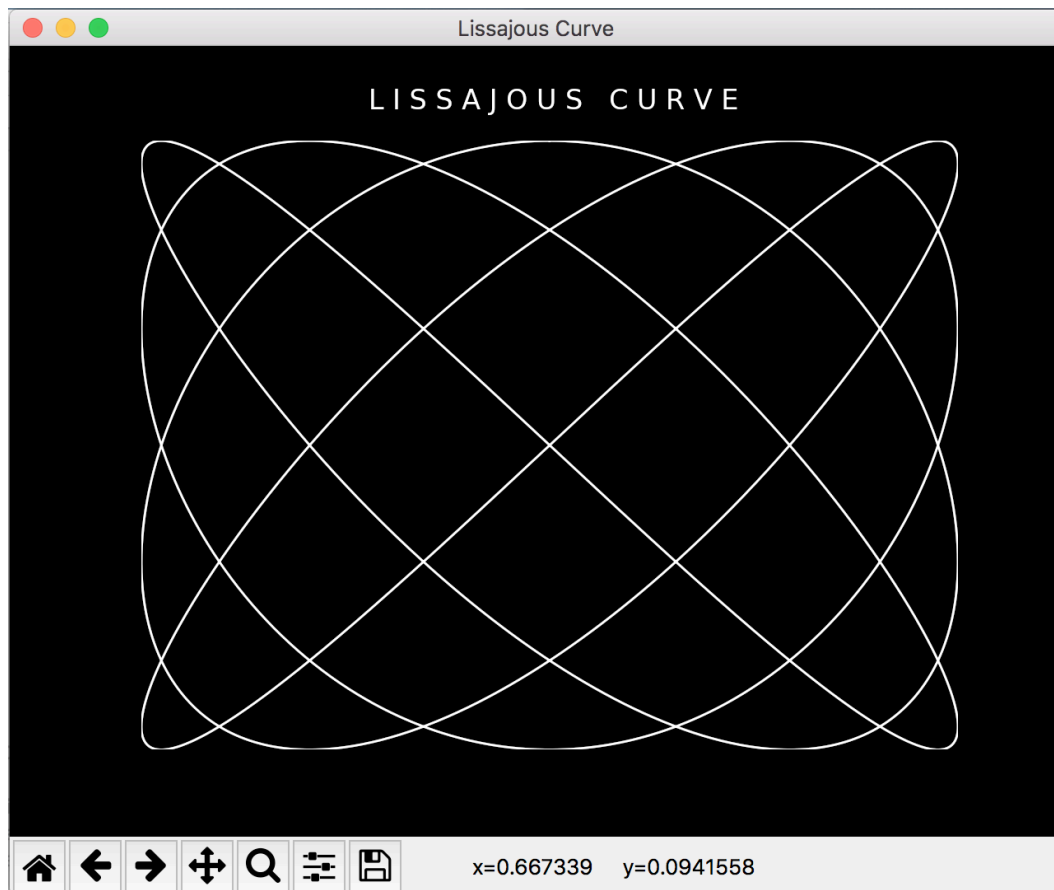
5. Resources

YouTube. (2018). *Coding Challenge #116: Lissajous Curve Table*. [online] Available at: https://www.youtube.com/watch?v=--6eyLO78CY&t=208s [Accessed 12 Oct. 2018].