National University of Singapore
School of Computing
CS1010X: Programming Methodology
Semester II, 2024/2025

Mission 5 - Side Quest
Circle Manipulation

Release date: 17 February 2025
Due: 13 March 2025, 23:59

Required Files

- sidequest05.1-template.py
- hi_graph.py

Information:

For your convenience, the template file **`sidequest05.1-template.py`** contains a line to load the Python source file **`hi_graph.py`**. Use the template file to answer the questions.

This side quest consists of **two** tasks.

Task 1: (2 marks)

Execute the following code:

```
draw_connected(200, unit_circle)
```

Then execute the following:

```
draw_connected(200, alternative_unit_circle)
```

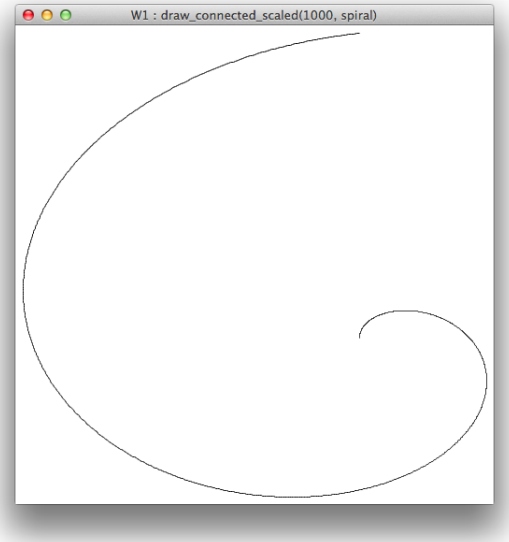
Can you see a difference? Now try using `draw_points` instead of `draw_connected`. Also, try using other drawing functions to draw `unit_circle` and `alternative_unit_circle`.

Write down the difference between `unit_circle` and `alternative_unit_circle`. You should also point out why this difference exists by examining the code of both `unit_circle` and `alternative_unit_circle` in **`hi_graph.py`**.

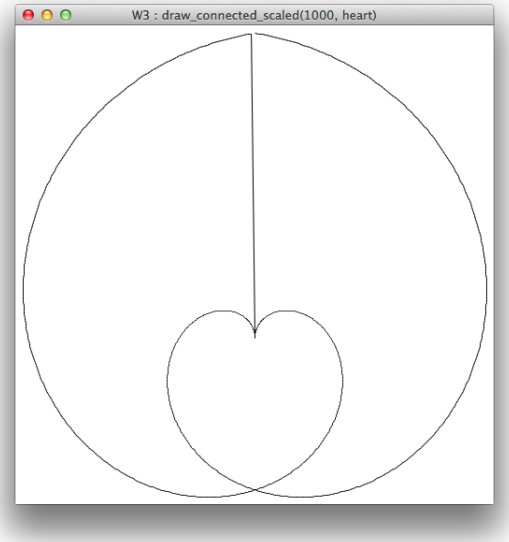
Task 2: (3 marks)

(a) Using the definition of the `unit_circle` as a reference, define a new curve `spiral` that draws a 'circle' which mimics a spiral.

(b) Define a new curve `heart` that draws a curve by connecting 2 spirals. You should make use of your `spiral` function to produce the curve.



draw_connected_scaled(1000, spiral)



draw_connected_scaled(1000, heart)