

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

**Mission 2 - Contest**  
**Beautiful Runes**

Release date: 27 January 2025

**Due: 21 February 2025, 23:59**

## Required Files

- contest02.2-template.py
- runes.py
- graphics.py
- PyGif.py

## Background

You have become adept as a PIM apprentice but so are many others like yourself. With everyone attempting to prove themselves superior, it is certain unhealthy rivalry will form amongst the fresh apprentices.

But the masters have already foreseen this problem through the many generations of PIM mages they have trained. Initially masquerading as a rumour, news of the annual rune conjuring contest quickly became the hottest of discussion topics.

With exquisite and intricate winning runes being displayed prominently in the grand hall and the hustle and bustle of preparation, you barely managed to get hold of a trainer to get the details. Clearly, it was not intended for all apprentices to participate but only those possessing true passion and are pure of essence. Do you have what it takes?

## Task:

This contest represents the 2D runes segment of the annual rune conjuring contest which you may participate in.

Being masters of rune manipulation, you are to use your creativity and design some cool-looking runes. Simply define your runes such that they may be displayed with the show function.

You may submit up to three runes in separate files. Submit your entries by writing each entry as a function in the template file provided and upload the files on Coursemology.

Please follow the following naming convention when submitting your files.

<Name-On-Coursemology>-<Entry-Number>-2d.py For example these 3 entries from the same person should read:

Leong-Wai-Kay-1-2d.py  
Leong-Wai-Kay-2-2d.py  
Leong-Wai-Kay-3-2d.py

### **Additional instructions:**

1. Ensure that your last line in each submitted file is an uncommented show function call, so that each file displays the rune when run in IDLE. You are not allowed to use external images in your entry. Please zip up your files if you are submitting more than one entries.
2. You may not create your own runes and use it to generate images, the building blocks of the final output should consist of only runes from `runes.py`.
3. You may not use `overlay` nor `overlay_frac` for Contest 2.2.
4. You may not import any other external modules beyond the following:
  - (a) `graphics` (from CS1010X)
  - (b) `PyGif` (from CS1010X)
  - (c) `runes` (from CS1010X)
  - (d) `math` (from the default Python library)All other modules are prohibited.
5. Your script should call the show function at the end of its running process, i.e., the assessor should be able to immediately generate the working image by running the script, without further modification to your script.
6. There is no file size limit to the file, apart from the limitation of Coursemology. However, running time to generate your image should be within a reasonable timeframe. (We should not need to wait > 10 minutes for the image to load.)
7. Directly importing an external image is prohibited, but you may manipulate the data corresponding to the image in your program, provided that it has gone through a visible transcription process and the external image is not immediately obvious. (The above is understood as: You can't load external jpegs, but you can embed a `base64/binary/hexadecimal/<insert encoding scheme here>` image in your code.)