

# Programming Exam 10

**Date/Time: 2024.06.11 08:10 – 09:00**

(程式檔命名學號\_pe10.py，上傳至 Moodle PE10 上傳區)

## Problem: Snake (文字版貪食蛇)

Design and implement a console-based text version of the Snake game in Python. The snake is controlled by the arrow keys by the user, and it can wrap around the screen boundaries. The snake will grow when it eats normal food. The game ends if the snake collides with itself or any obstacles.

### Requirements

- (1) The game screen should be initialized according to the size of the terminal window.
- (2) The initial snake is 3 units long and moves towards the right.
- (3) The game should feature two types of food, each represented by a different symbol:
  - Normal food: represented by  $\pi$ . When eating normal food, snake grows by 1 unit.
  - Special food: represented by X. When eating special food, snake shrinks by 1 unit. However, the snake cannot shrink if its length is less than or equal to 1.
- (4) Both types of food should be generated at random positions on the game screen. When a food is eaten, another one should be generated immediately.
- (5) Obstacles, represented by inverted color cells, should take up 5% of the game screen. Each obstacle should consist of at least 5 consecutive cells, arranged either horizontally or vertically. These obstacles should be generated at random positions at the start of the game. The game ends if the snake collides with any obstacle.
- (6) When moving the snake by the arrow keys, the movement can accelerate a little bit.
- (7) The snake's movement is allowed to wrap around the screen boundaries. That said, when the snake hits the bottom/up boundary, it can move out from the up/bottom boundary. When the snake hits the left/right boundary, it can move out from the right/left boundary.
- (8) The player should be able to pause and resume the game by pressing the whitespace.
- (9) At the end of the game, the program should display the number of normal and special foods eaten and the reason the game ended.

You may **highly rely on ChatGPT** for this problem. You are also welcome to implement by yourself. Your implementation may contain Python syntax or modules that you never learned. You may also need to install additional modules. You are free to design any presentation while implementing the requirements. We give you large flexibility to design the details of the snake game.

### Sample Input/Output

(此為程式執行後須印出的參考呈現方式，呈現方式不需要完全一樣，但要求的功能必須要有)

[https://www.dropbox.com/s/grljl5c67rq53b3/pe10\\_sample.mp4?dl=0](https://www.dropbox.com/s/grljl5c67rq53b3/pe10_sample.mp4?dl=0)

(繳交是交 pe10.py 檔)

**Need to write comments in your code.**