Midterm Exam 2

Date/Time: 2024.05.14 08:10 - 09:00

(程式檔命名學號_midterm2.py,上傳至 Moodle Midterm2 上傳區)

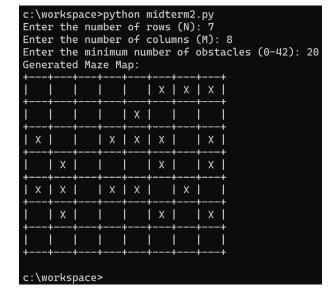
Problem: Maze Map Generation

[上機寫程式部分]

Write a Python program to generate a maze map with a clear path from the starting point (the topleft cell) to the bottom-right cell, and with a minimum number of obstacles that are randomly distributed in the 2-dimensional map. The movement in the path allows only four directions (up, down, left, or right). The program should prompt the user to input the values of N, M, and min obstacles, where N is the number of rows, M is the number of columns, and min obstacles is the minimum number of obstacles to add to the maze map. Then display the map with a specific format. We have provided you the main program, together with two functions generate maze(N, M) and print maze(maze). You need to complete the remaining two functions generate path(N, M) and add_obstacles(maze, min_obstacles). The comments in each function can guide you what to do. You may want to use the random module with random.randint and/or random.choice functions to randomly generate the path and to randomly add the obstacles.

Sample Input/Output

(以下是你程式執行後須印出的結果) ::\workspace>python midterm2.py



Enter the number of rows (N): 5 Enter the number of columns (M): 6 Enter the minimum number of obstacles (0-20): 0 Generated Maze Map: c:\workspace>python midterm2.py Enter the number of rows (N): 5
Enter the number of columns (M): 6 Enter the minimum number of obstacles (0-20): 30 Re-enter again (0-20): 20 Generated Maze Map: x | x | x XΙ χI X | X | X |

| X |

(繳交是交 midterm2.py 檔,不是交截圖)

Need to write comments in your code.

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c:\workspace>

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