Your hash value for this worksheet is the 4th digit of your student number, mod 5. E.g., if your student number is **8** then your hash value is 3. Below, from left to right, are mazes m0, m1, m2, m3, m4. **Your maze is mx, where x is your hash value.**

1. (3 marks) In the same style as on the course webnotes, draw the adjacency graph for your maze. Label the nodes of the top row left to right a . . . e, the next row starting from f, and so on, with the fifth row u . . . y. Label the top entrance A and the bottom entrance Z.

2. (6 marks) From the class github repo, execute the python3 program simple/maze/maze.py with input m16.txt.
   In each output maze diagram, what does a dot represent?
   Does every execution of maze.py on m16.txt end with the same diagram? Why, or why not?
   Does the output from every such execution include the diagram below? Why, or why not?

```
X X X X X X X X X
X ! . ~ ~ X
X . ~ ~ + X
X . ~ ~ X
X X X X X X X X
```

3. (6 marks) Modify maze.py: uncomment line 61 (**psn = fringe.pop() . . . **), comment out line 62 (**psn = fringe.popleft() . . . **), and comment out line 66 (**shuffle(nbr_offsets) . . . **). Run the modified program with input m16.txt.
   Does every execution of modified maze.py on m16.txt end with the same diagram? Why, or why not?
   Is this modified program executing breadth-first-search or depth-first-search? Explain briefly.