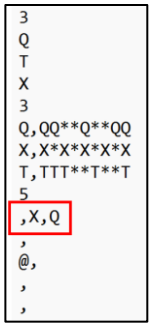
Puzzle File Breakdown of Puzzle1.txt

Line Number	Data	Description
1	3	This is the number of symbols in the game. It is used to iterate through the next three lines.
2	Q	FIRST SYMBOL. This is added to the AllowedSymbols list.
3	T	SECOND SYMBOL. This is added to the AllowedSymbols list.
4	X	THIRD SYMBOL. This is added to the AllowedSymbols list.
5	3	This is the number of patterns in the game. It is used to iterate through the next three lines.
6	Q,QQ**Q**QQ	FIRST PATTERN. This line is imported as a single string then split to lists using the comma as a delimiter. The first element is the Symbol for the pattern, and the second element is the PatternSequence. The PatternSequence represents the pattern as a helix of cells in a 3 × 3 section of the Grid.
7	X,X*X*X*X*X	SECOND PATTERN
8	T,TTT**T**T	THIRD PATTERN
9	5	This is the GridSize. A single value is used to denote the width and the height, i.e. the grid is square. This is used to calculate how many lines in the text files the code then needs to iterate through by multiplying it by itself, in this case 25.
10	Q,Q	The next 25 lines *(because this game has a 5 × 5 grid)* are the symbols in the grid. Each line has two elements. The first element is used to set the symbol in the cell (therefore, one symbol per cell).
11	Q,Q	The second element is what symbol can't be in the cell. This is used to stop two patterns of the same type overlapping. When this is imported, it is put into the SymbolsNotAllowed list, which implies multiple symbols can be put into the list. If a line contains this second element, it means it has been matched and scored as part of a pattern in the puzzle.
12	@,Q	The @ says that this is a blocked cell. In this example, however, the blocked cell is within the 3 × 3 section of a matched pattern in the puzzle because it contains a SymbolsNotAllowed list. While a blocked cell can have this attribute, it serves no purpose in a blocked cell.
13	,	This is a simple empty cell.
14	,	
15	Q,Q	
16	Q,Q	

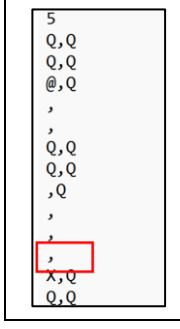
Line Number	Data	Description
17	,Q	This is a blank cell. In this example, however, the cell is within the 3 × 3 section of a matched pattern in the puzzle because it contains a SymbolsNotAllowed list.
18	,	
19	,	
20	,	See the ‘Error’ description before this row.
21	X,Q	This cell has an X symbol in it; however, the cell is within the 3 × 3 section of a matched pattern in the puzzle because it contains a SymbolsNotAllowed list. This is because the Q pattern was created before the X pattern; therefore, Q was used as the ‘SymbolsNotAllowed’ symbol.
22	Q,Q	
23	X,	
24	,	
25	,	
26	,	
27	X,	This is showing a cell in the grid during a game. It has an X in it which the user has put into it, but the pattern hasn't yet been complete; therefore, there are currently no symbols banned from this cell.
28	,	
29	,	
30	,	
31	X	
32	,	
33	,	
34	,	
35	10	This is the score of the current game.
36	1	This is the number of symbols left than can be played in this game.

‘Errors’ in the puzzle files

There are two logical errors that we have found in the puzzle files. These ‘errors’ have been checked with AQA, who have confirmed that the files operate as they expect them to or as required for the purpose of the exam. While they don’t impact the main functionality of the application, the ‘errors’ generated unexpected behaviour at runtime.



This ‘error’ is demonstrated in puzzle 4. Line 10 of the file shows an empty cell but a populated ‘SymbolsNotAllowed’ list with an X and a Q. The ‘SymbolsNotAllowed’ list is populated when a user matches a pattern. Under normal operation of the application, it should be logically impossible for a single cell to have populated ‘SymbolsNotAllowed’ list. The impact of this on the application is that when using puzzle 4, the user cannot place an X or a Q symbol into the cell at location 5,1.



This ‘error’ is demonstrated in puzzles 1, 2 and 3. Line 20 of the file shows an empty cell but also an empty ‘SymbolsNotAllowed’ list. The puzzle files demonstrate that a Q pattern has been matched with the top-left cell at location 5,1. This should put a Q into the ‘SymbolsNotAllowed’ list at locations 5,1 to 3,3. Line 20 represents location 3,1 in the grid. Under normal operation of the application, it should be logically impossible for this cell to have a blank ‘SymbolsNotAllowed’ list after a pattern match. The impact of this on the application is that a user can place a Q symbol into location 3,1 when the application should not let them.

