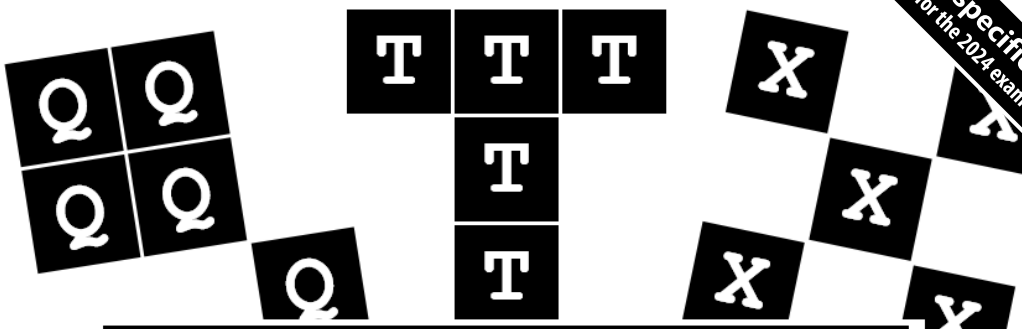
Zig Zag Education

Computer Science A Level | AQA | 7517

2015 specification for the 2024 exam



Symbol Puzzle

PAPER 1 EXAM RESOURCE PACK 2024

for A Level AQA Computer Science

PYTHON³ EDITION

- DIGITAL RESOURCE -

This pack includes paper versions of the electronic files.

Go to **zzed.uk/ProductSupport** to download the electronic files.

POD 12195

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Printouts of electronic resources (for reference)

- Code Breakdown (7 pages)
- Puzzle File Breakdown (3 pages)
- Advanced Techniques (5 pages)
- UML Class Diagram – Complete (1 page)*
- Theory Questions: Write-on Version (10 pages)
- Theory Questions: Non-write-on Version (5 pages)
- Coding Tasks (21 pages)
- Additional Tasks (Extension) (3 pages)
- Theory Questions: Mark Scheme (4 pages)
- Programming Tasks: Mark Scheme (58 pages)
- Electronic Answer Document (3 pages)

** Note there are also electronic copies of the UML Diagrams ('Complete' & 'Activity' versions) which can be printed in A3, making them much more usable (especially when used as activities)*

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Teacher's Introduction

Symbol Puzzle is a single-player puzzle game where the user needs to place symbols into a grid, building up patterns. Each time the user places a new symbol into the grid, the application compares cells in the grid, looking for pattern matches. The objective of the program is to get the highest score possible by adding valid patterns into the grid.

The application can either be played using an 8 × 8 standard puzzle grid, or load in a 5 × 5 external file with a partially complete puzzle.

The user can place Q, T or X symbols into empty cells in the grid, attempting to make larger patterns of these letters. Each valid matched pattern awards the user 10 points. The application has a fixed number of symbols available – either 64 for the standard puzzle or varying amounts, dependent on which external puzzle file the user loads. A user can place each symbol as a Q, a T or an X into the grid, subject to there being space and subject to the placement rules.

Patterns are matched in a 3 × 3 section of the grid – a pattern is nine cells in total in a specific order. Once a valid match for a specific symbol has been identified, the cells in that 3 × 3 section are modified so that the same symbol cannot be placed into any of the cells in that 3 × 3 section of the grid in a future move. This prevents overlapping patterns of the same symbol type being placed into the grid. Symbols of a different type can be placed into those cells, however, allowing for patterns of a different symbol type to overlap. The grid can also contain blocked cells – denoted by an '@' symbol. The user cannot place a symbol into these cells.

When the user has exhausted all their symbols, the puzzle is complete.

This resource aims to help you get to grips with and prepare for the A Level Paper 1 examination for summer 2024, which is partly based on the ***Symbol Puzzle*** pre-release material.

DIGITAL RESOURCE

Once you have downloaded the files for this resource via (**zzed.uk/ProductSupport**) you will have access to the following:

`SymbolPuzzle`	this folder contains all of the content (PDF/DOCX) accessible via a HTML interface
`Passwords.txt`	for teacher use – this file contains all of the passwords for the protected PDFs (also listed below)

* PRINTED COPIES OF ALL THE MATERIALS IN THIS DIGITAL RESOURCE PACK ARE INCLUDED FOR REFERENCE.

Installation: Extract the files from the downloaded ZIP file and move the entire `SymbolPuzzle` folder onto a network location that is accessible for students, and provide them with a shortcut to the index.html file. All content can be accessed from this page.

Passwords: All of the PDFs accessible via the *Solutions* web page are password-protected, so that students can only access them with your permission. Each password is a four-digit code, as follows:

`py02a-UML-Diagam-Complete.pdf`	`2875`
`py06-TheoryQuestions-MS.pdf`	`4761`
`py07-CodingTasks-MS.pdf`	`3954`

Should you wish to give students access to ALL protected-PDFs, the master password for all files is: **`zz2ghc4`**

The resource pack consists of the following sections:

- **Code breakdown**: a detailed technical overview of the skeleton program, describing in detail each class and method in turn – including their purpose/function, parameters and return values. Note that this is intended as a helpful reference document only, and not as a substitute for exploring the code in a practical manner. In addition to the code breakdown, there is also a breakdown of the puzzle files, errors in the code, and a set of 'advanced techniques' for exploring the code further.
- **UML class diagram activity**: requires you to study the program and fill in the gaps with the missing class/method names, data types, associations and access levels. There are 10 in total.
- **Video**: a quick overview of the ***Symbol Puzzle*** game mechanics – intended as a visual aid to accompany the notes in the official AQA pre-release material.
- **Theory questions**: designed to test your understanding of the skeleton program. These questions require access to the program, but no modifications need to be made to the program. Write-on (with answer lines) and non-write-on versions are available.
- **Coding tasks**: there are 18 modification tasks to test your programming skills – as well as an additional 12 modification ideas that you may also want to try as extension tasks.