

## Computer Science

### Transition Work Part #1: Introduction to Java

Install and configure Eclipse IDE (<https://www.eclipse.org/downloads/packages/>).

Then, use the following free online tutorials to develop a basic understanding of Java development and syntax for console-based applications:

- <https://www.codecademy.com/learn/learn-java>
- <https://www.learnjavaonline.org/> (The Basics)
- <https://www.w3schools.com/java/> (Java Tutorial)

By September make sure that you are able to:

- Start and configure a new basic Java project and simple class
- Initiate, use and update primitive data types (Integer, String, Boolean and Float)
- Use definite loops (e.g. FOR)
- Use pre and post condition indefinite loops (e.g. WHILE...DO and DO...WHILE)
- Display output to the console and get input from the console

Finally, develop a simple console-based quiz application that:

- Asks 20 multiple choice questions on a GCSE Computer Science topic of your choosing
- Displays a final score, percentage and grade (using your own grade boundaries)
- Asks the user if they wish to play again
- *Extension: ask the user for their name and save the results to an external CSV file*
- *Extension/s for those with hobbyist Java experience:*
  - *Create a simple GUI for your quiz using Windowbuilder or Javafx*
  - *Use an SQL database for your questions*

This work will be informally assessed, focusing on the following:

- Use of basic programming techniques
- Use of input validation and output formatting
- Use of a naming convention and commenting
- Efficiency and efficacy of coded solution

### Transition Work Part #2: Theory

To prepare you for the planned assessments at the start of Year 12 you should revise OCR GCSE Computer Science (J276) content, with a particular focus on:

- Networking and the Internet
- Search and sort algorithms (linear/binary search & bubble/insertion/merge sorts)
- Binary/denary/hexadecimal conversions and calculations
- Core programming techniques (sequence, selection and iteration), and the use of pseudo code and flowcharts to represent an algorithm

You will also need to sign up for [Isaac Computer Science](#) and join my 2020 group (using code **C8H9T2**) and complete the set assignments before September.

In addition, you should also research and be able to compare Linear vs. Exponential vs. Logarithmic Big O Time Complexity in relation to the GCSE search and sort algorithms named above.

Please feel free to contact me ([scot.mulligan@kshs.uk](mailto:scot.mulligan@kshs.uk)) if you have any questions.

Until then, stay safe, have a great summer and I look forward to seeing you in September.

## Useful links

- [The A-Level Specification](#)

### GCSE Revision Materials

- [OCR resources](#)
- [BBC Bitesize](#)
- [Quizlet](#)

### A-Level Support Materials

- [Isaac](#)
- [Craig'n'Dave](#)
- [Quizlet](#)

### Recommended Tech News

- <https://www.bbc.co.uk/news/technology>
- <https://www.wired.co.uk/topic/technology>
- <https://www.theverge.com/tech>
- <https://www.cnet.com/news/>