



OAKS PARK SIXTH FORM
Learning Together, Achieving Together



A LEVEL COMPUTER SCIENCE TRANSITION BOOKLET 2026 - 2027

Full Name:

Key Areas Of Focus	
Introduction To A Level Computer Science	Welcome to A-Level Computer Science! This course is designed to ignite your passion for technology, and equip you with all the skills and knowledge to go far in an increasingly dynamic world of computing. Whether you aim to pursue further studies, or embark on a career in technology, this course gives you a solid foundation, and a deep understanding, of both theoretical concepts and practical applications to take with you in your future.
Skills Gained	By the end of this course, you will be well-prepared for further education or a role in the technology industry directly. Whether you aspire to be a software developer, a network engineer, a games designer, an AI programmer, a data analyst, or a plethora of other choices, the skills gained from your studying in theory, programming, and development, will take you there.
Wider Reading	Code: The Hidden Language of Computer Hardware and Software by Charles Petzold Clean Code by Robert C. Martin The Innovators by Walter Isaacson Gödel, Escher, Bach: An Eternal Golden Braid by Douglas Hofstadter

Why Transition Work?

Preparation is crucial for success in A Levels. The Transition Work Booklet is designed to help you bridge the gap of knowledge between GCSE Studies and A Level, and is especially useful for students who have not previously studied Computer Science to a GCSE level.

Fundamentally, A Levels also require you to be an independent learner, someone capable of studying and cementing knowledge in their own time, without direct or explicit guidance. Although you will have fewer subjects, they require an entirely different skill set in terms of studying, and the volume of work produced in each subject is exponentially larger due to the depth and detail of an A Level, to produce a well rounded subject expert.

The exercises and tasks in this booklet will ensure that you are ready to begin the exciting course that is A Level Computer Science. Starting in September, the knowledge you gain from these tasks will be put to immediate use. Each task has also been designed in such a way that you begin to hone your skills in the ways that you need for Sixth Form; independent enquiry, evidence of further reading, and evidence of further learning.

Will My Work Be Assessed?

Yes. In September, you will be asked to submit your completed transition work on the Google Classroom for the subject. Over the first two weeks of Year 12, you will sit a Baseline Assessment, covering all the topics assigned in the transition work, as well as be expected to deliver presentations on the tasks that ask you to do so.

Your transition work must be completed, and ready to submit, on the first Year 12 Computer Science Lesson in September. In certain cases, we may decide to withdraw the offer of A Level Computer Science.

Extra Reading & Resources

Isaac's Computer Science: [A level topics — Isaac Computer Science](#)

CSNewbs: [OCR A-Level | CSNewbs](#)

Treeknox Logic Puzzles: <https://www.treeknox.com/general/puzzles/logical/index.php>

Mathplayground: [Logic Games | Fun Games for Kids | Math Playground](#)

w3schools Python: [Python Tutorial](#)

Section 1 - Computer Science Theory

Task #1: Emerging Computing Technology

In this task, you are being asked to investigate any area of emerging computer technology that may interest you to learn more about. The purpose of the unit is to focus on the social, moral, cultural, and ethical benefits or downfalls of that technology, to prepare you for the unit in the A Level course that asks you to do the same. You may choose any from:

- Artificial Intelligence
- Robotics
- Automated self-driving cars
- Brain-computer interfaces

You will be expected to cover:

1. What is the technology I have chosen?
2. What are the possible social, moral, cultural, and ethical benefits of this technology on wider society and life?
3. What are the possible social, moral, cultural, and ethical downfalls of this technology on wider society and life?
4. My conclusion on this technology and what it will mean for our world in 10 years time.

Mode of assessment:

You will present your research to the class, being assessed both on presentation skills and the overall depth of research.

Task #2: Getting To Grips With Terminology

As part of the A Level specification, there are over 240 specific key words and subject related terminology that you will be expected to know. Research each of the terms and write a definition. Ask yourself: Is my definition succinct? Does my definition make sense? Does the definition have the appropriate depth for A Level? Could I give this to another student and they could revise it? Please avoid using Artificial Intelligence, and simple copy paste.

Control Unit	Register	Buses	Von Neumann Architecture	Optical Storage
Operating System	Intermediate Code	Device Driver	Compiler	Assembly Language
Machine Code	Lossy Compression	Hashing	Normalisation	Decomposition

Mode of assessment:

This will form part of the written baseline assessment that is conducted within the first two weeks of Year 12.

Task #3: Threats To Networks

A key skill in A Level Computer Science is being able to take a topic and then discuss it in the context of different scenarios. Most theory-based exam questions will be asked in the form of a scenario. Simply repeating the content and terminology that you have learnt in class without contextualising it to the scenario will often result in low marks. This can be detrimental to your success on larger questions, some scenarios span up to a total of 40 marks on a single paper!

There have been many recent high-profile cyber-attacks in the world, including the devastating attack on the NHS in May 2017. Some commentators, in response to the attacks, have said that “we now rely too much on technology”. Write an essay explaining how far you agree with this statement, including descriptions of threats to IT systems and methods we can use to reduce vulnerabilities.

Mode of assessment:

You will be expected to turn in your written essay, which will be marked and assessed on spelling, punctuation and grammar, as well as content.

Section 2 - Python Programming

Task #1: Programming Basics

Learning to write programs in different programming languages is a fun and essential part of A Level Computer Science. The task is essential if you have not done the GCSE in Computer Science, as we will not have a prolonged period of time to review the basics of Python. If you did do the GCSE, this gives you a refresher ahead of starting your A Level course, where there will be more than one language to learn.

1. Create an account with Coddy, you may use a personal email to do this. Direct link to the website: <https://coddy.tech/>
2. Sign up to study Python.
3. Complete the entirety of Section 1, covering:
 - a. Introduction to Python
 - b. Variables
 - c. Operators
 - d. Selection / Decision Making
 - e. Loops
 - f. Functions
 - g. Lists

Mode of assessment

You will be expected to provide evidence that you have completed the entirety of Section 1 by logging into your account within the first two weeks of Year 12.

Task #2: Applying The Knowledge

Once you have become familiar with the basics of Python, you will need to apply your knowledge to given scenarios in exam questions. For this task, create a program that allows the user to check the strength of passwords, and automatically generate a strong password.

The program should check the strength of a password based on a point-scoring system. When a password is entered, points are awarded based on the length of the password and the types of characters contained within the password. Points are deducted if characters are used in a limited way. The program should also be able to generate a password that, when checked for strength, is classified as a strong password.

The program should take the following steps:

1. When the program is executed, a menu is displayed allowing the user to select from the following options:
 - a. Check Password
 - b. Generate New Password
 - c. Quit The Program
2. If the User selects "Check Password", then:
 - a. They are asked to enter a password

- b. If the password is less than eight characters, an error message is displayed and the user is returned to the main menu.
- c. If the length of the password is greater than eight characters, then it check that it contains only the accepted characters:
 - i. Upper case letters (A-Z)
 - ii. Lower case letters (a-z)
 - iii. Digits (0-9)
 - iv. Allowed symbols (!, \$, £, *, ^, -, _, =, +)
 - v. Spaces are not allowed.
- d. If the password contains a character that is not accepted, an error message is displayed and the user is returned to the main menu.
- e. If the length of the password is acceptable, and the characters it contains are acceptable, then the program will calculate and display a point score:
 - i. The initial score is set to the length of the password
 - ii. If the password contains at least one upper case letter, and at least one lower case letter, and at least one digit, and at least one symbol, then add 15 to the point score.
- f. If the point score is less than 20, then the password is weak.
- g. If the point score is between 20 and 30, then the password is medium.
- h. If the point score is over 30, then the password is strong.
- 3. If the user selects "Generate Password", then:
 - a. The program generates a random number between 8 and 20 inclusive, this will be used to make the password length
 - b. The program generates a combination of random acceptable characters
 - c. The point score for the password is calculated
 - d. The generated password and strength are displayed for the user.
- 4. If the user selects "Quit The Program", then:
 - a. An appropriate message is displayed and the program exits safely.

Mode of assessment:

You will be expected to turn in a Python file within the first two weeks of Year 12.

Overall Section 2 Mode of assessment:

As part of the baseline assessment, you will be asked to demonstrate your Python programming skills in practice exam-style scenario questions.

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