

Computer Science Transition workbook

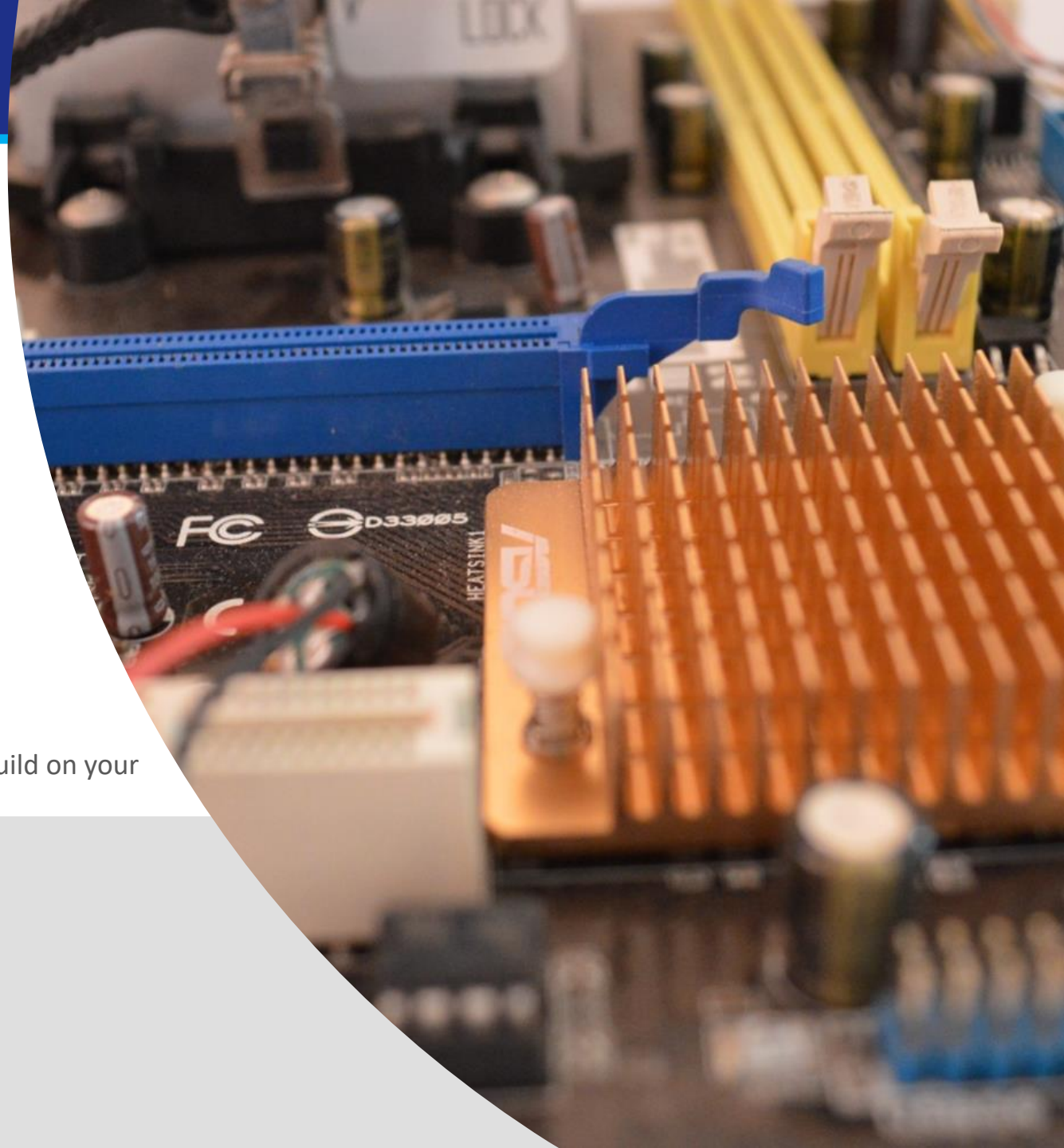
- The topic of **Computer Science** is at the heart of the modern world
- Studying it can make you extremely sought after in today's job market
- The transition from GCSE to A level is significant, this includes:
 - An increased emphasis on **technical content**
 - An increased emphasis **independent research**

This workbook is designed to allow you to practice some of these skills and build on your existing knowledge.

TASKS:

1. **Tell me about yourself**
2. **Independent research**
3. **Note Taking practice**
4. **Programming practice**
5. **Networks task**

Please complete by your first lesson back in September.



“Tell me about yourself”



Why did you choose Computer Science?

In this simple task you get the opportunity to tell me your choices and reasons behind choosing to study Computer Science. Please answer all questions as best you can.

1. Why did you choose to study A level Computer Science?

2. What other courses have you chosen to study at Key Stage 5, and what made you choose this combination?

3. What are you hoping to achieve from studying Computer Science?

4. How would you describe yourself as a learner at GCSE? What skills were you good at, what areas would you like to improve on?

5. What are your other hobbies and interests outside of school? Anything related to Computing?

Emerging computer technology

In this task you get to investigate any area of emerging computer technology which interests you.

Area of interest:

- Artificial intelligence

ON the next slide summarise the area you have chosen under the following four headings:

1. What is it?
2. What are the possible Social, Moral, Cultural and Ethical **benefits** of this technology on society
3. What are the possible Social, Moral, Cultural and Ethical **risks** of this technology on society
4. My conclusion on this technology and what it will mean for our world 10 years from now

Additional help:

For additional help and support in structuring your answer you might like to watch some of the videos from the following Craig 'n' Dave playlists:

OCR:

SLR 17 – Ethical, morale and cultural issues

<https://student.craigndave.org/videos/slr-17-ethical-moral-and-cultural-issues>



Emerging computer technology: Artificial Intelligence

1. What is it?
2. What are the possible Social, Moral, Cultural and Ethical **benefits** of this technology on society
3. What are the possible Social, Moral, Cultural and Ethical **risks** of this technology on society
4. My conclusion on this technology and what it will mean for our world 10 years from now

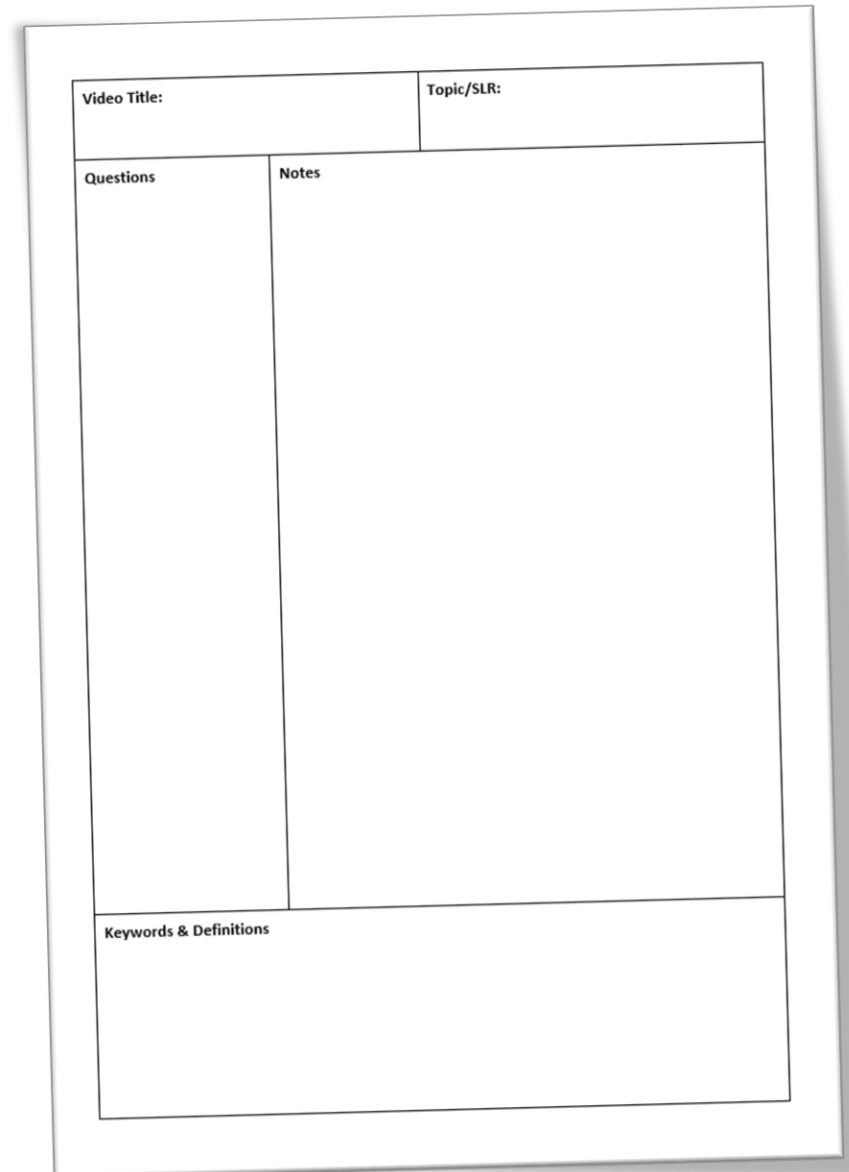
Note taking practice task

The Cornell method of note taking

The expectation to do independent research at A Level will increase dramatically from GCSE.

There is a real skill to taking decent notes outside of lesson which are of value. Research has proven that one of the most effective methods is the “Cornell” note taking method.

- On the next slide make notes following the structure:
1. Watch the following videos from Craig ‘n’ Dave:
 - OCR: <https://student.craigndave.org/videos/ocr-alevel-sl01-alu-cu-registers-and-buses>
 2. Write the title of the video and its topic in the top boxes (use a different sheet for each video).
 3. In the main “Notes” section, write notes from the video. You can do this in any way you like, a suggestion might be to rewind slightly when the canvas changes, thinking carefully about what was important in the previous few minutes.
 4. Having recorded the notes, review them:
 - Turn each part into a question in the section on the left.
 - For example, the notes may say, “The value of the program counter is passed to the memory address register”.
 - The question then becomes, “which register is the value of the program counter passed to?”
 - Sometimes these questions are easy, and at times they are more difficult to write.
 - There may also be more than one valid question.
 - You will need to decide for yourself which are the most appropriate questions for revision.
 5. Finally pull out all the key words and their definitions words the notes and list them in the bottom section.



| | | |
|------------------------|-------|------------|
| Video Title: | | Topic/SLR: |
| Questions | Notes | |
| Keywords & Definitions | | |

Note taking practice task



Craig'n'Dave

The Cornell method of note taking

| Video Title: | | Topic/SLR: |
|--------------|-------|------------|
| Questions | Notes | |
| Key Terms | | |
| | | |
| | | |
| | | |
| | | |

Programming basics

Learning to “code” is a fun and essential part of A Level Computer Science. This task is ideal if you haven't done the GCSE in Computer Science or to refresh ahead of starting your A Level course.

1. Head over to the web site: <https://www.learnpython.org/>
2. Complete the following python tutorials under the heading:
 - Hello, World!
 - Variables and Types
 - Lists
 - Basic Operators
 - String Formatting
 - Basic String Operations
 - Conditions
 - Loops
 - Functions
3. Each section presents you with theory, code to run and exercises to try out.
4. SCREEN SHOT each of your exercise answers on the next slide.
5. If you want to practice writing your own python programs you can download and install a simple python development tool here: <https://www.python.org/downloads/>



An introduction to the basics of programming tasks



Craig'n'Dave

Programming basics

Hello, World!

Basic Operators

Conditions

Variables and Types

String Formatting

Loops

Lists

Basic String Operations

Functions

Types of networks

Carry out some research on computer networks, in particular LANs, WiFi, Network topologies and connectivity devices. Use the symbols on the right (feel free to revise them) to create an appropriate network over the floorplan on the next slide. Make sure your network meets all the following requirements:

1. Each member of the main office needs a desktop PC
2. Angela, Pam, Dwight and Oscar also use an office issued smart phone
3. The following rooms need access to WiFi:
 1. Meeting room (top right)
 2. Reception
 3. Conference Room
 4. Main office
4. Use a circle with a transparent fill (so you can see the network underneath) with a width and height of 12.5cm to provide the WiFi coverage needed to cover the rooms above:
 1. The circles need to have a WAP at the centre
 2. The 12.5cm diameter circles represent the maximum range of each WAP
 3. The WAP icons must be attached to a wall
 4. You must use the minimum number of WAP possible to provide the coverage needed
5. All desktop PCs use wired connections in a star network configuration
 1. The top left server room, conference room and main office need to be on one subnet with its own switch
 2. All other rooms are on a separate subnet and will require its own hardware for this
 3. The two subnets need to be appropriately connected together
6. The top left room needs to have a server placed in it and connected appropriately to the local subnet
7. The server room needs hardware to appropriately connect the LAN to "The Internet"
8. Reception needs a photocopier and it needs connecting to the local subnet
9. A firewall should be placed somewhere appropriate

Additional help:

For additional help and support in structuring your answer you might like to watch some of the videos from the following Craig 'n' Dave playlists:

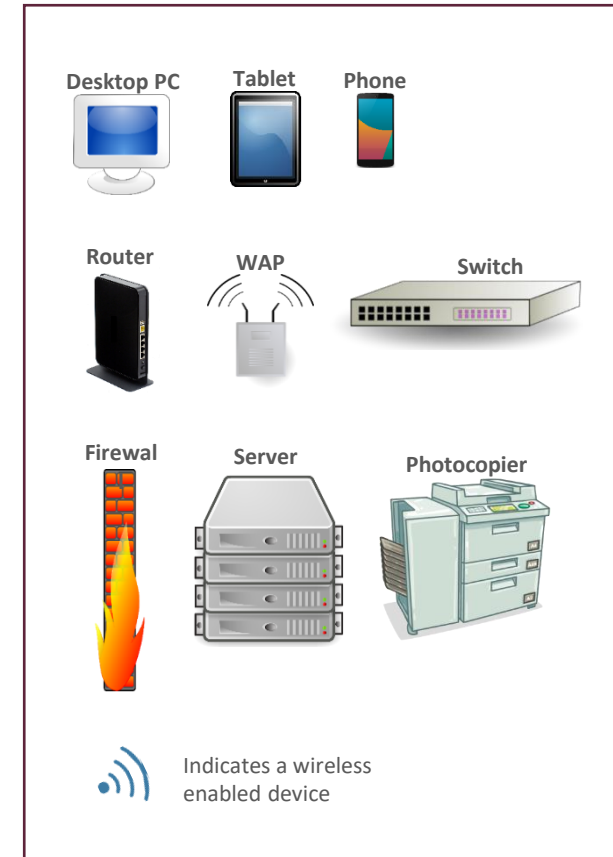
OCR: SLR 11 – Networks

<https://student.craigndave.org/videos/slr-11-networks>

AQA: SLR21 – Network and the Internet

<https://student.craigndave.org/videos/slr21-networks-the-internet>

Use the following symbols:



Networks task

Types of networks

