# Computer Science Pre-Sixth Form Course

## Specification

The specification for the A Level is here:

https://www.aqa.org.uk/subjects/computer-science-and-it/as-and-a-level/computer-science-7516-7517

## Assignments:

Isaac Computing website has a good section on topics that cover some of the bridging material you may like to recap before September. If you didn't take GCSE or you think your skills are rusty after the long break I would urge you to do these.

**https://isaaccomputerscience.org/topics**

- Programming Concepts
- Data Representation
- Boolean Logic
- Systems
- Networking

(Note: We are doing the AQA version of A Level Computer Science)

Once you have read one of the topics, use the following link to register and take one of the end of unit topic tests. You will need to use the token: **BUHQWX**

**https://isaaccomputerscience.org/**

## Programming skills

You all know best what your strengths and weaknesses are:

I suggest those of you who want to develop their knowledge of programming should follow a tutorial to learn a programming language such as Python.

Those of you who are happy with your programming knowledge of Python (Y11) & VB.net (Y9) could try learning another language that interests you - Javascript? Java? C#? (There are some great resources on the KES VLE for Javascript I have created for the Year 9s)
If you like the idea of games programming, then you could download Unity and follow one of the numerous tutorials on how to build a 3D game and program it with C# (This is a good tutorial which gets you coding a simple maze following game **https://projects.raspberrypi.org/en/projects/cd-beginner-unity-sushi**)

(If you want an official Python course you could sign up for: **https://learn.edx.org/mit-python/** sign up required and quite an involved course – ideal for A Level students)

# Programming Project

As for the coursework, there is not a specific "task" you have to do, unlike GSCE. Students are expected to produce their own idea for a problem they want to solve, that will display their programming skills.

Obviously, I will be going through this in MUCH more detail in lessons, but if you are keen, you could look at the VLE pages here to get an idea of other students' previous projects:

https://kesbath.fireflycloud.net/computing--ict/computer-science-a-level-y12-and-y13/programming-project [Requires KES login]

My best advice to you would be to spend some time over the summer practising some programming of any kind. Pick a language you like the look of and play around with it. JavaScript, C#, PHP are all good. There are plenty of tutorials on the internet. You could extend your knowledge of Python - try and get to grips with Object Oriented code (again we will cover this in lessons) or look at other Python libraries such as Pygame or interfacing with hardware.... follow your heart (or just check out other cool projects you see on Repl.it!)

# Learn Python

Python is an easy to read, easy to write language which we teach in Year 8 and use extensively in the GCSE and A Level Computer Science courses.

## Python Courses online

https://www.codecademy.com/learn/learn-python-3 – Some sections are paid for but a good introduction

http://www.teachyourselfpython.com/index.php

https://hourofpython.com/

https://www.learnpython.org/

http://www.practicepython.org/

https://groklearning.com/ – Sign up for free

https://snakify.org/

NEW – Computer Science Circles – interactive Python code with some good explanations and automatic grading

Python Interpreters online

The following are online Python interpreters – meaning you don't have to install Python on your own computer

https://repl.it/languages/python

https://trinket.io/

## Download Python for use at home

However, for the more serious coder, who maybe wants to explore other libraries that are available to Python (and there are thousands!) then you will need to download and install the program. Don't worry, it's free!

https://www.python.org/downloads/

You many want to investigate installing Pygame – a fun library for 2D game programming - although currently this only works with Python 2 (more info can be found here http://programarcadegames.com/)

In order to use a GUI (graphical user interface) that has buttons/text boxes & popups which are easy to do in Visual Basic & Javascript you will need to use special libraries. The default one that comes preloaded in Python is called **Tkinter** but there are other easier ones to use such as **appJar** and **guizero**, but these require libraries to be installed before they can be used.

## More advanced – e.g. A Level Computer Science

https://learn.edx.org/mit-python/ sign up required and quite an involved course – ideal for A Level students

http://openbookproject.net/thinkcs/python/english3e/index.htm - How To Think Like A Computer Scientist (interactive examples)

https://www.udemy.com/complete-python-bootcamp/ (PAID)

https://developers.google.com/edu/python/ (Does recommend Python 2 rather than 3)

http://greenteapress.com/wp/think-python-2e/ << This has the PDF of this which walks you through almost all aspects of Python in an interesting and friendly way (or you could order it on Amazon Kindle and read it)