WEST COVENTRY SIXTH FORM

West Coventry Academy

SUBJECT TRANSITION BOOK
Summer 2022

Computer Science

STUDENT NAME:

SCHOOL:

This booklet has been prepared by Computing staff for you to read and the work contained in it will ensure that you get off to the best possible start in this subject area. It is very important that you read this booklet carefully over the summer and have a thorough attempt to complete the work and submit it at the start of the year to your subject teacher in the very first lesson. This will be the first impression you create and is a real indicator of how seriously you are prepared to be in your studies.

A Level Computer Science

This subject is taught at:

West Coventry Academy

The key staff are:

Ms Dhanjal – Subject Leader for Computer Science and IT, West Coventry Academy
staffpxd@westcoventryacademy.org

Course Details

Course Title: A Level Computer Science
Exam board: OCR
Exam Code: H446

Exam Board web site: www.ocr.org.uk

Assessment method:

2 External Examinations worth 40% each, and practical coursework worth 20%

About the course

This is a challenging and engaging course that combines theoretical knowledge of computing and programming structures with a practical application of programming skills. This course is ideal for students who are passionate about computing and programming, who are keen to enter into further education or a career in this area. Lessons will involve practical activities as well as reviewing theoretical concepts. This course does have an element of coursework and practical programming at A2, though is predominantly assessed through final examinations. Practical, real world projects are undertaken to give students an insight into how programming is used in the modern business world.

A Level Computer Science:

Unit 1: Computer Systems

This is an externally assessed unit, involving a final written examination. This unit covers key theory required for programming including computer systems, processors and software types. It also covers the use of data, and how data can be stored and processed effectively using relational databases. Students then cover the legal, moral and ethical implications of computing to equip them for moving on to programming.

Unit 2: Algorithms and programming

This is an externally assessed unit, involving a final written examination. This unit involves students developing their programming skills using Python, Java, Javascript, PHP, HTML, CSS, SQL. They will be required to solve problems using algorithms, and develop an understanding of key elements of coding and programming. This covers the practical understanding of how to solve problems and produce relevant code in order to do this.

Unit 3: Programming project

This is a practical programming unit, where students will be given a project to complete using the planning techniques they have developed, and the practical coding that they will learn as part of this unit. Students will code using Python, SQL, PHP, JavaScript, HTML, CSS, C++, C# and Java. This will give students an understanding of a broad range of programming languages.

Academic and Career Pathways

Computer Science is an ideal subject for those who want to study Computing at a higher level, or want to enter into a computing based career such as data management, games design, software engineering or computer programming.

What equipment will be needed for the subject?

An A4 ring binder

Dividers

Lined paper

Pens, pencils rulers

Please complete the following assignments over summer ready to hand in on the very first lesson in this subject:

Task One:

One of the topics that you will be covering in Unit 1 is **1.4.1 Data Types**.
Research and answer the following questions on this topic.

1) In programming, list the 5 data types?

2) What is the process for carrying out 8-bit binary addition? Give 2 examples.

3) What is the process for carrying out 8-bit binary subtraction? Give 2 examples.

4) Negative numbers in binary can be represented by using **sign and magnitude** and **two's complement**. Explain the difference between these two representations, giving at least one example of each.

Task Two:

You need to log on to the website https://www.codecademy.com

There you will need to register as a user. You should use your school email to register, which is schoolusername@westcoventryacademy.org

For example it may be:

16RSmithJ@westcoventryacademy.org

You can then use your username again as your username on the site. Alternatively you can use a personal email login.

Once you have registered, you need to choose **Catalog**, and then choose **Python** and the course **Learn Python 2**. The full course lasts for 13 hours, and if you complete all of this you will be in a great position, but you must ensure that you complete at least **5** hours of this over the holidays.

How does it work?

Down the left hand side of the panel, an example will appear, and then below that will be instructions. Follow the instructions by completing the task in the workspace at the centre of the screen. Once complete, submit and save the code to move on to the next task.