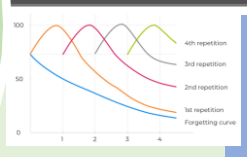
THOMAS ALLEYNE`S HIGH SCHOOL

Computing – Computer Science:

LEARNING JOURNEY

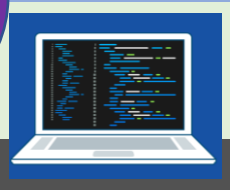
OPPORTUNITY · PROGRESS · INDIVIDUALITY



Focus will be on exam technique and introducing case se-lect. Higher tar-gets will spend a good amount of time working with higher order programming questions e.g. 2D array and file operations. Lower tar-gets will focus in on getting all the input, output and data type questions right consistently.

Case select is left right until the very end so that only one selection statement is practised throughout the year. The exams haven't had much focus on case select be-fore so had been better to focus on what more frequently appears but also give students some experience with the alternatives.

The GCSE has 2 examinations both 1.5 hours and on paper



Focus on types of exam questions including making the most from level of response questions and accessing the maximum number of marks from the programming questions.

6TH FORM

POST-16 PATHWAY

College/Apprenticeships

Summer · **Spring** · **Mock Exam**

CEIAG 6th Form interviews take place Jan of Y11

Parts of the operating system, different types and uses of utility soft-ware and how compression works.
This builds on students understanding of how data is stored and will be taught by practically reducing files to see the effect.

Mock Exam

Advanced programming techniques

The fundamentals are built on from year 10 allowing students to utilise more advanced techniques including 2D lists. SQL, file manipulation and for the most advanced learning programming the key algorithms we are studying as a class from a theoretical perspective. This element is beyond scope but gives them a better chance of recognising them when they appear as code in the exams and allows for easy movement to Alevels if they choose to.

This allows us to end year 10 with the excitement of work placements and Boolean logic. The logic element is supported by the previous learning of binary and how computers work. Work experience is supported by our industry mentors.

The previous understanding of networking allows for a better grasp of the next topic network protocols and layers. It is here we experience more examination techniques and apply them to the thread of knowledge learnt so far.

Year 11

Summer · **Autumn**

The understanding of networking is now tested from a new aspect – system security. Students are introduced to a wide range of system and network threats then how to prevent them with both physical and logical security methods.

Searching and sorting algorithms are now introduced as the latest understanding of how computers use data.

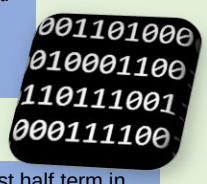
With the new understanding from the previous half term of data storage we apply this knowledge to networking and building on the topologies introduced at KS3 by introducing the complications of wireless networks and cloud storage.

In year 10 students revisit Computational Thinking. With the new understanding from term one they gain an insight to the why as well as the how computers manage large data sets. They then test out these logical skills in the competition in both years 10 & 11.

Programming fundamentals

This is threaded throughout both years and starts by building from KS3. Students begin the process by understanding one programming technique at a time. This is then built into using multiple techniques under guidance in the second half term and develops into them choosing which techniques to use in combination from around Easter

Large focus in the first half term in the Maths behind Computing. We explore binary, denary and hexadecimal. This is essential to practise frequently and to understand other elements of how data is represented. Starting with binary and denary to build on from KS3.



Spring · **Autumn** · **Transition activities**

Autumn 2 we develop our data understanding to sound, images and character sets. This then applied using an escape room simulation with a programmed Caesar cypher in year 11 when getting ready for the mock examinations.

We extend this further in year 10 by looking at data storage and embedded systems.

Year 10

April - May

We will explore websites both in terminology used and writing HTML.

We will extend our Python and images knowledge using subroutines to generate vector images.

Explore searching algorithms.

Finishing with a image manipulation lesson.

Summer

Encryption and revision skills.

Students will then take their final exam before moving on to their creative project.

Touch typing

Typing skills are interleaved throughout the year so that students are proficient before accessing their GCSEs.

They will need to use digital literacy skills taught throughout KS3 to make a range of products including a website.

Y9 CEIAG interviews. Students select option subjects

Festival

Students are challenged to use their digital literacy and entrepreneurial skills to create the advertising campaign for a festival of their design

This includes merchandise and logo design

Spring · **Summer** · **Creative Project**

Feb - March

Digital literacy – spreadsheets.

Interleaving data representation – character sets.

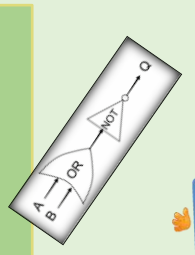
Finishing the year with our first sorting algorithm – bubble sort.

Jan - Feb

We will start with Computer History, developed into computer hardware and networking. We will interleave our data representation with sound

Lead up to Christmas

Once the competition is over we concentrate on logic gates, bitmap images and start programming in the text based language Python.



First half term

This term is crucial to set students up to being successful throughout their time at TAHS, further in education and the world of work. We start with E-safety, laws, computational thinking skills and binary representation.

Winter · **Autumn** · **WELCOME**

Year 9

Y8 Taster Sessions / Transition days

Computational thinking competition

All students take part in the Bebras Computational Thinking competition. If they do well they may be invited back to take part in the OUCTC in the spring term

There are a good number of school systems that are integral to life at TAHS. These are introduced in the first lessons.