Computing – KS3 Overview

ACET SHIREBROOK ACADEMY
EMPOWERING ACHIEVEMENT
STRIVING FOR EXCELLENCE

Y7

HALF TERM 1 – Introduction to Computer Systems

- Identify characteristics of a strong password
- Explain the importance of a strong password
- Create and use an appropriate folder structure in your documents
- Use the printer and its functions e.g. scan, photocopy
- Send a professional email with attachment
- Use the Google Workspace digital platform

HALF TERM 2 – Computational Thinking

- Define the 4 cornerstones of computational thinking
- Solve a series of paper-based problems using computational thinking cornerstones
- Explain each computational thinking cornerstone with a worked example
- Illustrate solutions using basic flowcharts and pseudocode
- Take part in the national Bebras Challenge

HALF TERM 3 – Hardware

- Identify, define and classify types of hardware
- Identify the correct hardware for a range of given situations
- Explain the role of the CPU
- Build a virtual PC
- Create an information brochure for a new computer using technical language.

HALF TERM 4 – Spreadsheets

- Use a variety of text and cell formatting techniques to manipulate data for a given situation e.g. currency and borders
- Use a range of basic functions to manipulate data e.g. SUM, COUNT, AVERAGE
- Use basic formulae operations to manipulate data
- Use conditional formatting to manipulate data
- Use data validation to reduce data errors
- Create graphs and charts to represent different types of information

HALF TERM 5 – Programming Using Blocks

- Construct and interrogate programs to solve a series of problems
- Identify the requirements of a program
- Annotate code to explain the use of the 3 programming constructs
- Use the 3 programming constructs in program construction
- Define the 3 programming constructs

HALF TERM 6 – History of Computing

- Know about important figures in the development of computing e.g. Charles Babbage and George Boole
- Understand Moore's Law and how technology has changed and developed
- Understand binary and why it is used in computing
- Know how to convert between binary and denary (up to 8 digits)
- Create a digital computing history timeline

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HALF TERM 1

Software

- Identify, define and classify types of software
- Identify the correct application software for a range of given situations
- Explain the different types of user interface with examples
- Explain working relationship between the OS and hardware
- Navigate a command line interface within a text adventure gain
- Match command line instructions with GUI actions

HALF TERM 2

Computational Thinking

- Use computational thinking cornerstones to solve a series of real life problems
- Use the 3 programming constructs within your algorithmic solutions (flowol)
- Use subroutines to structure solutions
- Implement the solutions using flowcharts
- Test and refine the solution to solve the problem

HALF TERM 3

Finish Computational Thinking and start Digital Responsibility

- Understand the terms phishing and pharming and the effect they have
- Understand a range of malware and the effects they have
- Describe methods to keep data safe online
- Describe how to stay safe when using social media
- Solve a series of cyber security real life problems using cryptography, forensics, open source intelligence and more.
- Create a digital artefact for Y7 students on how to be digitally responsible
- Annotate the flowcharts to demonstrate understanding of computational thinking and programming constructs in your found solutions

HALF TERM 4

Finish Digital Responsibility and start Programming using Python Turtle

- Analyse the requirements of a program
- Design and develop working programs in Small Basic to solve a range of problems
- Understand and use variables successfully in a program
- Annotate code to explain the 3 programming constructs

HALF TERM 5

Finish Programming using Python Turtle

- Understand and use condition controlled loops
- Understand and use count controlled loops

HALF TERM 6

Data Representation

- Know how to convert between binary and denary (up to 8 digits)
- Define the terms colour/bit depth, resolution/sample rate, metadata
- Understand and explain how binary is used to encode sound and images
- Define lossy and lossless compressions with file type examples
- Use image editing software to create an and edit image advert using multiple image files
- Use sound editing software to create and edit an audio advert using multiple sound files

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HALF TERM 1

Digital Responsibility

- Understand the need to license software and the purpose of a software licence.
- Understand the purpose of each piece of computing legislation and the specific actions it has as well as what it allows or prohibits.
- Understand the importance of intellectual property, copyright and associated laws with protecting data
- Consider the ethical implications of the use of modern technologies and make informed decisions as to whether activities are morally acceptable or not

HALF TERM 2

Computational Thinking

- Explain the need for cyber security
- Solve a series of cyber security real life problems using cryptography, forensics, open source intelligence and more.
- Explain the purpose of sort and search algorithms
- Carry out a series of bubble SORT algorithms to solve given problems
- Carry out a series of binary SEARCH algorithms to solve given problems

HALF TERM 3

Programming using Python

- Identify and Analyse the requirements of a program
- Explain the concept and importance of syntax within programming.
- Design and develop working programs in Python to solve a range of problems
- Understand and use variables successfully in a Python
- Annotate code to explain the use of the 3 programming constructs
- Understand and use condition controlled loops
- Understand and use count controlled loops
- Understand and use data casting in your solutions

HALF TERM 4

Spreadsheets

- Use and explain advanced data validation tools to minimise data errors
- Develop and use macros to automate actions within the spreadsheet
- Use and understand a range of advanced functions e.g. IF, VLOOKUP to manipulate data
- Describe the different methods of presenting information
- Explain the difference between data and information
- Explain the purpose and impact of big data and data manipulation to help make decisions
- Use PIVOT tables to manipulate data to present key highlights as required
- Interpret data from the spreadsheet to make decisions

HALF TERM 5

Data Representation

- Recall the order of data storage units up to YB
- Convert between binary, decimal, hexadecimal and back
- Decipher binary sequences into ASCII characters
- Solve associated logic gate truth tables
- Calculate moving between data storage units up to GB
- Understand how binary is used to represent ASCII characters
- Identify AND, OR and NOT logic gates

HALF TERM 6

User Interfaces

- Understanding how humans interact with user interfaces.
- Understand how colour, font style and positioning is important when using and designing user interfaces.
- Design a user interface using the key concepts discussed in lessons.