Computer Science Curriculum:KS3

YEAR 7-13 CURRICULUM ROADMAP

Year 13 Summer
CRITICAL SCHOLARS

Year 13 Spring
MOVING TO CRITICAL SCHOLARSHIP

Year 13 Autumn
DEVELOPING CRITICAL SCHOLARS

Year 12 Summer
WALKING THE WALK
Independent thinkers applying skills & knowledge

Year 12 Spring
TALKING THE TALK
Mastering the language & developing more complex skills

Year 12 Autumn
STEPPING STONES
Transition & routines; retrieving and applying what they know; building confidence & independence

Year 10 Summer
OWNING YOUR STORY
Analysis / hypothesis / evaluation

Year 10 Spring
SPEAKING THE LANGUAGE
Using academic language

Year 10 Autumn
REIGNITING FIRES
Transition & routines; retrieving foundational knowledge from KS3

Year 11 Summer
SUBJECT MASTERS
Long-term, secure and adaptable understanding

Year 11 Spring
MOVING TO MASTERY
Applying ideas from one area to another

Year 11 Autumn
DEVELOPING SUBJECT MASTERS

Year 8 Summer
SUBJECT IN ACTION
Developing more complex skills

Year 9 Summer
SHOWCASING OUR SUBJECT
Applying & displaying knowledge / skills / concepts including command verbs

Year 9 Spring
WHERE OUR STORY TAKES US
Links to today

Year 9 Autumn
FIRESTARTERS
Transition & routines; retrieving; experiencing subjects

Year 8 Spring
BUILDING ON OUR STORY

Year 7 Summer
SUBJECT IN ACTION
Skills based on new knowledge

Year 8 Autumn
FANNING THE FLAMES
Transition & routines; retrieving; experiencing subjects

Year 7 Spring
THE STORY OF WHERE IT BEGAN
Chronological teaching

Year 7 Autumn
LIGHTING FIRES
Transition & routines; experiencing subjects

CRITICAL SCHOLARS

SUBJECT MASTERS

LOVERS OF LEARNING

SOAR

SERVICE   OPPORTUNITY   ASPIRATION   REWARD

SOAR

SERVICE   OPPORTUNITY   ASPIRATION   REWARD

Curriculum Intent

We **serve** our students with an adaptive curriculum that meets the needs of all. Our different subjects have carefully identified plans outlining, what they teach and why. This is shared with all students, staff and parents to empower our community in their learning journey and includes careful consideration of sequencing of knowledge and skills. Cardinal Pole is committed to providing **opportunities** for staff and students to become life-long lovers of learning through personalised feedback, opportunities for reflection and progression. We are a community of **aspirant** learners where teachers are experts and students are critical scholars. This is achieved through absolute clarity of expectations and constant re-evaluation of needs through a shared language. We **reward** our community of learners by celebrating the successes, progress and achievements of all.

SERVICE   OPPORTUNITY   ASPIRATION   REWARD

How do all Computer Science lessons start?
(Ready to Learn)

All lessons at Cardinal Pole start with a 'Ready to Learn' activity. The purpose of this is to support retrieval and prepares students for the lesson with recalling relevant knowledge. This activity is printed for students and handed out at the door. Students are expected to sit at their desk immediately and complete the task before sticking it in their books while the teacher welcomes the class and takes the register.

Ready to Learn activities in Computer Science look like this:

DO NOW TASK	YR8	DATE:

Q1

Y

N
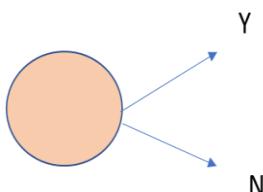
An algorithm is a set of instructions used to solve a problem.

FACTUAL QUESTIONS

Q2
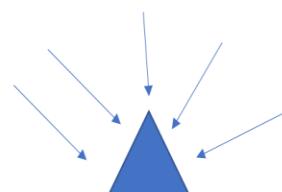
Why do we need to understand an algorithm?

CONVERGENT QUESTIONS

Q3
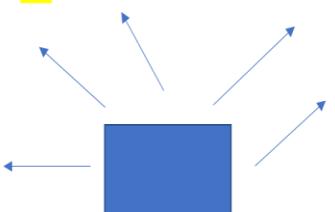
What would happen to a Python Code if you use for i in range (10), print "x"?

DIVERGENT QUESTIONS

Q4
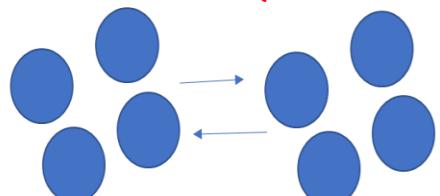
Why will you use WHILE LOOP instead of IF command?

EVALUATIVE QUESTIONS

Y7 Computer Science

Application of computational thinking
Problem solving real life scenarios in Flowol; control systems using sensors

How do computers process data?
Define Binary; apply binary conversions

How do you build a computer?
Inputs, processes and outputs; introduction of computer components

How can Scratch be used to make a game?
Using coordinates in programming; randomisation; independent creation of a game

Programming Scratch
Using variables to hold values; understanding components of programming structure

How are computers used today?
The role of computers in different sectors

Where does computing come from?
The history of the computer

What are the different strategies of computational thinking?
Abstraction; pattern recognition; decomposition; algorithmic thinking

How do storage devices use binary?
How can you apply your knowledge of binary to other storage devices?

Introduction to Scratch
How to access Scratch; Sequencing instructions; Scratch interface; controlling the sprite

How might computers be used in the future?
Is AI the future? Debating the pros and cons of artificial intelligence

How can computers and users be protected from harm?
Understand e-safety, cyberbullying and grooming

How does a computer work?
Inputs and outputs; storage; file management

SERVICE   OPPORTUNITY   ASPIRATION   REWARD

How is your progress measured in class in Computer Science in Autumn Term?

Autumn: Becoming a Computer scientist	
Multiple Choice Quiz	Knowledge recall on topic (15 marks): • How are files stored for later use? • Where does computing come from? • How does a computer work? • How are computers used today?
Bi-weekly Quiz 1 Extended written response Various retrieval questions (MCQs) Tracked using RED/AMBER/GREEN Tracker	• How might computers be used in the future? • How can computers and users be protected from malware harm? Understand other dangers - e-safety, cyberbullying and grooming

Emerging	Achieving	Excelling
I can follow simple instructions to complete a basic task like creating folders and saving files	I can use the terms to explain how my files are organised and identify some file formats	I can correctly organise my files into folders and name them.
I can mention some of the inventors of computers.	I can recall and use a timeline to show part of the History of Computing	I can add extra data such as dates and years to the timeline.
I can safely use my password and know how to be safe online.	I understand a weak and strong password and know what to do when faced with a e-safety threat.	I can create a presentation and give advice to my peers about the dangers of online interaction.

How does a computer work: Autumn Term
Golden Nuggets and Work Hard

	Golden Nugget	Work Hard
1	Understand how to save and store my work on the computer	Create YR7 folders for different subject areas and begin to save files into them using correct labels.
2	Know how computer development started and where we are now.	Use the reference page to complete the 'History of Computing' timeline.
3	How keyboard, mouse, monitor and other hardware component make a computer work?	Research different components that make up a computer – their names and functionality.
4	Know how computers are used in finance, banking, education, transport etc	Identify and explain how the elements of computer input-output-storage are applied in different modern machines and sectors
6	How Artificial Intelligence will help us become more useful in the future.	Collect data and use it to model how AI can quickly be applied to different real word solutions
7	Know that some viruses and malware exist and how they can harm humans, networks and mobile devices.	Identify and explain different types of computer viruses and show understanding of how they are transmitted.
8	Why is using a strong password important?	Know why and methods we can use strong passwords to protect our files, network and devices?
9	Know that digital footprints can be dangerous as they can track our activities online.	Identify possible places you have left your digital footprint and risks associated with them.
10	Understand that cyberbullying can affect you and others.	Determine from different scenarios when someone is cyberbullied and select the correct approach.
11	Recognise when someone is being groomed and know how to reduce the risk of becoming a victim.	Explain what you understand by the term grooming and highlight ways you can reduce the risk of grooming.

How is your progress measured in class in Computer Science in Spring Term?

Autumn: Becoming a Computer scientist	
Multiple Choice Quiz	Knowledge recall on topic (15 marks):
Bi-weekly Quiz 1 Extended written response Various retrieval questions (MCQs) Tracked using RED/AMBER/GREEN Tracker	

Emerging	Achieving	Excelling
I can identify a sprite I can use simple scratch blocks to sequence instructions and solve a problem I can use the if block to make choices I can identify hardware and software I can convert 4-digit binary to decimal	I can delete and replace sprites can trigger the code with events to make it interactive I can add arithmetic operations to if blocks to solve complex problems I can explain inputs, process and outputs of a computer system I can convert 4-digit decimal to binary	I can create new sprites I can use variables to store different information like score, time, player etc I can use both arithmetic and logic operations to solve complex problems I can explain how inputs, process and output work on real world systems. I can convert up to 8-digit binary to decimal

How does a computer work: Spring Term
Golden Nuggets and Work Hard

	Golden Nugget	Work Hard
1	Identify and name Sprite/ Script group/Sprite/Script area/Stage/Script Blocks on a Scratch Window	Create, delete and change sprites in Scratch and make them move some steps.
2	Understand the meaning of Variables and Scoring	Use variables to add Lives and scoring to a Dragon Sprite.
3	Understand the purpose of repeat loops and procedures ("broadcasts")	Make the Mouse move around the square 4 times. Broadcast and switch sprite costumes in different blocks.
4	Be able to read X,Y co-ordinates and use random numbers	Use the X,Y co-ordinates to move sprites around the stage and to different positions.
6	Be able to create Shooting and Jumping games in Scratch	Use If, random, variable, loops to create a shooting and jumping game.
7	Recognise different hardware and software used in a computer system	Label and match different hardware and software. Identify input, process and output for different devices and real world applications.
8	Identify and explain the main components of a CPU.	Explain the acronym RAM and ROM. Know the difference between Memory and Storage. Explain the steps of the FDE cycle.
9	Understand binary 1,0 and why computer data is represented using it.	Make simple cards using binary 1,0. Encode symbols and shapes in binary. Convert form Decimal to Bibnary and Binary to Decimal.
10	Understand numbers are added by the computer using binary	Practice CISCO binary addition. Convert 4 digit binary to whole number and vice versa.

How is your progress measured in class in Computer Science in Summer Term?

Summer: Becoming a Computer scientist	
Multiple Choice Quiz	Knowledge recall on topic (15 marks):
Bi-weekly Quiz 1 Extended written response Various retrieval questions (MCQs) Tracked using RED/AMBER/GREEN Tracker	

Emerging	Achieving	Excelling
I can explain the term Computational thinking	I can explain the term Computational thinking and decomposition with examples.	I can plan a game using decomposition strategy to make it easy to program.
I can identify patterns in a giving context.	I can use patterns and similarities to solve a simple problems.	I can use patterns and similarities to solve complex problems.
I can identify what needs to be abstracted in order to make it easy to solve a problem.	I can use abstraction method to to solve simple problems.	I can use abstraction method to solve complex problems.
I can plan simple mimics using buttons, input/output, delay, start/stop statements.	I can control a number of mimics using using buttons, input/output, delay, start/stop statements.	I can explain what is wrong with an algorithm and fix some of the errors.

How does a computer work: Summer Term
Golden Nuggets and Work Hard

	Golden Nugget	Work Hard
1	Understand the term Computational thinking and Decomposition as one method of solving problems.	Explain the meaning of decomposition. Plan a game using decomposition to make it easy to solve.
2	Understand the term Computational thinking and Pattern Recognition as one method of solving problems.	Explain the meaning of Pattern Recognition. Check for patterns and similarities in different context and scenarios.
3	Understand the term Computational thinking and Abstraction as one method of solving problems.	Explain the meaning of Abstraction. Compare maps, pictures, texts that have been abstracted inorder to help solve a problem.
4	Understand the term Computational thinking and Algorithm as one method of solving problems.	Explain what an algorithm is. Create algorithms to solve specific problems. Example: Making a cup of tea, toasting bread etc.
6	Understand the term Computational thinking and Flowchart as a way to represent an of algorithm.	Identify the different flowchart symbols and use them to sequence instructions inorder to solve problems. Example : Flowol Autohome Contro Systems
7	What are control systems? Understand that real-life systems such as Robot can be controlled.	Open and use Flowol easily. Control the Robot Mimic using buttons, input/output, delay, start/stop statements.
8	Understand that real life systems such as Lighthouse, can be controlled using the	Control the Lighthouse Mimic using buttons, input/output, delay, start/stop, looping statements.
9	Understand that real-life system such as - Pelican Crossing can be controlled.	Control the Pelican Crossimng Mimic using buttons, input/output, delay, start/stop, sensors, looping statements.
10	Understand that real-life system such as - Autohome can be controlled.	Control the Autohome Mimic using buttons, input/output, delay, start/stop, sensors, looping statements.

Y8 Computer Science

How can variety of computational problems be solved using modular structures?
Problem solving real life scenarios in Pygame; control objects using functions, arrays etc

Understand how to present digital information using a website
HTML, CSS, Navigation, Styling and User Input. Test and Evaluate website

How does the data collected by the computer be read and analysed to solve problems of the users or give insight into user needs.
Data collection, structure data, calculation and presentation

How do computers share data over the internet?
What is a network?

How do computers process data, text,images etc?
Define Binary; apply binary conversions

Why do we use different network types?
Network topology, advantages and disadvantages.

How do you build a computer?
Inputs, processes and outputs; introduction of computer components

How do storage devices use binary?
How can you apply your knowledge of binary to other storage devices?

Why is selection important in problem solving and in which situations should it be considered?
Understand IF and nested IF statements

Understand the need for arithmetic & logical operations in solving problems.
Addition, Subtraction, Multiplication, Division, <,>,== write simple programs using the above operators

What are datatypes and why are they important when storing data.?
Understand Integer, float, Boolean and real . Create simple python programs using input, variables and correct datatypes.

What are variables and how do they help programmers store correct data ?
Variables, Datatypes , represent algorithms and simple pseudocodes

How is your progress measured in class in Computer Science in Autumn Term?

Autumn: Becoming a Computer scientist	
Multiple Choice Quiz	Knowledge recall on topic (15 marks): Bi-weekly Quiz 1 Extended written response Various retrieval questions (MCQs) Tracked using RED/AMBER/GREEN Tracker

Emerging	Achieving	Excelling
I can follow simple instructions to complete a basic task like creating folders and saving files	I can use correct terms to explain how my files are organised and identify some file formats	I can correctly organise my files into my local folders/teams or One drive and name them according to their file types.
I can write a simple pseudocode like making a cup of tea	I can logically plan a pseudocode based on simple tasks or scenarios	I can represent pseudocodes in a flowchart and explain the solution
I can identify and define a variable in a n algorithm	I can define variables in a simple algorithm and identify some datatypes.	I can use variables with correct datatypes and operators in an algorithm
I can explain a linear search algorithm	I can explain both linear and binary search algorithms	I can differentiate between a linear and binary search algorithm

How does a computer work: Autumn Term
Golden Nuggets and Work Hard

	Golden Nugget	Work Hard
1	Recall how to save and store my work on the computer locally and remotely.	Create YR8 folders for different subject areas and begin to save files into them using correct labels. Learn to use One drive and Teams to manage files and folders.
2	Know the logical steps to follow in solving a problem using pseudocode.	Write some pseudocodes using simple English language statements
3	Know flowchart symbols and use them to plan and solve a problem	Draw flowcharts with simple statements using correct flowchart symbols connected together.
4	Know how to ask user to get data in and out of a computer using python input and output statements	Solve simple problems using variables, input and output statements in python.
5	Understand what linear search is and how it works.	Explain how computers find a single piece of data from billions of data stored inside it?
6	Know that linear search is useful when searching through a short list.	Understand the advantages and disadvantages of linear search.
7	Understand what binary search is, how it works and when it is can be used.	When so many data are stored, how can we improve the time it takes to find a single piece of data? Explain the mechanisms of a linear search algorithm
8	Know that binary search is used to search through a long list and it uses divide-and-conquer process to speed up the process.	List and explain the advantages and disadvantages of binary search.

How is your progress measured in class in Computer Science in Spring Term?

Spring: Becoming a Computer scientist	
Multiple Choice Quiz	Knowledge recall on topic (15 marks): • Bi-weekly Quiz • 1 Extended written response • Various retrieval questions (MCQs) • Tracked using RED/AMBER/GREEN Tracker

Emerging	Achieving	Excelling
I can identify hardware and software	I can explain inputs, process and outputs of a computer system	I can explain how inputs, process and output work on real world systems.
I can convert 4-digit binary to decimal	I can convert 4-digit decimal to binary	I can convert up to 8-digit binary to decimal
I can explain a network and identify the devices needed in a simple network.	I can plan a network by correctly match all the devices	I can recommend or give account of why different networks are used for different reasons

How does a computer work: Spring Term
Golden Nuggets and Work Hard

	Golden Nugget	Work Hard
1	Recognise different hardware and software used in a computer system	Label and match different hardware and software. Identify input, process and output for different devices and real world applications.
2	Identify and explain the main components of a CPU.	Explain the acronym RAM and ROM. Know the difference between Memory and Storage. Explain the steps of the FDE cycle.
3	Understand binary 1,0 and why computer data is represented using it.	Make simple cards using binary 1,0. Encode symbols and shapes in binary. Convert form Decimal to Bibnary and Binary to Decimal.
4	Understand numbers are added by the computer using binary	Practice CISCO binary addition. Convert 4-digit binary to whole number and vice versa.
5	Know what Internet means and understand some keywords used to describe a network.	Match keywords to their meaning. Locate web addresses and identify their domain name, IP address and Location.
6	Understand that cables are used to connect the world.	Compare different cables. Determine their download and upload speed.
7	What are the ways networks are arranged and why?	Understand and compare different types of network topologies(arrangement) and state why they are suited for different purposes.
8	Use pictures to design a simple network	Connect the network devices to a LAN and explain you choice of cables, switches or hubs and Mbps connection speed.

How is your progress measured in class in Computer Science in Summer Term?

Summer: Becoming a Computer scientist	
Multiple Choice Quiz	Knowledge recall on topic (15 marks): • Bi-weekly Quiz • 1 Extended written response • Various retrieval questions (MCQs) • Tracked using RED/AMBER/GREEN Tracker

Emerging	Achieving	Excelling
I can draw using shape tools	I can modify shapes using shape tools	I can combine and modify multiple shapes tools
I can work and combine multiple objects using union	I can work and combine multiple objects using intersection	I can work and combine multiple objects using difference
I can use paths to create a shape	I can modify paths and create a new shape	I can combine straight and curved paths to produce new shape.
I can plan a simple design	I can plan and make a simple design	I can plan, edit and evaluate designs to suit the intended purpose.

How does a computer work: Summer Term
Golden Nuggets and Work Hard

	Golden Nugget	Work Hard
1	Understand Vector Graphics and working with shapes. Draw and modify shapes using shape tools	Select shapes and modify the fill, outline colour, and outline width. Alter the outline style.
2	Working with multiple objects. Use tools to align, distribute, group, and combine objects.	Combine two shapes using union, intersection, and difference
3	Working with Paths. Understand how to create and modify straight and curved paths	Create and modify straight and curved paths Change shapes to paths and edit them
4	Getting into shapes. Choose a project and plan a design.	Combine tools and techniques to create a vector image. Evaluate your project against its given purpose
5	Behind the scenes. Investigate how vector images are stored and alter them.	Change an object by modifying its markup Plan improvements and implement them to develop a project
6	Showcase and compare vector images with bitmaps images.	Outline which image type best suits which uses Evaluate your image against a rubric
7	Understand how to setup a website, add content and style it using html tags	Open notepad and add basic tags of a website <html> </html>, <title></title>,<body> </body>etc
8	Understand how to add, style navigation and add more pages	Add CSS file for page styling and navigation.
9	Understand how to add user input forms to make your website interactive. Test and evaluate your website.	Use html to create a form : <form name="contactForm"> Explain what you have done, explaining the different languages used for each section of your website.

Y9 Computer Science

Be familiar and able to use =,!=,<,>,<> etc
3.2 Programming
3.2.4 Relational operations in programming language

Understand how to present digital information using a website
3.2 Programming
3.2.5 Boolean operations AND,NOT, OR

Know and use arithmetic operations
3.2 Programming
3.2.3 Arithmetic operations in a programming language +,-,/,* , DIV and MOD

Use simple list and array datastructures in design of solutions to simple programs
3.2 Programming
3.2. 6 & 3.2.7 Input/Output / Data structures

Know how different statement types can be combines in programs eg variable,constant, assignment, iteratio, selection and subroutine
3.2 Programming
3.2.2 Programming Concepts

Understand and be able to use length, position, substring, concatenation etc
3.2 Programming
3.2.8 String handling operations

Understand the use of integer,real, boolean , character an string types
3.2 Programming
3.2.1 data types

Project based encomapssing 3.3/3.4/3.5/3.6/3.7/3.8 Scenarios
3.2.9/3.2.10/3.2.11 Random number Structured and Robust Programming

Understand , explain and compare linear and binary search algorithms
3.1 Fundamentals of Algorithm
3.1.3 Searching algorithms

Understand , explain and compare bubble and merge sort algorithm
3.1 Fundamentals of Algorithm
3.1.4 Sorting algorithms

Understand that more than one way can be used to solve the same problem
3.1 Fundamentals of Algorithm
3.1.2 Efficiency of algorithms

Understand and explain the term algorithm. Explain simple algorithms in terms of their inpu, process and output
3.1 Fundamentals of Algorithm
3.1.1 Representing algorithms

How is your progress measured in class in Computer Science in Autumn Term?

Autumn: Becoming a Computer scientist	
Multiple Choice Quiz	Knowledge recall on topic (15 marks): End of Unit Quiz Various retrieval questions (MCQs) and Extended questions Tracked using RED/AMBER/GREEN Tracker

Emerging	Achieving	Excelling
I can define and identify an algorithm I can explain the term decomposition I can identify a flowchart and pseudocode in an algorithm. I can explain how a linear search and burble sort works	I can plan a simple algorithm that works I can explain decomposition and pattern recognition I can use a flowchart and pseudocode to plan a simple algorithm I can explain how a binary search and merge sort works	I can plan and refine complex algorithms to make them work better. I can explain decomposition, pattern recognition and abstraction I can use a flowchart and pseudocode to plan several algorithms I can explain the advantages and disadvantages of both algorithms.

How does a computer work?
Autumn Term Golden Nuggets and Work Hard

	Golden Nugget(What?)	Work Hard(How?)
1	Understand the term algorithm and be aware that an algorithm is not the same as a computer program	Define and plan a simple algorithm using simple English language and flowcharts.
2	Understand and explain the term decomposition and abstraction	Define the term decomposition and break down a complex scenarios into smaller sub-problems so that each accomplishes an identifiable task. Remove unnecessary information
3	Understand how to use pseudocode and flowchart to represent an algorithm.	Solve a number of problems using both pseudocode and flowchart.
4	Understand simple algorithms in terms of their input, processing and output.	Identify where inputs, processing and outputs are taking place within several algorithms.
5	Determine the purpose of simple algorithms using PRIMM model	Copy and type several programs. Use trace table to inspect algorithms and state their purpose.
6	Understand that algorithms can be written in several ways to solve the same problem. Know that this is called Efficiency of algorithms.	Check the time efficiency of different algorithms such as for loop and while loop. Does increasing the input increase the running time or not?
7	Understand and explain how linear and binary search algorithms works	Show the steps of both algorithm by stepping through (for linear search) and spliting ordered list(for binary search)
8	Understand and explain how bubble and merge sort algorithms work	Show the steps of both algorithm by comparing pairs (for bubble sort) and split and merge (for merge sort)

How is your progress measured in class in Computer Science in Spring Term?

Autumn: Becoming a Computer scientist	
Multiple Choice Quiz	Knowledge recall on topic (15 marks): End of Unit Quiz Various retrieval questions (MCQs) and Extended questions Tracked using RED/AMBER/GREEN Tracker

Emerging	Achieving	Excelling
I can identify 5 datatypes used in python	I can use 5 datatypes used in python in simple programs	I can use 5 datatypes used in python in a variety of programs
I can define variables and constant in a simple program	I can use variables and constants in more than 1 program	I can use variables and constants in a number of programs
I can use a for loop in a simple program	I can use a for loop and while loop in more than 1 program	I can combine for loop and while loop in a number of programs
I can identify nested selection and iteration	I can use nested selection in a program	I can use nested selection and nested iteration in a program
I can identify arithmetic, logical and string functions	I can use arithmetic operations in several programs	I can use logical and string functions in several programs.

How does a computer work?
Spring Term Golden Nuggets and Work Hard

3.2	Golden Nugget(What?)	Work Hard(How?)
1	Understand the concept of a data type	Identify and match different data types correctly
2	Know how to use integer, real, Boolean, character and string	Use correct data types in simple programs
3	Understand and know how to use and combine variable and constant declaration, assignment, iteration and selection	Write programs that include statement types combining variable and constant declaration, assignment, iteration and selection.
4	Understand a loop and why it is needed in programs. Understand a definite or count controlled loop.	Interpret statements using count - controlled loop such as for loop.
5	Understand an indefinite or condition controlled loop.	Interpret statements using condition - controlled loop such as while loop.
6	Understand nested selection and nested iteration	Interpret statements using nested selection statements and nested iteration
7	Know different arithmetic and relational operations	Use arithmetic and relational operations in programs
8	Use Boolean operations in python	Use Boolean operations in programs
9	Understand and use string handling operations: length, position, substring, concatenation	Use string functions to extract and slice strings

How is your progress measured in class in Computer Science in Summer Term?

Autumn: Becoming a Computer scientist	
Multiple Choice Quiz	Knowledge recall on topic (15 marks): End of Unit Quiz Various retrieval questions (MCQs) and Extended questions Tracked using RED/AMBER/GREEN Tracker

Emerging	Achieving	Excelling
I can use simple random function to generate numbers	I can use random function in a program	I can combine random function with other program statements
I can define a subroutine	I can use a subroutine in a simple program	I can use a subroutine with other statements
I can show the difference between 1D and 2D array	I can get, print and delete data from 1D array	I can define, get, print and delete data from a 2D array
I can apply some programming skills that I have learnt to my project.	I can apply reasonable programming skills that I have learnt to my project.	I can apply variety of programming skills that I have learnt to my project.

How does a computer work?
Summer Term Golden Nuggets and Work Hard

	Golden Nugget(What?)	Work Hard(How?)
1	Know about random number generation	Use random numbers within your computer programs
2	Understand subroutines, their advantages and disadvantages.	Define subroutines and use simple examples.
3	Understand 1D and 2D arrays	Use 1D and 2D arrays in the design of solutions to simple problems
4	Understand how to define Records	Show simple record definition
5	Understand **Structured** programming in a project	Apply all programming skills to develop a structured program
6	Understand **Robust** programming in a project	Apply all programming skills to develop a Robust program
7	Understand **Secure** programming in a project	Apply all programming skills to develop a secure program
8	Understand program testing, error correction, test table. Types of errors – syntax and logical. Types of test data- normal, boundary and erroneous data.	Test the program and data to ensure the entire program works.