UNIT OVERVIEW & LEARNING JOURNEY

YEAR 9 – COMPUTING: TERM 1 (1st half term)

PYTHON PROGRAMMING WITH SEQUENCES OF DATA

Welcome, aspiring coders! Get ready to level up your python programming skills with this exciting new unit. If you've already started your coding journey, you know how powerful python can be. Now, we're going to dive into how python handles groups of information, like lists of planets, lines of text from a book, or even secret passwords.

In this unit, you'll learn awesome new tricks to work with these sequences of data. You'll become a pro at finding specific pieces of information, changing entire lists, and even cleaning up messy data. We'll solve cool, real-world problems – from organizing solar system data to working with word dictionaries.

Get ready to write even more powerful and engaging programs. We'll use live coding to bring your ideas to life. This unit is all about making you a Master of Data and Sequences in Python!

Your coding compass: What you'll learn and achieve

What I Already Know! (My Coding Superpowers from before!)	New Adventures This Term! (What We'll Learn!)	Where We're Heading Next! (Your Future Digital Journey!)
How to write basic Python programs	Describe what lists are and how to create them	Tackle more complex data structures (like dictionaries or sets)
How to display messages and get input from the keyboard	Access individual elements within a list using indexes	Build programs that work with larger, more complex datasets
How to use simple math in your code	Perform common operations on lists (like adding, removing, sorting)	Develop advanced algorithms for data processing and analysis
How to control your program's flow with `if` (selection) and `for` / `while` (iteration/loops)	Describe what strings are and how to create them	Create interactive applications that rely heavily on user input and data manipulation
You understand variables	Access individual characters within a string using indexes	Explore advanced Python libraries for specific tasks (e.g., data visualization, web development)
	Perform common operations on strings (like joining, splitting, finding)	Become a data scientist or software engineer!
	Use `for` loops to go through elements in lists and strings.	
	Use functions and what they return in your expressions.	
	Locate and fix errors in your code (debugging)	
	Trace through programs that use loops and branches, sketching out what's happening	
	Use variables to keep track of counts and sums in your programs	
	Combine different features to solve meaningful programming problems	

Weekly missions: Developing your Python superpowers

Week 1: Code Warm-Up & List Launch - Reconnect with Python and get a gentle introduction to lists			
Skills:	**Key words:**		
• Write programs that display messages, receive keyboard input, and use simple math in your code • Use selection (`if`, `elif`, `else`) to control your program's flow • Describe what lists are and access individual elements using their index	Input | Output | Variables | Assignment | Expressions | Selection | Boolean / logical expression (condition) | List | Index | List item		
RAG rate your confidence with this lesson	☹	😐	☺
Week 2: List Logic - Learn how to change lists, add items, and find information within them			
Skills:	**Key words:**		
• Perform common operations on lists (like `append`, `insert`, `pop`, `remove`, `sort`) • Use `for` loops to go through each element in a list • Find and fix errors in your code (debugging)	List | Index | List item | List operations (append, insert, pop, remove, index, count, reverse, sort, length) | List membership | Boolean / logical expression (condition)		
RAG rate your confidence with this lesson	☹	😐	☺
Week 3: String Secrets - Discover how Python handles text and learn to manipulate strings			
Skills:	**Key words:**		
• Describe what strings are and access individual characters using their index • Perform common operations on strings (like `len()`, `upper()`, `lower()`, `find()`, `replace()`) • Use `for` loops to go through each character in a string	Iteration | Boolean / logical expression (condition) | List | Index | List item | List operations (append, insert, pop, remove, index, count, reverse, sort, length) | List membership		
RAG rate your confidence with this lesson	☹	😐	☺
Week 4: Looping for Gold - Master different types of loops to process sequences effectively			
Skills:	**Key words:**		
• Trace through programs that use branches and loops, and sketch out what the program is doing step-by-step • Use `while` loops to control the flow of your program	Iteration | Boolean / logical expression (condition) | List | Index | List item | List operations | String operations		
RAG rate your confidence with this lesson	☹	😐	☺
Week 5: Problem Solvers Unite - Combine all your Python skills to solve real, meaningful problems			
Skills:	**Key words:**		
• Use variables to keep track of counts and sums in your programs • Combine features you've learned to develop solutions to meaningful problems	Input | Output | Variables | Assignment | Expressions | Selection | Boolean / logical expression (condition) | List | Index | List item | List operations | String operations		
RAG rate your confidence with this lesson	☹	😐	☺
Week 6: Challenge & Celebration - Take on a final challenge and review your amazing progress			
Skills:	**Key words:**		
• Apply all your knowledge to solve a complex problem using lists, strings, and loops • **Evaluate your own code and identify areas for improvement** • **Complete a short Microsoft test to check your knowledge of programming**	Input | Output | Variables | Assignment | Expressions | Selection | Boolean / logical expression (condition) | List | Index | List item | List operations | String operations		
RAG rate your confidence with this lesson	☹	😐	☺