

TOPIC OVERVIEW: 9.2 PROGRAMMING [PYTHON]

<p>What BIG IDEAS will you cover in this topic?</p> <p>In this topic, you'll unlock the creative power of programming with Python — one of the most widely used and beginner-friendly coding languages in the world. Whether it's drawing colourful patterns, composing your own music, creating an interactive chatbot, or designing a workout tracking app, you'll see how code brings ideas to life.</p>	<p>What other <u>key concepts, knowledge and skills</u> will you learn in this topic?</p> <ul style="list-style-type: none">● Python Turtle – Create shapes and art with code, learn about loops, colours, and nested patterns● EarSketch – Make music using Python code by combining beats, loops, and tempo changes● Chat Bot – Write a text-based adventure story where the user makes choices using input() and if statements● Workout Tracker – Develop a program that uses lists, loops, and user input to build and log a full workout session
<p>What important <u>prior knowledge</u> will you use from your prior learning?</p> <p>You'll use your basic understanding of how computers work and your familiarity with using technology. If you know how to use a computer and understand basic logic and instructions, you're ready to start coding.</p>	<p>Assessment:</p> <p>How and when will you be assessed on this topic?</p> <ul style="list-style-type: none">● Quizzes: Short quizzes to check your understanding of programming concepts like if statements and loops.● Practical Exercises: Hands-on activities using Python Turtle and Ear Sketch to apply what you've learned in real coding tasks.● Projects: Create simple programs that involve drawing shapes, composing music, handling input/output, and using loops and if statements.● Assessment: On the computer, there will be an end of term assessment.
<p>Where does this topic fit into the <u>curriculum plan</u> for this subject?</p> <p>In Year 9, from January to April. This topic introduces fundamental programming concepts using Python, setting a strong foundation for more advanced programming. It helps you understand how to create interactive programs and apply coding skills to various creative projects.</p>	<p>What is the structure of learning/lessons in this topic?</p> <ul style="list-style-type: none">● 9.2.1 – Python Turtle:● 9.2.2 – EarSketch:● 9.2.3 – Chat Bot:● 9.2.4 – Workout Tracker:
<p>What is the key <u>vocabulary</u> that you will need to know in this topic?</p> <p>Python, Turtle, Ear Sketch, Input, Output, If Statements, Loops, Code, Algorithm, Variable, Syntax, Programming, Debugging, Conditional Statements, Iteration and Sequence</p>	

```
name = input("Enter Name") #A
age = 14 #B
users = ["John", "Jane"] #C
length = len(users) #D
valid = False #E
#F
for i in range(length): #G
    if name == users[i] #H
        valid = True #I

if valid == True: #J
    print("Valid user")
else: #K
    print("Invalid user")
```

- A: Stores user inputted text to a variable called name.
- B: Stores an integer value 14 to a variable called age.
- C: Creates a list which contains 2 string values.
- D: Calculates the length (how many items are in) of users.
- E: Stores the Boolean value False to variable valid.
- F: Use of white space to make code clearer.
- G: Creates a loop that will iterate for every element in
- H: Use of selection to determine if the entered value match with any values from the list. users[i] looks up the current value from the list based on the given index.
- I: If the name is in the list users, valid is changed to True.
- J: Selection based on whether valid was changed to True.
- K: Runs alternative code if the criteria from J is not met.

TOPIC OVERVIEW: 9.3 PROJECTS

<p>What BIG IDEAS will you cover in this topic?</p> <p>In this project-based unit, you'll explore how computing skills can be applied in the real world — from video editing and AI ethics, to simulating how a computer really works using Little Man Computer, and even building your own Escape Room challenge. It's a chance to bring your creative, logical, and critical thinking skills together in fun and practical ways.</p>	<p>What other <u>key concepts, knowledge and skills</u> will you learn in this topic?</p> <ul style="list-style-type: none"> ● Video Editing: Trim clips, add transitions, music, captions, and effects using CapCut. ● Creative Storytelling: Plan and structure engaging narratives for trailers and escape rooms. ● Ethical Thinking: Explore the social impact of AI, privacy, bias, and responsibility in technology. ● Machine Learning: Understand how AI is trained using data, and create a basic model using Teachable Machine. ● Computer Architecture: Learn how a CPU works using the Little Man Computer simulation. ● Problem-Solving & Logic: Build puzzles, validate inputs, and structure challenges in a digital Escape Room.
<p>What important <u>prior knowledge</u> will you use from your prior learning?</p> <p>Your experience of programming, especially using inputs, decisions and outputs. Creative thinking and storytelling from other subjects (e.g., English or Art). Logical thinking and step-by-step processes from Computer Science lessons. Familiarity with using digital tools like Google Drive, Slides, or Forms</p> <p>Where does this topic fit into the <u>curriculum plan</u> for this subject?</p> <p>This topic is taught in Year 9 (April to July) and helps prepare you for the creative, ethical, and logical challenges you'll meet in GCSE Computer Science or the wider digital world. Whether you're into media, technology, or problem-solving, these projects help you see how Computing connects with real life.</p>	<p>Assessment:</p> <p>How and when will you be assessed on this topic?</p> <ul style="list-style-type: none"> ● Mini-Projects: Like your edited trailer, AI experiment, or Escape Room ● Group and Solo Tasks: Some projects will be individual, others team-based ● Teacher Feedback: You'll get clear advice on how to improve each project ● Showcase Opportunities: Some of your work may be shared in class or used as examples!
<p>What is the key <u>vocabulary</u> that you will need to know in this topic?</p> <p>CapCut, Timeline, Transition, Ethics, Bias, AI, Facial Recognition, Machine Learning, Dataset, Little Man Computer, Instruction, Escape Room, Validation, Puzzle Logic, Input, Output, Simulation</p>	<p>What is the structure of learning/lessons in this topic?</p> <ul style="list-style-type: none"> ● 9.3.1 – Video Editing (CapCut Trailer Challenge) ● 9.3.2 – Ethical Dilemmas in AI & Technology (Teachable Machine) ● 9.3.3 – Little Man Computer (LMC Simulator Practice) ● 9.3.4 – Animation & Digital Escape Room (Design & Build Challenge)

