Computational Thinking Concept:

### Pupil Progression

- **Computing Progression Pathways**
- **Algorithms**
  - Understands what an algorithm is and is able to express simple algorithms through algorithmic symbols. (AL)
  - Designs a solution to a problem that depends on smaller instances of the same problem. (AL GE)
  - Understands why some problems cannot be solved computationally. (AB GE)

- **Programming & Development**
  - Designs and writes nested modular programs that enforce reusability utilizing sub-routines whenever possible. (AB GE)
  - Designs and writes nested modular programs that enforce reusability utilizing sub-routines whenever possible. (AL GE)
  - Understands the difference between ‘while’ and ‘for’ loop, which uses a loop counter. (AL GE)
  - Designs and writes nested modular programs that enforce reusability utilizing sub-routines whenever possible. (AL GE)
  - Designs and writes nested modular programs that enforce reusability utilizing sub-routines whenever possible. (AB GE)

- **Data & Data Representation**
  - Knows that users can develop their own approach to represent data. (AB GE)
  - Performs operations using bit patterns e.g., conversion between binary and hexadecimal, among others. (AB GE)
  - Performs operations using bit patterns e.g., conversion between binary and hexadecimal, among others. (AL GE)
  - Has practical experience of simple (hypothetical) low level programming languages. (AB GE)

- **Hardware & Processing**
  - Understands that programs that do not compile have syntax errors. (AB GE)
  - Knows that computers have instruction sets that relate to low-level instructions carried out by a computer. (AB GE GE)
  - Knows that processes have instruction sets that relate to low-level instructions carried out by a computer. (AL GE GE)

- **Communication & Networks**
  - Obtain content from the world wide web through a web browser. (AB GE)
  - Has practical experience of simple (hypothetical) low level programming languages. (AB GE)
  - Discusses the difference between binary and hexadecimal, among others. (AB GE)

- **Information Technology**
  - Understands the difference between binary and hexadecimal, among others. (AB GE)
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- **Computing Progression Pathways**

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