IB Computer Science Worksheet: B2 Programming

Jupyter Notebook: Notebook 5 — Lists and Data Analysis

Syllabus Links: B2.2.2, B2.1.3

Q1: Swimmer Data Format (6 marks)

(a) Outline the data type of "1:32.57" when read from a file. (2)

(b) List **one** advantage and **one** disadvantage of representing times in this format. (2)

(c) Identify the data structure produced by `file.readlines()` and give **one** reason why it is suitable. (2)

Q2: Algorithm Design (8 marks)

Without writing code, describe an algorithm that finds the fastest time in a swimmer's file. (8)

Q3: Tracing an Algorithm (8 marks)

Consider a list of times e.g., `["1:35.75", "1:32.57", "1:40.12"]`.

(a) Construct Python code that converts each value to hundredths of a second and outputs the fastest time. Assume that the file has already been read and the list of times as shown is available. (4)

(b) Construct the trace table for the code written in the previous question. (4)

Q4: Reflection (4 marks)

Explain why a list is more suitable than individual variables for storing race times in this problem. (4)

Total: 26 marks