**T2 Week 7 – Practical Questions Analysis**

Often when solving practical questions, you may quickly become confused and/or overwhelmed by the given context.

**1 The format to the Practical Examination Paper**

The H2 Computing (9569) Practical Examination Paper (i.e., Paper 2) always consists of 4 questions, which may be generalised as follows:

|  |  |
| --- | --- |
| **#** | **Question Type** |
| 1 | File I/O + Exception Handling + Searching + Sorting |
| 2 | Algorithms (e.g., Checksum) + Recursion + Testing |
| 3 | OOP + Data Structure; typically Array-OOP Hybrid |
| 4 | Web App + Sqlite3 |

Do note that while the above is generally true, some variation is to be expected. Be prepared to solve each question based on its contents. **This should only serve as a rough guide.**

**2 Question Analysis**

In order to navigate each of the above questions, you should always work to identify the following.

1. The list of (general) steps that we are required to perform in order to complete the Tasks in the question.
   1. Read through the question and (separately) note:
      1. Facts given within the context (highlighting)
      2. The way the program you are writing should work (written summary list)
   2. Typically, the required program may be decomposed into the following general steps:
      1. Read and parse the Source Data
      2. Format and/or convert the Source Data
      3. Use some representation to Store Source Data (create structures if so required)
      4. Process the Data within the representation adopted
      5. Format and/or output the data as required

Typically, after determining **(ai)** and **(aii)**, we would thus seek to determine the following.

1. The source data.
   1. What is the format within the file?
   2. What are the individual elements?
      1. What are the entities/objects/records for the items being stored?
      2. What attributes do of these entities/objects/records possess?
   3. How is the data formatted within the source?
      1. Typically, this corresponds to a text file; what is used to delimit each element of data?
      2. How many lines correspond to each entity/object/record?
   4. How can you read and parse the data in the file such that you can store all the relevant elements?
2. The processing required. (You might want to read the latter tasks in the questions to get a better idea for this)
   1. What do you need to do with the data?
      1. Must the data be converted (format)? What do we need to do to facilitate this conversion?
      2. Must we sort the records? (E.g., median calculation, binary search, etc., requires sorting.)
      3. Must we search through the records? What is the key that is required to search through the records?
3. The data representation.
   1. What structure(s) are necessary to store this data (such that we may appropriately process it)?
      1. Do we have to write our own classes (to store the entities/records)?
      2. Do we have to write our own data structures?
   2. Ultimately, we need to determine what processing is necessary, and given this requirement, in turn determine the data structures that would best facilitate this functionality.
      1. Our default should be to either use a list or dictionary (since those are already implemented for us)
4. The output.
   1. What is the form of the output?
      1. What output formatting should we use?

Potentially, there may be other criteria. However, this are the most important things to consider when working on your solution.