Array Processing with Text Files

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Objectives

- Design Java programs using arrays to process files

  - Design file structure

  - Design file processing logic using arrays

File Structure

- A file consists of 0 or more records

- Question: how many records?

    - The number of records can be part of the file

    - The number of records can be inferred from records available in the file (using sentinel)

Number of Records

- Differentiate two types of records

    - The number of data records

    - Data Records

- Example: a data record a line

    ```
    2

    John,18

    Jane,21
    ```

Using Sentinel

- Data records only, but using a sentinel to indicate the end of file

  - A special value, e.g.,

    ```
    John,18
    Am,25
    -1
    ```

  - the end of file, e.g.,

    ```
    John,18
    Amy,25
    ```

Using Sentinel: What is your solution?

- If we are to store the records in an array, we need to know how big the array should be.

- Two methods:

  - Use the one-pass method (initial allocation-resize-copy method)

    - Read the file once

  - Use the two-pass method

    - Read the file twice

Record Structure

- Simple record

  - a record a line, but what if a record has multiple fields?

  - Commonly, using comma-separated values

  - Example:

    ```
    "John Doe",18,"Nickname \"Big John\""
    ```

  - Header?

- Structured record

  ```
  BEGIN

      Name=John Done

      Age=18

      Remark=Nickname "Big John"

  END
  ```

Questions?

Using Arrays to Process Files

- Given a text file that contains the names of a list of basket players, game dates, and their scores in a game for a basketball season, find players whose scores average in a season.

- Save the results to another file.

Questions?