



## Computer Organization & Operating Systems

Lab Examination, Vasanth 2026

Maximum Marks: 10

Course Code: **DSC315**

Weightage: 8

Date: **2026-April-19**

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### Process and Multithreading with Multiple Files

1. The program takes an integer input  $n$  from the user, representing the number of files.
2. There are 10 files named `input_file_0.txt`, `input_file_1.txt`, ..., `input_file_9.txt`. Each file contains words of varying lengths, and the size (in bytes) of each file is known.
3. Given input  $n$ , the parent process creates  $n$  **child processes** using `fork()`, each corresponding to a file.
4. Each child process:
  - Opens its corresponding file.
  - Creates **3 threads**.
  - Divides the file into 3 equal parts (by byte range).
  - Each thread processes one part of the file and computes:
    - Total number of words in its part
    - Average length of words in its part
5. After all threads finish:
  - The child process computes the **overall average word length** of the file using the data obtained from all threads.
  - Prints the result for its file.
6. The parent process:
  - Waits for all child processes to complete.
  - Prints a final completion message.
7. **Output Requirements:**
  - Each thread prints: Thread ID, Byte range processed, word count and average length
  - Each child process prints:
    - File name
    - Overall average word length