Lab Assignment 2: Threads

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- **how your code is organized**:
  - code is divided into three main modules:
    - Matrix reader module which is responsible for reading matrices from input file (matrixA & matrixB).
    - Threads_creation_method1 module which is responsible for multiplying two matrices using threads each thread is responsible for a row in the resulting matrix.
    - Threads_creation_method2 module which is responsible for multiplying two matrices using threads each thread is responsible for a cell in the resulting matrix so we got (n*m) threads working where (n is number of rows in matrixA and m is number of columns in matrix).
  - First of all we read user input from the files expected to be entered by user or to use default files(a.txt & b.txt).
  - After that we apply the two methods on the matrices and get output.
  - Then calculate time interval taken by each method.
  - Finally write this data in the output files.
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- **main functions**:
  - matrix_read : responsible for reading matrix from file.
  - Create_threads: responsible for creating number of threads indicated.
  - Wait_thread:which is responsible for waiting all threads working using their id till they finish.
  - Write_to_file:which is responsible for writing data out into the files after calculation.

- **sample runs:**
  - Delivered as a separate folder.
- **How to run your code:**
  - **Gcc –lm –pthread –o main**
  - **./main**
  - **You can enter name of files or anything else.**

- **comparison between the two methods of matrix multiplication:**
  - first method create number of threads each thread is responsible for calculating a row in the resulting matrix.
    - Which is good as it divide the task into number of tasks of somehow equal weight.
  - Second method create number of threads each thread responsible for calculating a specific cell inside the resulting matrix.

- Which is good only in small matrices but in large size matrices will be bad method as it may exceed maximum number of threads could be afforded by the
- Processor due to limited memory size.