

# WORD COUNT PROBLEM & CROSS CORRELATION CALCULATION

SOLUTIONS DIAGRAM AND ENTITY INTERACTION

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# WORD COUNT PROBLEM

# MULTI-THREAD MAPPING

Given that our group had an initial single-thread implementation of the solution for this problem, we needed to map the program to a multi-thread environment and obviously implement it. The necessary mapping were:

- A shared memory space would keep track of the files to be processed.
- Each worker would request the shared memory a chunk of text, process it and return the results to the shared memory.
- The shared memory would manage the files content internally enabling the distribution of chunks of text.
- The shared memory would keep track of all received results, enabling a print in the end of the processing of all files.

# SOLUTION DIAGRAM

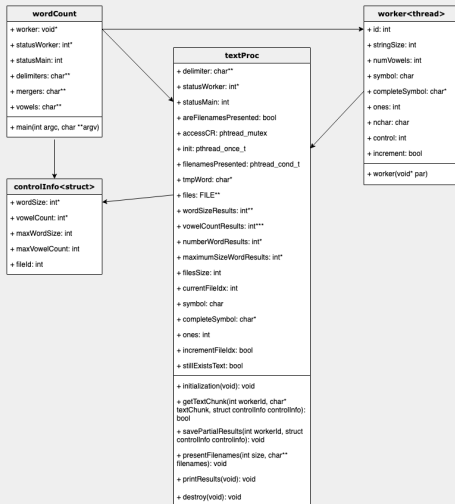
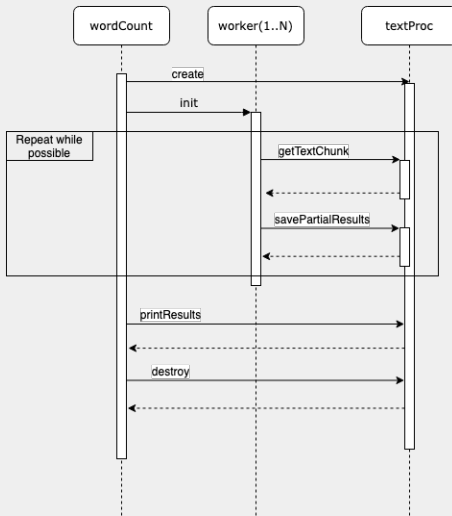


Figure: Solution Diagram

# ENTITY INTERACTION



**Figure:** Entity Interactions

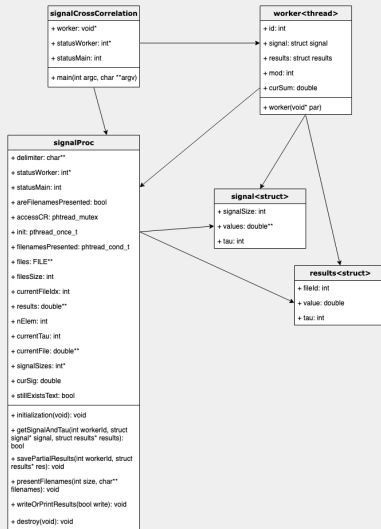
# CROSS CORRELATION PROBLEM

# MULTI-THREAD MAPPING

Given that our group had an initial single-thread implementation of the solution for this problem, we needed to map the program to a multi-thread environment and obviously implement it. The necessary mappings were:

- A shared memory space would keep track of the files to be processed.
- Each worker would request the shared memory a signal and a specific  $\tau$ , calculate the cross correlation and return the results to the shared memory.
- The shared memory would manage the files content internally enabling the distribution of chunks of text.
- The shared memory would keep track of all received results, enabling the program to write the results at the end of each file or to print to the console the results.

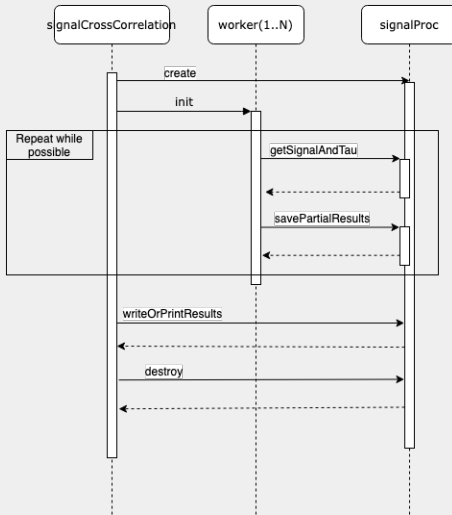
# SOLUTION DIAGRAM



**Figure:** Solution Diagram



# ENTITY INTERACTION



**Figure:** Entity Interactions