Word Count Problem & Cross Correlation Calculation

Solutions Diagram and Entity Interaction

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Word Count Problem

Multi-Thread Mapping

The team efforts were focused on mapping the initial single-threaded implementation of the program to a multi-threaded environment. The required mapping was:

- A shared memory space would keep track of the files to be processed.
- Each worker thread would ask the shared memory for 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 global results processing of each file given as input.

Solution Diagram

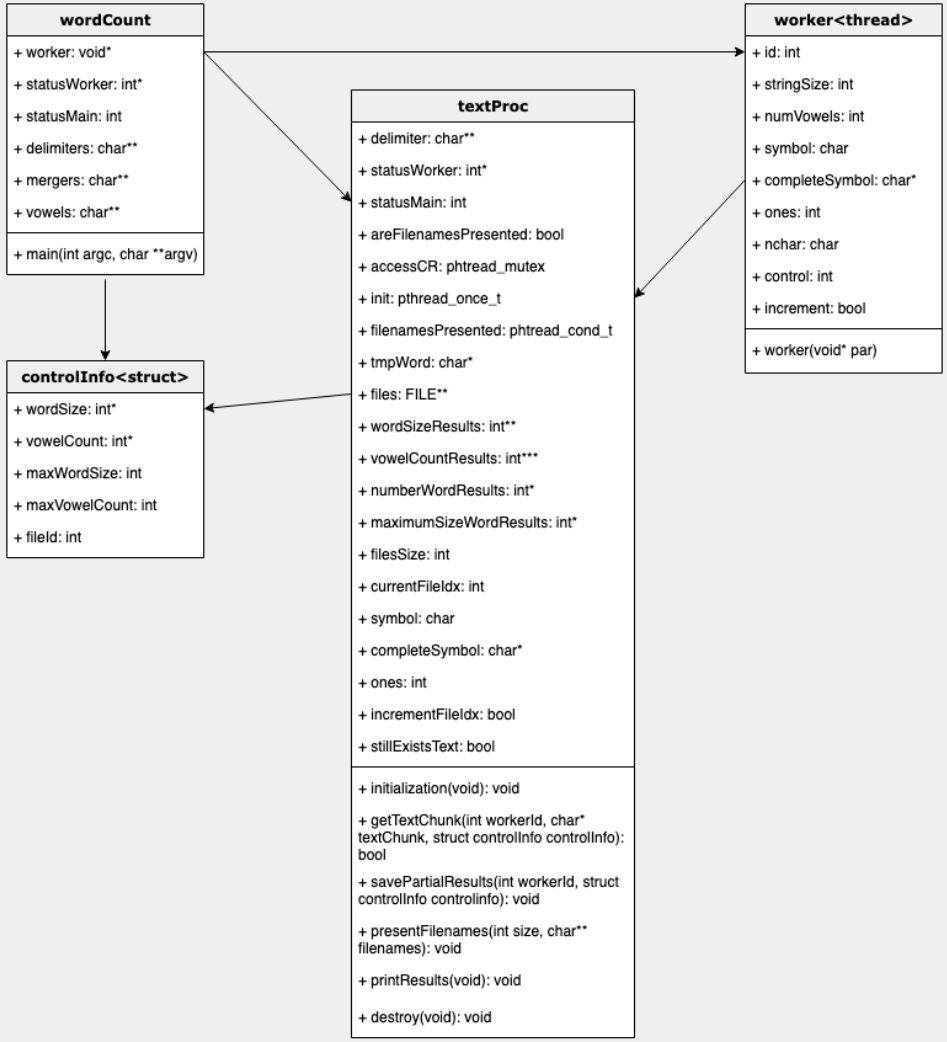

Figure: Solution Diagram

Entity Interaction

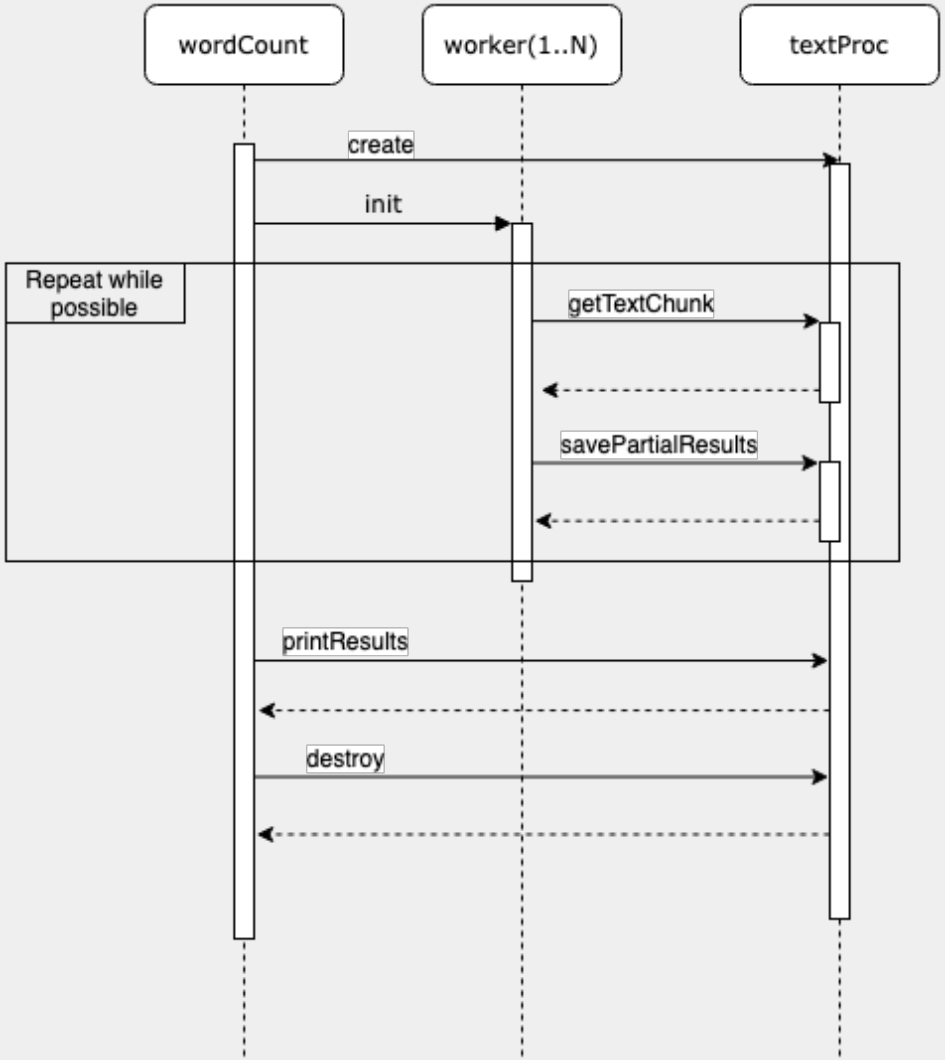

Figure: Entity Interactions

Cross Correlation Problem

Multi-Thread Mapping

Once again, our task was to map a single-threaded implementation of the solution for this second problem, previously developed by us, to a multi-threaded version of such implementation. The required mapping was:

- A shared memory space would keep track of the files to be processed.
- Each worker thread would ask the shared memory for the values of a signal and a specific τ, 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 the same signals but with different τ values.
- The shared memory would keep track of all received results, enabling the program to write the results in the end of each file or to print them to the console.

Solution Diagram

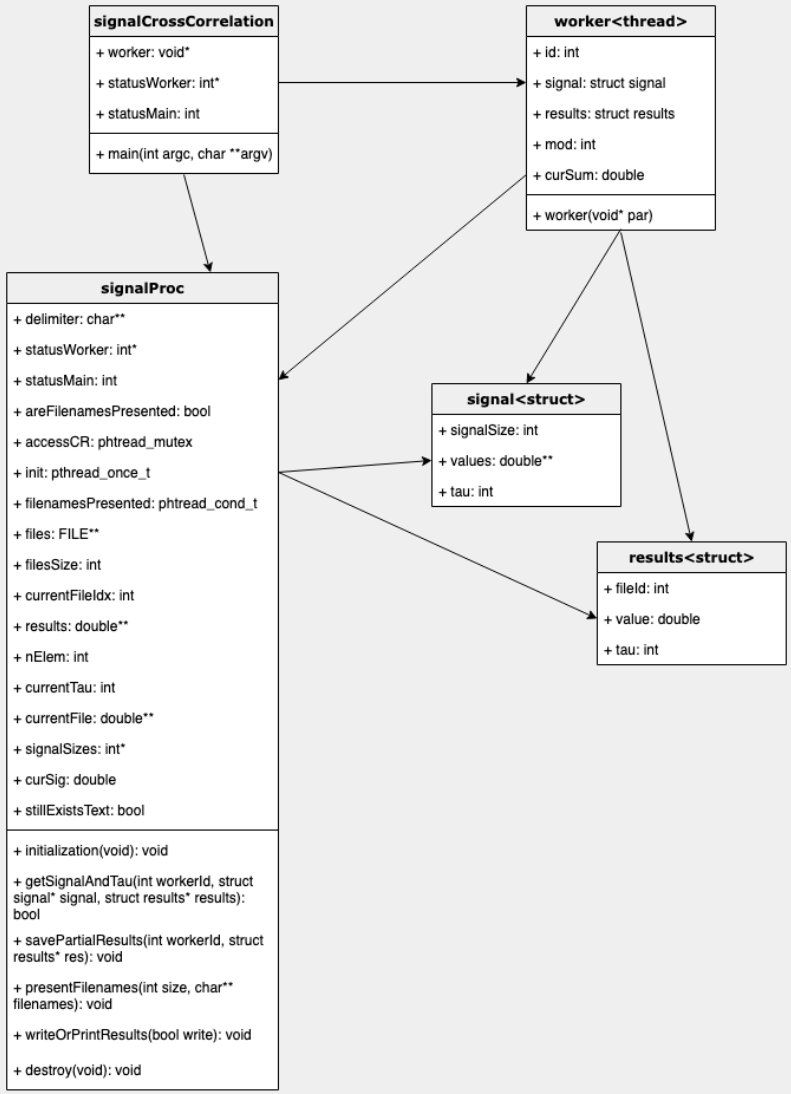

Figure: Solution Diagram

Entity Interaction

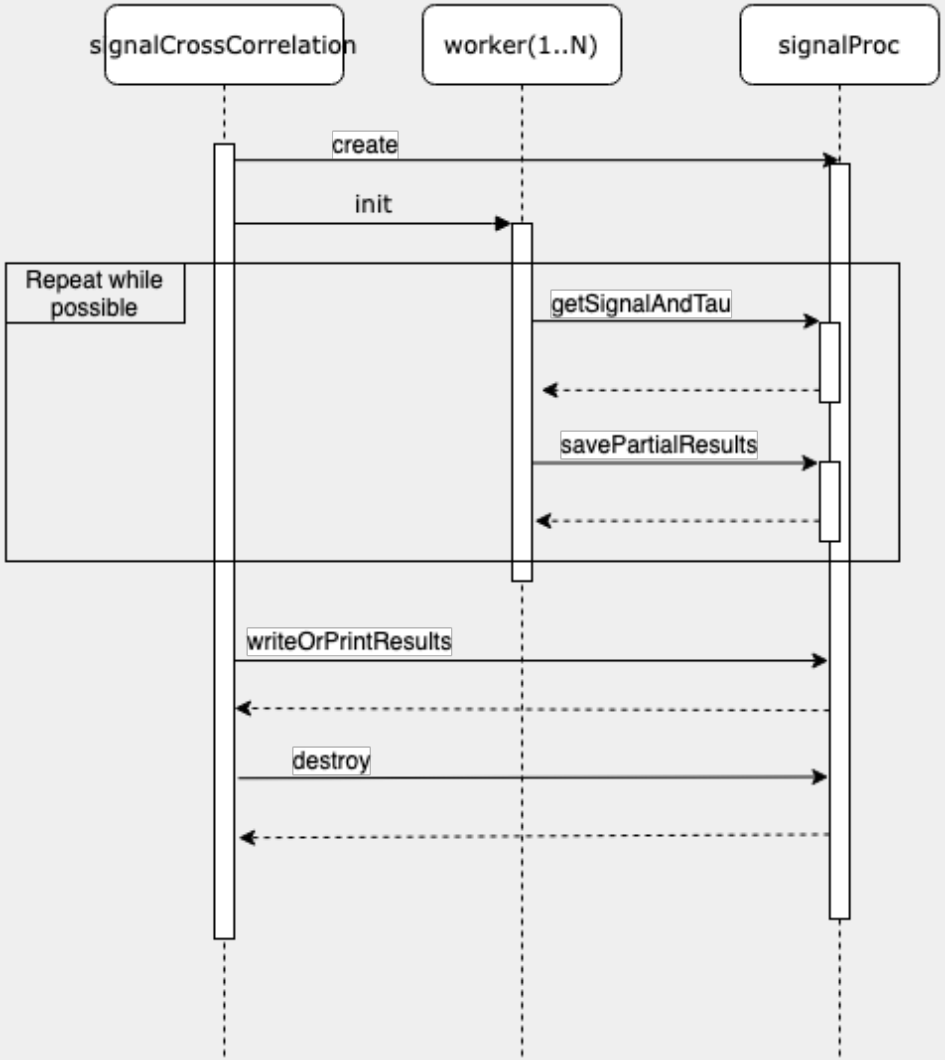

Figure: Entity Interactions