

HW1 Due: Thursday February 10th

Implement two algorithms (ijk-form, and jki-form) to multiply two matrices that are not necessarily square. For this you may follow lecture notes 4 and 5.

Your program must be able to manipulate matrices with up to 40,000 integer values, which still are very small matrices. You must use the `gettimeofday(...)` routine to **measure the execution time of $A*B$ in seconds**. Take into account that `gettimeofday(...)` provides you the elapsed time with an accuracy of microseconds.

Your code must look something like this,

```
Allocate memory for A, B and C
Read A's values, Read B's values
Transpose if needed
gettimeofday()
for
    for
        for
            // Something here
        end
    end
end
gettimeofday()
Print matrix C
Deallocate memory
```

You must provide a pdf with a table that shows different runtimes for both algorithms using `-O0` (no optimization) and `-O3` (full optimization). Explain a bit why one algorithm is faster than the other. Please create a folder (hw0) containing both the report and the source code of your program. Two main aspects will be graded: Correctness of your code and memory management (no leaks). The top priority is that you understand and implement both algorithms properly, as well as you allocate and deallocate memory for the arrays. Once you manage how to do it, then you can pay attention to how well are you reading and writing the data. You do not have to calculate speedup for this homework since $np = 1$ always.