**Format for Intermediate Reports on DSP Optimizations**

**Group Name** : Speech group 5

**Team member 1** : Koen Goetshalckx

**Team member 2** : Seppe Iven

Selfie(s). Illustrating who is who.

Seppe: Koen:

 

Include the following details in your reports.

* Optimizations tried and carried out. Discuss its impact on the cycles at the function level and total code level. **Also present your reasoning** about the impact of the optimization which you observed.
* Even if an optimization does not improves the result, include and discuss it.
* Present the following profile results (in the formats shown in the tables) -
  + For the complete code in the following format:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Major Optimization** | **Functions Effected** | **Total Cycles\*** | | **Change (in %)** |
| **Before** | **After** |
| Base Code |  |  |  |  |  |
| Session 1 | Optimization name | Function name(s) |  |  |  |
| Optimization name | Function name(s) |  |  |  |
| : | : |  |  |  |
| Session 2 | Optimization name | Function name(s) |  |  |  |
| Optimization name | Function name(s) |  |  |  |
| : | : |  |  |  |
| : | : | : |  |  |  |

\* For cycle counts use 1.23M instead of 1234500, or 1.23K instead of 1230

Specify the input data size used for profiling

* + For each function in the following format:

\* For cycle counts use 1.23M instead of 1234500, or 1.23K instead of 1230

Specify the input data size used for profiling

* + For crypto code, profile key agreement separately and encrypt/decrypt separately

## Profile results:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Function Name | File Name | Total no. of calls | Exclusive Count Total\* | | | Inclusive Count Total\* | | | Optimization carried out |
| Before  (Previous Session) | After  (This Session) | % Change | Before  (Previous Session) | After  (This Session) | % Change |
|  |  |  |  |  |  |  |  |  |  |

A little explanation, if needed.

Bar charts and/or line charts are welcomed, for better illustrating the profile results.

## Discussion (important)

* Point1
* Point2

# Report 1

**Lab date : 22/04, 2016**

**Submission time : 23/04**

## Logs:

We have found and fixed some bugs that occurred when implementing another group’s crypto part. We installed and configured CCS 5 and went through the given slides. We made the code slightly more modular. We profiled the code for a first time.

## Profile results:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Major Optimization** | **Functions Effected** | **Total Cycles\*** | | **Change (in %)** |
| **Before** | **After** |
| Base Code |  |  | 21,8M |  |  |
| Session 1 | Hardcoded filter in unrolled inner loop of convolve for filter2 and filter3 | Convolve 🡪 convolveFilter2Odd, convolveFilter2Even, convolveFilter3Odd, convolveFilter3Even | 21,8M | 21,7M | 0,5 |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Function Name | File Name | Total no. of calls | Exclusive Count Total\* | | | Inclusive Count Total\* | | | Optimization carried out |
| Before  (Previous Session) | After  (This Session) | % Change | Before  (Previous Session) | After  (This Session) | % Change |
| Convolve  🡪  Convolve,  convolveFilter2Odd, convolveFilter2Even, convolveFilter3Odd, convolveFilter3Even | Analysis.c | 3840 | 3,5M | 3,4M | 3 | 13,5M | 13,4M | 1 | Hardcoded filter coefficients in an unrolled inner loop |

## Discussion (important)

The inner loop of the convolve function is the most used code of the program. Before the DSP, this inner loop was already sped up by a factor of 2, using the profiler of Visual Studio and the default windows C compiler. Now, an attempt to speed it up even more was made by unrolling this inner loop and hardcoding the filter coefficients in it. Some noticeable gain was expected, considering unrolled code improves pipelining and the hardcoded coefficients should require less data accesses. However, only a very small gain in speed was realized. Therefore, and because of the unreadability of the manually unrolled code (manually to hardcode the coefficients), the changes were reverted. (Only filter2 and filter3 were hardcoded. This should be enough to test the impact of the change.)

The amount of cycles is for an input file of 2986 samples

# Report 2

Lab date:

Submission date:

Submission deadline:

## Logs:

Describe what you have done. (Around 5 lines)

## Profile results:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Function Name | File Name | Total no. of calls | Exclusive Count Total\* | | | Inclusive Count Total\* | | | Optimization carried out |
| Before  (Previous Session) | After  (This Session) | % Change | Before  (Previous Session) | After  (This Session) | % Change |
|  |  |  |  |  |  |  |  |  |  |

A little explanation, if needed.

Bar charts and/or line charts are welcomed, for better illustrating the profile results.

## Discussion (important)

* Point1
* Point2