# Embedded Software

Lab 2

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I. INTRODUCTION

This report summarizes our work concerning the laboratory 2 of the Embedded Software course. The lab2 consists of developing a streaming application software. We are asked to develop the application on three different architectures (Single Core with RTOS, Single core without OS, Multicore without OS). Also in this laboratory, we had to meet a throughput constraint and a memory footprint constraint.

A. Data Flow Graph of the application
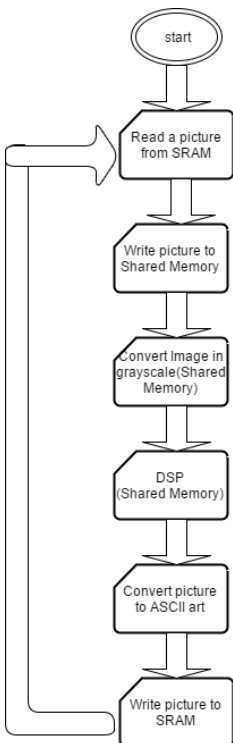
B. Single Core Solution With RTOS

i. Implementation

We use on task to implement the steps of the algorithm.

ii. Results

The throughput shows that our application take long time to calculate Sobel algorithms e.g. 2 sec per picture.

C. Single Core without OS Solution

i. Implementation

In a single core without OS, we have no choice but to implement a straightforward and sequential code. We execute each function after other.

ii. Results

The throughput took lees time compare to single core

D. *Multicore Solution without OS*

i. Implementation

We split the pictures into four parts.
The cpu_0 read the picture from the sram and writes it to the shared memory. Then cpu_1, cpu_2, cpu_3, cpu_4 will operate on the differents parts. Cpu_0 will print the picture.

The value we getting is wrong and not correct.s

E. *Throughput and Memory footprint*

	RTOS	Bare-Metal	Multicore
Throughput	663.733 S/100P	645.786 S/100P	
SRAM(bytes)	143 KB	126 KB	
OnChip CPU 1			
OnChip CPU 2			
OnChip CPU 3			
OnChip CPU 4			
OnChip (Shared)	112 KB	111 KB	
Total			