

Project Objective

This is the final project where you are going to learn how to measure the instruction count of your system, improve the system by using the custom floating-point unit and create a multi-processor system. To achieve this objection, your work will be composed of the following three cases:

Case A: Floating-point unit and timer unit to measure the improvement in the frame time.

Case B: Floating-point unit and program counter to measure the instruction count.

Case C: Floating-point unit, timer unit and two processors to measure the improvement in frame time.

Case A

- Add the **custom floating-point unit (floating-point hardware2)** and connect its slaves (s1 and s2) to the processor custom_instruction_master.
- Re-generate the system, compile, and synthesize your project. Read the summary report from Quartus and fill out the below table. Save the Table in the report file.

Table A: Custom_Floating_point_Timer

Logical Elements	Registers	Total Pins	Memory Bits

- Run your application code to measure the frame time and compare it with the frame time obtained in Project 5. Don't forget to setup your bsp variables as shown below.

Sys_clk_timer	Timestamp timer	stdin	stdout	stderr
Timer	Timer	jtag	jtag	jtag

- In your pixel_code function,
 - change sin and cos in your rotation code to sinf and cosf respectively.
 - Any variable that is used inside this function and declared as double, change it to float.
- Record the average frame time.