

Performance Results

In this section, you are required to configure your corrected code to run in the Quartus tool. Using the Timing Analyzer (as discussed during the training phase), you will need to create a clock and specify timing constraints suitable for your processor. You are free to apply any constraints you deem appropriate.

After completing the analysis, report the performance metrics and required data in the table below. Additionally, provide the necessary commands from the Synopsys Design Constraints (SDC) file.

Table 1 Performance Data

		Metric	Value	Description
		Clock Frequency	29.41 MHz	clock frequency you configured in the Quartus tool.
		Design Size (LE)	1910	Size of design in terms of logic elements
model	Slow 85C	Fmax	30.93 Mhz	Fmax : The highest frequency at which the processor can operate reliably.
		Setup Slack	0.835	
		Hold Slack	1.118	
	Slow 0C	Fmax	32.81 Mhz	Setup Time : The time required to set up signals before the clock edge.
		Setup Slack	1.763	
		Hold Slack	1.059	
	Fast 0C	Fmax	82.64 MHz	Hold Time : The minimum time signals must remain stable after the clock edge.
		Setup Slack	10.950	
		Hold Slack	0.388	

Provide the commands from your **SDC file** that define the clock and timing constraints.

```
set_time_format -unit ns -decimal_places 3

create_clock -name {clk} -period 34.000 -waveform { 0.000 17.000 } [get_ports {clk}]

set_clock_uncertainty -rise_from [get_clocks {clk}] -rise_to [get_clocks {clk}] 0.020

set_clock_uncertainty -rise_from [get_clocks {clk}] -fall_to [get_clocks {clk}] 0.020

set_clock_uncertainty -fall_from [get_clocks {clk}] -rise_to [get_clocks {clk}] 0.020

set_clock_uncertainty -fall_from [get_clocks {clk}] -fall_to [get_clocks {clk}] 0.020
```