

Assignments

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Source : Nitin Chandrachoodan PlayList

1 Assignment 1 - DFT Implementation

Implementation of DFT using Cooley-Tookey.

Resources Used :

- Rich Radke DSP Playlist
- Understanding the FFT Algorithm

Methods Used:

- For Loop Based
- Vector Based
- Using `dftmtx`
- Radix-2 Decimation In Time Algo

Finished On: 18-06-2021

2 Assignment 2 - Integer Division

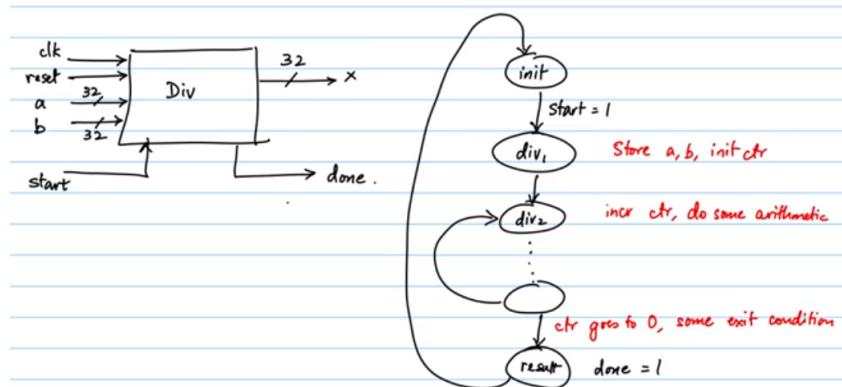
Implementation of Integer Division with the following description.

Sequential Divider	
Inputs :	a, b [31:0]
Output :	$x = a / b$ \longrightarrow Integer division.
eg :	$10 / 3 = 3$
	$100 / 3 = 33$
	$1 / 3 = 0$
	$-5 / 3 = -2$
Restoring / Non-restoring division.	

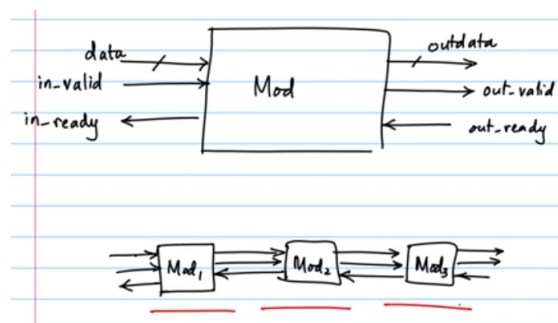
Method To Used:

- Restoring/ Non-restoring Division

2.1 Using Start and Stop Signal



2.2 Using ready and valid Signal



2.3 Test Bench to Use

```

timescale 1ns/1ns
define width 32

module seq_div_tb () ;
  reg ['width-1:0] a, b;
  reg          clk, reset, rdy;

  wire [2*'width-1:0] q;
  wire          valid;

  seq_div dut( .clk(clk),
               .reset(reset),
               .a(a),
               .b(b),
               .rdy(rdy),
               .valid(valid),
               .q(q));

  always #5 clk = !clk;

  task reset_and_crank_dut;
  begin
    // Reset the DUT for one clock cycle
    reset = 1;
    rdy = 0;
    @(posedge clk);
    // Remove reset and set ready to high
    #1 reset = 0;
    rdy = 1;

    // Loop until the DUT indicates 'valid'
    while (valid == 0) begin
      @(posedge clk); // Wait for one clock cycle
    end
  end
endtask // reset_and_crank_dut
  
```