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module fast_division_tb;

    reg [15:0] dividend; // Testbench input: 16-bit dividend
    reg [7:0] divisor; // Testbench input: 8-bit divisor
    wire [7:0] quotient; // Testbench output: 8-bit quotient
    wire [7:0] remainder; // Testbench output: 8-bit remainder
    wire done; // Testbench output: Done flag

    // Instantiate the DUT (Device Under Test)
    fast_division dut (
        .dividend(dividend),
        .divisor(divisor),
        .quotient(quotient),
        .remainder(remainder),
        .done(done)
    );

    // Stimulus generation
    initial begin
        // Initialize inputs
        dividend = 16'b1010101010101010;
        divisor = 8'b01100110;

        // Wait for some time for the division to complete
        #10;

        // Display results
        $display("Dividend: %b", dividend);
        $display("Divisor: %b", divisor);
        $display("Quotient: %b", quotient);
        $display("Remainder: %b", remainder);
        $display("Done: %b", done);

        // End simulation
        $finish;
    end

endmodule

```