# Computer Architecture Lab
# Assignment - 03

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## 1 Introduction

This assignment involves developing a single-cycle processor simulator for the ToyRISC ISA. Processing is done in 5 stages, i.e. IF, OF, EX, MA, WB.

## 2 Observations

The observation made during the execution of the following program is tabulated below:

| Program | Static Instructions | Dynamic Instructions | Cycles |
|---------|---------------------|----------------------|--------|
| prime | 16 | 29 | 145 |
| even-odd | 9 | 6 | 30 |
| palindrome | 16 | 49 | 245 |
| descending | 21 | 277 | 1385 |
| fibonacci | 21 | 78 | 390 |

### Static Instructions

The static instruction count is the number of instruction the program has in it.

### Dynamic Instructions

The dynamic instruction count is the actual number of instructions executed by the CPU for a specific program execution.

### Cycles

- A cycle, in this context, represents a unit of time or a clock cycle in the computer's operation.

- When you say that each instruction takes 5 cycles to execute, it means that there are five distinct phases or stages involved in executing a single instruction.

- Each of these stages corresponds to one clock cycle.