

Jan29

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## Contents

Lab 3: 3:30 -5:20 Thursday 2/6

### 1 F-E Cycle

1. Get Instr
2. Interpret Instrc :: Binary Instructions
3. Execute Instrc
4. Go to 1

#### 1.1 Cycles

- Clock Cycle = CC
- Clock Period - Time @ start of a CC to start of Next CC
- Clock Rate (CR) -  $1 / \text{Clock Period}$ 
  - # cycles / seconds

speed	cycle/sec
MHz	$10^6$
GHz	$10^9$
THz	$10^{12}$

**1.2 CPU Time (t) (in seconds) = ( # clock cycles in program ) / (Clock Rate)**

$$T = (CC) / (CR)$$

- Instruction = I
- Instruction Count = IC - Depends on Architecture -> Assembly Language
- Cycles per Instructions = CPI - Average # of cycles Needed to process each Instruction
- often Average of ALL Instructions In Instruction set

$$CPI = (CC) / (IC)$$

- CPU Time  $T = (IC \times CPI) / (CR)$

example ::