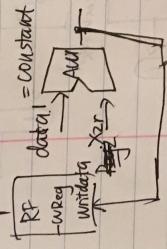


PS 5 a) addi. put

first we need to add a number ~~out~~ into a Register,

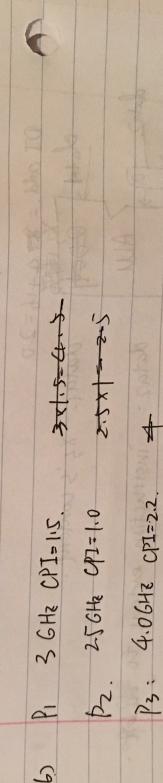
then add R₁ + R₂,

wire = | 2. We need put an ~~or~~ immediate.



b).

Registers from out gate have WIA of earlier stages and so it's hard to



c).

P₁: 3 GHz CPI=1.5. 3+1.5=4.5

P₂: 2.5 GHz CPI=1.0 2.5+1=3.5

P₃: 4.0 GHz CPI=2.2. 4+2.2=6.2

CPI: Cycles Per Instruction.

clock period: $\frac{1}{\text{clock frequency}} = \frac{1}{\text{GHz}}$

TPC = Instructions per cycle.

$\therefore \text{TPC} \times \text{Frequency} = \text{Throughput}$.

$$\therefore \frac{1}{1.5} \times 3 = 2. = P_1$$

$$\frac{1}{1.0} \times 2.5 = 2.5 \quad P_2 \text{ is best}$$

$$\frac{1}{4.0} \times 4 = < 2. \quad P_3 \text{ is worst}$$

- b) if the processors execute a program in 10 seconds each.
find the # of cycles, and # of instructions.

$$\text{Instruct. P1: } \frac{10^{10}}{0.5} = 2 \times 10^{10}.$$

$$\text{Cycles: } P_1: 2 \times 10^{10} \times 1.5 = 3 \times 10^{10}$$

$$P_2: 2.5 \times 10^{10} = 2.5 \times 10^{10}$$

$$P_3: 1.8 \times 10^0 \times 2.2 = 3.99 \times 10^0.$$

7. performance:

stur x_2 ($x_3 + 20$)

2. Single Cycle Opn.
a) use Datamemory : $ldur - 25\%$ $stur = 10\%$

- total = 35%

b). use Instruction memory. [10%]

c) use sign extend? 100%
?) b

- b) load instruction. (ALU₃₂ = 0₁₆)
stir instruction Carbage.

o) cb2., b

~~00000000000000000000000000000000~~ - 18888888888888888888888888888888 - NKA

00000 0003 E 0054100

$$PC = 1 \text{ C} + \varphi$$

PT address $R_n = pg_3$ $Rt = pg_2$

$$\text{Eq. 2: } \frac{x_1 + x_2}{2} = \frac{(x_3 + 4)(b)}{2}$$

The diagram illustrates a memory write operation. It shows a bus with four wires: Address, Read data, Write enable, and Write data. The Address wire is connected to a box labeled 'Mem Write'. The Read data wire is connected to a box labeled 'Aux'. The Write enable wire is connected to a box labeled 'W Reg'. The Write data wire is connected to a box labeled 'Data'.

Kart Mem.

nature the input values for ALL and the two add counts

3. $\text{CH}_3\text{CH}_2\text{OH}$ (propan-1-ol) has three carbon atoms.

data2: instruction extent to 64 bit.

two odd units:

② DC current



→ $\frac{1}{2} \times 3 \times 3 = 4.5$

eggi: X3's width

92% X_2 's content

$\chi_2 =$

