# SOFT400127: Computer Organization and Architecture 2022-Fall

# Homework- **7** Solutions

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**Honor Code: I promise that I finished the homework solutions on my own without copying other people's work.**

## Input/Output

**1.**

Answer: $\dfrac{9600 \text{ bps}}{8 \text{ bpB} \cdot 1 \text{ BpI} \cdot 1 \text{ MIPS}} = 0.12\%$

**2.**

Answer: Maximum rate $= 800 + 800 + 2 \times 6.6 + 2 \times 1.2 + 10 \times 1 = 1625.6$ KB/s

**3.**

Yes.

Maximum frequency of the corresponding interrupt handler is
$\dfrac{1}{40\ \mu\text{s}} = 2.5 \times 10^4$ times per second $>$ 4000 times per second

**4.**

Assume that a disk uses 32-bit word as the data transmission unit with transferring rate of 1MB/s, and CPU clock cycles is 50MHz. Please answer the following questions:

**a.**

$100 \times \frac{1 \text{ MB/s}}{32 \text{ bit}} = 25$ MHz, ratio $= \frac{25}{50} = 50\%$

**b.**

$80 \times \frac{1 \text{ MB/s}}{32 \text{ bit}} = 20$ MHz, ratio $= \frac{20}{50} = 40\%$

**c.**

$(1000 + 500) \times \frac{1 \text{ MB/s}}{4 \text{ KB}} = 0.375$ MHz, ratio $= \frac{0.375}{50} = 0.75\%$

## Other things

- LaTeX code refer to these things and was complied on texlive2020.
  - UCB-CS70's given homework template.
  - A free website useful to edit LaTeX formula code.
- Some context refer to Professor Li. 's PPT.

Thanks for your correcting and grading :).