

Homework 3

Solving Recurrence Equation in MIPS

Recurrence Equation

$$T(n) = \begin{cases} 2 * T\left(\frac{n}{2}\right) + c * n, & \text{if } n \geq 2 \\ c, & \text{otherwise} \end{cases}$$

Input / Output Format

- Input: $\langle n \rangle \langle " , " \rangle \langle c \rangle$ in file “input.txt”
 - Both n , c are in 2-digit (integer)
 - $n \in \{2, 4, 8, 16, 32, 64\}$
 - $1 \leq c \leq 20$
- Output: $\langle \text{result} \rangle$ in file “output.txt”
 - Use itoa function in HW2
 - result is 4-digit
- E.g.
 - Input: “04,03” \Rightarrow output: “0036”
 - Input: “32,15” \Rightarrow output: “2880”

Hints

- Refer to the slide ISA(II) – Procedure calling convention
- Refer to Fibonacci
 - Page 36-38 of slides “SPIM tutorial”

$$\text{fib}(n) = \begin{cases} \text{fib}(n-1) + \text{fib}(n-2), & \text{if } n \geq 2 \\ n, & \text{otherwise} \end{cases}$$

Requirements

- Right I/O format
 - Correctness of your program would be judged by output file
- Implement in recursive function for full-credit
 - I.e. equation in page 2
 - Or your credits would be 40% off

Submission

- 2018/10/30 midnight (23:59:59)
- 10% off per day for late submission
- You should pack the folder in a .zip file
 - Whatever.zip
 - hw3_<studentID>
 - hw3_<studentID>.s
 - readme.txt
- Please upload to NTU COOL this time