

Homework 3

[Computer Architecture I ShanghaiTech University](#)
[HW2](#) HW3

Instructions

In this homework you will write a program to generate a preorder traversal of a binary search tree from given inorder and postorder traversals using RISC-V. Here is a [very simple template](#).

Input

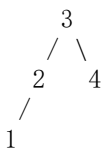
The input is given by one integer and two array of integers in form of data in data section,

```
input_size:
    .word    4
input_inorder:
    .word    1
    .word    2
    .word    3
    .word    4
input_postorder:
    .word    1
    .word    2
    .word    4
    .word    3
```

or in equivalent form of global variable in c language.

```
int input_size = 4;
int input_inorder[] = {1, 2, 3, 4};
int input_postorder[] = {1, 2, 4, 3};
```

`input_size` is the size of both `input_inorder` and `input_postorder`, which contain inorder and postorder of a same tree respectively. For example, the previous input specify the following tree.



The numbers representing nodes are **not** necessarily continuous or positive.

Output

The output will consist of one single line with `input_size` number of integers representing the preorder traversal of the binary search tree.

For example the output of the program given the input above would be

3 2 1 4

Notice that each number is separated by exactly one space, and at the end of the line, there are exactly one space and one line break (' \n'). Any output in other format will be rejected.

Some advice

- learn recursive functions
- learn save and Load from Memory using RISC-V
- it is helpful writing in C first
- write comments

Execution

We will test your program using RISC-V emulator [venus](#). You probably want to read [this](#) before you started.

Submission

- You need to follow the [RISC-V integer register convention](#) and the [RISC-V integer calling convention](#).
- You need to have **meaningful** comments not less than 50% of the total lines of code you wrote. A comment is defined by a sentence followed by #.
- You should submit exactly **one file**, hw3. s. Any other file found will result in a score of zero. Submission containing any of `input_size`, `input_inorder` or `input_postorder` label will be rejected.

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