

Online on xv6 - System Call

Section: A2

Time: 30 minutes

Our favourite os xv6 doesn't have any built-in pseudo-random number generator. In this online, you will add a simple mechanism for generating random numbers and finally, add support for selecting a random element from an array similar to the Python function `random.choice()`.

Formally add 2 **system calls**.

1. `setSeed(int)` : sets the seed for a pseudo-random number generator.
2. `choice(struct array *)` : returns the randomly selected number from the array and updates the internal state. The structure *array* is defined as follows:

```
struct array{
    int len; // length of array
    int array[15]; //array elements
};
```

For ease of implementation, we will use a simple policy where calling choice will first increase the seed by 1 and the selected index of the input array will be `seed % array->len`.

You also need to add 2 user commands.

3. `seed n`
4. `choice len [the_array elements]`

See the sample I/O for clarification:

```
$ seed 2
The seed has been set to 2
$ choice 3 1 2 3
Randomly selected element is 1
$ choice 5 10 20 30 40 50
Randomly selected element is 50
$ seed 12
The seed has been set to 12
$ choice 3 6 7 8
Randomly selected element is 7
$ choice 1 5
Randomly selected element is 5
```

Submission:

```
git add --all
git diff HEAD > ../{studentID}.patch
```