

CSE12 - Lecture 23 - C00

Monday, November 21, 2022 11:00 AM

PA8 due tomorrow

PA5 Late/Resubmit due tomorrow

Holiday → Thurs/Friday

PA7/PA8 Late/Resubmit → due Friday of Week 10

Create a RandomStream class that generates random numbers in an enhanced for loop..

Generating a random number:

From java.util.*

```
class Random
    public int nextInt(int bound)

    Returns a pseudorandom, uniformly distributed int value between 0 (inclusive) and the specified value
    (exclusive), drawn from this random number generator's sequence.
```

```
Random random;
int value = random.nextInt(100); //random number between 0 and 99
```

Note: always use a field, never create a new one over and over again in a loop.

```
RandomStream r = new RandomStream(10, 100);
for (Integer i : r) {
    System.out.println(i);
}
```

```
class RandomStream implements Iterable<Integer> {
    int bound;
    int size;
    Random number;

    public RandomStream(int size, int bound) {
        this.size = size;
        this.bound = bound;
        number = new Random();
    }

    class RandomIterator implements Iterator<Integer> {
        int current = 0;

        public boolean hasNext() {
            return this.current < size;
        }

        public Integer next() {
            int value = number.nextInt(bound);
            this.current += 1;
            return value;
        }
    }

    public Iterator<Integer> iterator() {
        return new RandomIterator();
    }
}
```

55

75

61

0

1

99

→ bound - 1

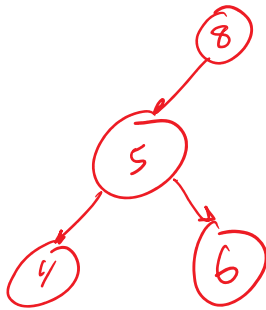
7

10

11

30

How would we make a BST iterator?



pre-traversal
post-
in-order

Iterator class

↳ save state

↳ create an arraylist

↳ fill ArrayList with an in-order traversal

↳ iterator → next/hasNext same as ArrayList

How would we make a Heap iterator?

① copy the heap into the iterator

↳ use the poll() of the copy in next

↳ all elements heap order

② copy the array into the iterator

↳ sort array in heap order

↳ in next(), just use the array
like ArrayList version the iterator