CSE12 - Lecture 23 - A00

Monday, November 21, 2022 8:00 AM

PA8 due tomorrow
PA5 Late/Resubmit due tomorrow
Holiday → Thur/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
```

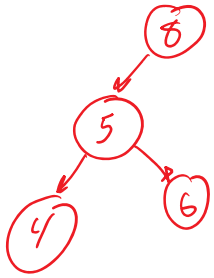
Note: always use a field, never create a new one over and over again in a loop.

```
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 array list
↳ fill AL w/ an in-order traversal
↳ iterator → next/hasNext same as array list

How would we make a Heap iterator?

(i) copy the heap into the iterator
↳ use the poll() of the copy in next
↳ all elements heap order

(ii) copy the array into the iterator
↳ sort in heap order
↳ in next(), just use the array like array list version of iterator