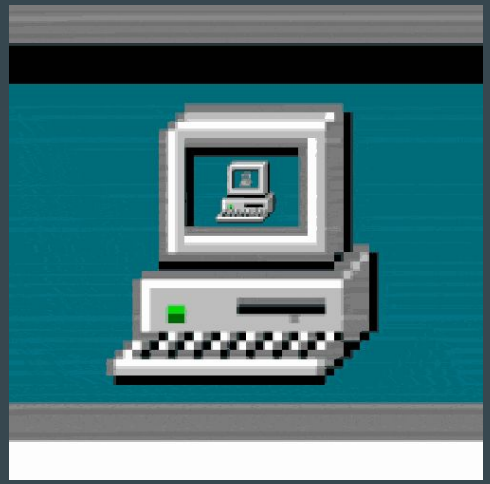
AP Computer Science A

UNIT 10 Recursion
TOPIC 1 Recursion Applications (Day 4)



AP Classroom: 10.1

Class 128
4-24-23
Mr. Miller
mmiller25@schools.nyc.gov

Do Now!

Consider the following two code segments. Assume that the `int` variables `m` and `n` have been properly declared and initialized and are both greater than `0`.

I.
```
for (int i = 0; i < m * n; i++)
{
   System.out.print("A");
}
```

II.
```
for (int j = 1; j <= m; j++)
{
   for (int k = 1; k < n; k++)
   {
      System.out.print("B");
   }
}
```

(A) `"A"` is printed `m` fewer times than `"B"`.

(B) `"A"` is printed `n` fewer times than `"B"`.

(C) `"A"` is printed `m` more times than `"B"`.

(D) `"A"` is printed `n` more times than `"B"`.

(E) `"A"` and `"B"` are printed the same number of times.

Assume that the initial values of `m` and `n` are the same in code segment I as they are in code segment II. Which of the following correctly compares the number of times that `"A"` and `"B"` are printed when each code segment is executed?

Do Now!

Consider the following two code segments. Assume that the `int` variables `m` and `n` have been properly declared and initialized and are both greater than `0`.

I.
```
for (int i = 0; i < m * n; i++)
{
   System.out.print("A");
}
```

II.
```
for (int j = 1; j <= m; j++)
{
   for (int k = 1; k < n; k++)
   {
      System.out.print("B");
   }
}
```

(A) `"A"` is printed `m` fewer times than `"B"`.

(B) `"A"` is printed `n` fewer times than `"B"`.

(C) `"A"` is printed `m` more times than `"B"`.

(D) `"A"` is printed `n` more times than `"B"`.

(E) `"A"` and `"B"` are printed the same number of times.

Assume that the initial values of `m` and `n` are the same in code segment I as they are in code segment II. Which of the following correctly compares the number of times that `"A"` and `"B"` are printed when each code segment is executed?

Do Now!

Consider the following two code segments. Assume that the `int` variables `m` and `n` have been properly declared and initialized and are both greater than `0`.

I.
```
for (int i = 0; i < m * n; i++)
{
   System.out.print("A");
}
```

II.
```
for (int j = 1; j <= m; j++)
{
   for (int k = 1; k < n; k++)
   {
      System.out.print("B");
   }
}
```

Assume that the initial values of `m` and `n` are the same in code segment I as they are in code segment II. Which of the following correctly compares the number of times that `"A"` and `"B"` are printed when each code segment is executed?

COME UP WITH A TEST CASE:
pick m and n to be, say m = 6, n = 5

for loop in segment I iterates 6 * 5 = 30 times, as i increments from 0 to 29

so A gets printed 30 times

outer for loop in segment II iterates 6 times, as j increments from 1 to 6
inner for loop in segment II iterates 4 times, as k increments from 1 to 4

so B gets printed 6 * 4 = 24 times, which is m (6) fewer times than A gets printed

AP CSA Tutoring

Come by Mondays and Wednesdays after 10th period in 1E10, starting today

Mr. Miller is holding AP CSA tutoring -- bring any questions you want to talk about or work on! Or just use the lab to self-study or work on your own stuff.

Agenda Today

1. U10T1 Lab #4: Recursion Applications
    - Partner Lab using the U10T1 Lab 4 shared Replit
    - **Hand write all stack tables!**
2. Time to work on the Practice Exam MCQ + FRQ (due Monday)
3. U10T1 Extension (+25 EC, optional)