

Thursday, March 7, 2019

- No Journal entry, but you may want your journal to take notes
- Test Review
 - MC Questions
 - General Concept Review
- Work time on practice create task

Mock Exam
3/14
NS + class
2 hours

Objectives

Content: I will review general ideas from the chapter through **practice multiple choice** and **discussion**.

Social: I will allow others to listen and only add to the conversation, not compete.

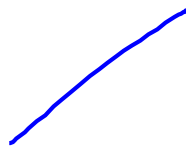
Language: I will process vocabulary that I am unsure about both in **writing** and in **class discussion**.

A programmer completes the user manual for a video game she has developed and realizes she has reversed the roles of goats and sheep throughout the text. Consider the programmer's goal of changing all occurrences of "goats" to "sheep" and all occurrences of "sheep" to "goats." The programmer will use the fact that the word "foxes" does not appear anywhere in the original text.

Which of the following algorithms can be used to accomplish the programmer's goal?

- (A) First, change all occurrences of "goats" to "sheep."
Then, change all occurrences of "sheep" to "goats."
- (B) First, change all occurrences of "goats" to "sheep."
Then, change all occurrences of "sheep" to "goats."
Last, change all occurrences of "foxes" to "sheep."
- (C) First, change all occurrences of "goats" to "foxes."
Then, change all occurrences of "sheep" to "goats."
Last, change all occurrences of "foxes" to "sheep."
- (D) First, change all occurrences of "goats" to "foxes."
Then, change all occurrences of "foxes" to "sheep."
Last, change all occurrences of "sheep" to "goats."

temp



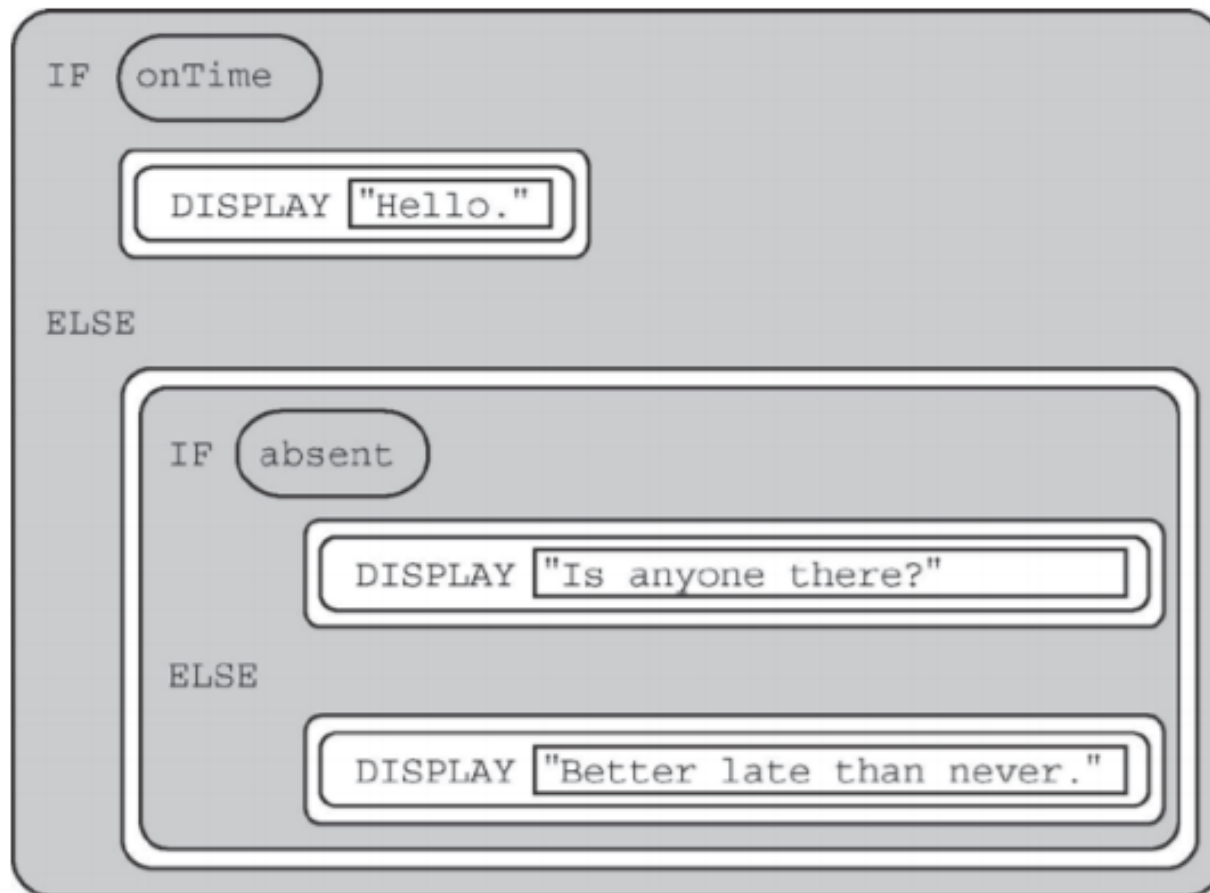
9. The table below shows the time a computer system takes to complete a specified task on the customer data of different-sized companies.

Task	Small Company (approximately 100 customers)	Medium Company (approximately 1,000 customers)	Large Company (approximately 10,000 customers)
Backing up data	2 hours	20 hours	200 hours
Deleting entries from data	100 hours	200 hours	300 hours
Searching through data	250 hours	300 hours	350 hours
Sorting data	0.01 hour	1 hour	100 hours

Based on the information in the table, which of the following tasks is likely to take the longest amount of time when scaled up for a very large company of approximately 100,000 customers?

- (A) Backing up data
- (B) Deleting entries from data
- (C) Searching through data
- (D) Sorting data

10. Consider the code segment below.



If the variables `onTime` and `absent` both have the value `false`, what is displayed as a result of running the code segment?

- (A) Is anyone there?
- (B) Better late than never.
- (C) Hello. Is anyone there?
- (D) Hello. Better late than never.

11. Under which of the following conditions is it most beneficial to use a heuristic approach to solve a problem?
- (A) When the problem can be solved in a reasonable time and an approximate solution is acceptable
 - (B) When the problem can be solved in a reasonable time and an exact solution is needed
 - (C) When the problem cannot be solved in a reasonable time and an approximate solution is acceptable
 - (D) When the problem cannot be solved in a reasonable time and an exact solution is needed

13. There are 32 students standing in a classroom. Two different algorithms are given for finding the average height of the students.

Algorithm A

Step 1: All students stand.

Step 2: A randomly selected student writes his or her height on a card and is seated.

Step 3: A randomly selected standing student adds his or her height to the value on the card, records the new value on the card, and is seated. The previous value on the card is erased.

Step 4: Repeat step 3 until no students remain standing.

Step 5: The sum on the card is divided by 32. The result is given to the teacher.

Algorithm B

Step 1: All students stand.

Step 2: Each student is given a card. Each student writes his or her height on the card.

Step 3: Standing students form random pairs at the same time. Each pair adds the numbers written on their cards and writes the result on one student's card; the other student is seated. The previous value on the card is erased.

Step 4: Repeat step 3 until one student remains standing.

Step 5: The sum on the last student's card is divided by 32. The result is given to the teacher.

Which of the following statements is true?

- (A) Algorithm A always calculates the correct average, but Algorithm B does not.
- (B) Algorithm B always calculates the correct average, but Algorithm A does not.
- (C) Both Algorithm A and Algorithm B always calculate the correct average.
- (D) Neither Algorithm A nor Algorithm B calculates the correct average.

15. Biologists often attach tracking collars to wild animals. For each animal, the following geolocation data is collected at frequent intervals.
- The time
 - The date
 - The location of the animal

Which of the following questions about a particular animal could NOT be answered using only the data collected from the tracking collars?

- (A) Approximately how many miles did the animal travel in one week?
- (B) Does the animal travel in groups with other tracked animals?
- (C) Do the movement patterns of the animal vary according to the weather?
- (D) In what geographic locations does the animal typically travel?

16. A summer camp offers a morning session and an afternoon session. The list `morningList` contains the names of all children attending the morning session, and the list `afternoonList` contains the names of all children attending the afternoon session.

Only children who attend both sessions eat lunch at the camp. The camp director wants to create `lunchList`, which will contain the names of children attending both sessions.

The following code segment is intended to create `lunchList`, which is initially empty. It uses the procedure `IsFound (list, name)`, which returns `true` if `name` is found in `list` and returns `false` otherwise.

```
FOR EACH child IN morningList
{
    <MISSING CODE>
}
```

Which of the following could replace `<MISSING CODE>` so that the code segment works as intended?

(A) `IF (IsFound (afternoonList, child))`
{
 `APPEND (lunchList, child)`
}

~~(B) `IF (IsFound (lunchList, child))`~~
{
 `APPEND (afternoonList, child)`
}

~~(C) `IF (IsFound (morningList, child))`~~
{
 `APPEND (lunchList, child)`
}

(D) `IF ((IsFound (morningList, child)) OR (IsFound (afternoonList, child)))`
{
 `APPEND (lunchList, child)`
}

21. Which of the following algorithms require both selection and iteration?

if...

repeat

Select two answers.

~~(A)~~ An algorithm that, given two integers, displays the greater of the two integers

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I*

(B) An algorithm that, given a list of integers, displays the number of even integers in the list

(C) An algorithm that, given a list of integers, displays only the negative integers in the list

I

(D) An algorithm that, given a list of integers, displays the sum of the integers in the list

*I
no S*

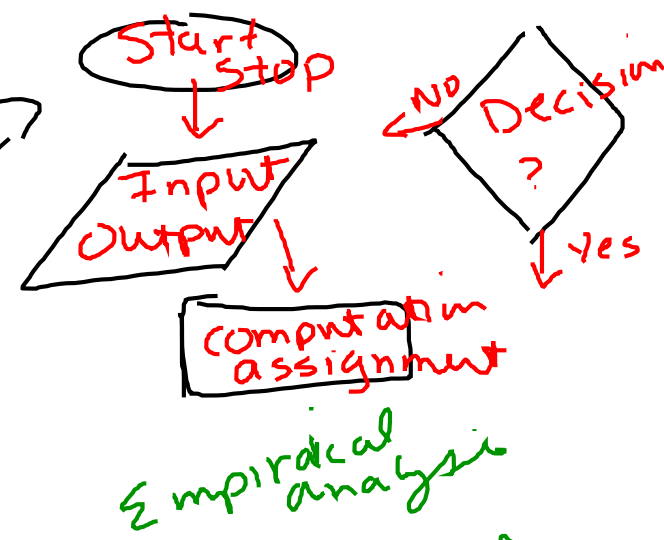
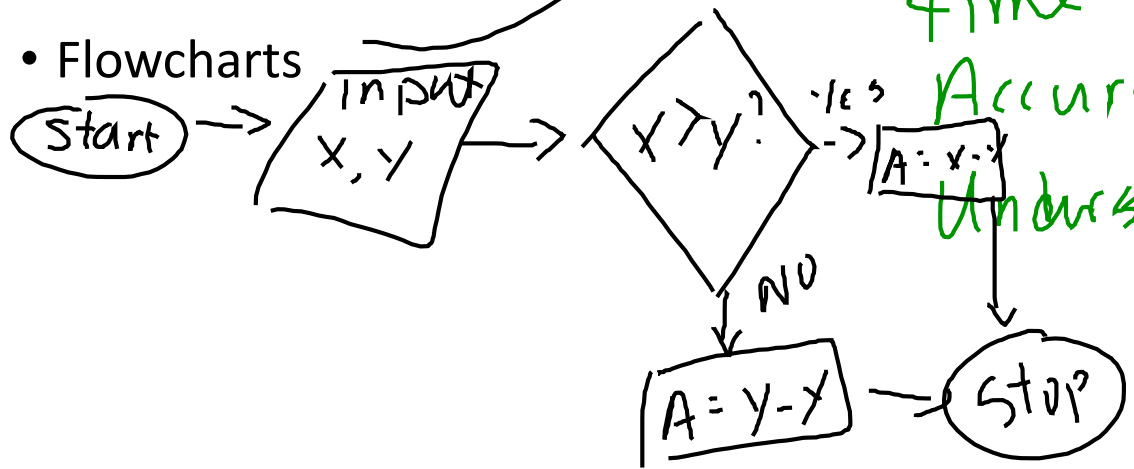
Other Items to Think About

- Searches: **Binary** ≠ **Linear**
* must be sorted
- Sorts: **Select** - S **merge** - F
Bubble - S **Heap** - F
Quick - F **Shell** - F
Insertion - S

• Determining if an algorithm is good

Big (O) - steps in process
time = scalability

• Flowcharts



Empirical analysis

Accuracy
Understandable