AP Computer Science Principles
Ticket Out the Door
Set 34: Traversing Arrays

Name _____ Period _____

Skill 34.01 Exercise 1

The image below represents an array of String type variables called houses.

(a) Write code that could be used to declare and initialize the array, but does not populate it.

(b) Write the address of each house on the roof.

(c)   Write code that could be used to assign the value of house 3 to "Wilma", and the value of house 6 to "Barney", and the value of house 2 to "Homer"

(d) What is the value of the house with address 4?

(e) What is the length of the array?

(f) What is the index of the last element?

Skill 34.01 Exercise 2

A new neighbor named "Wirt" has moved into the neighborhood from the previous exercise. You have no idea which house he lives in.

(a) Write a for-each loop to iterate over all the houses in the neighborhood and locate "Wirt".	(b) Write a while loop to iterate over all the houses in the neighborhood and locate "Wirt".

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Skill 34.02 Exercise 1
The image below represents an array of String type variables called houses. The value associated with each house corresponds to the name of the person who lives there.
(a)   Write the address of each house on the roof.
(b)   Write a function called *swap* that accepts two integers as parameters, then swaps the people at those locations in the houses array.

(c)   Write a function called *minToFront* that accepts a variable, *startSearch*, as a parameter. In the body of the function write a loop that starts at *startSearch* then locates the person whose name comes first in the alphabet starting from this position. Once you have located this person, call the function above to swap that person with the person at the location specified by *startSearch*.   Below is an illustration how this function should work,
 	
 var houses = [kyle, marvin, bugs, bart];
 minToFront(1);
 console.log(houses);//prints kyle, bart, bugs, marvin

(d)   Write a function that sorts the people in the houses array. Do this by writing a loop that iterates over the houses array. Then at each location call the function you wrote in part (c).

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(e) Write a function to check if the people in the houses array are in alphabetical order. If the people are in order, your function should return true, otherwise it should return false.

Skill 34.03 Exercise 1

Refer to the code below

```
var nums = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10];
function doSomething(j){

    while(j != nums.length){
        console.log(nums[j]);
        j+=2;
    }
}
```

For each call to doSomething, indicate what is printed

(a) doSomething(3);

(b) doSomething(2);

(c) doSomething(1);

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Skill 34.04 Exercise 1

A student is creating a procedure to determine whether the weather for a particular month was considered very hot. The procedure takes as input a list containing daily high temperatures for a particular month. The procedure is intended to return true if the daily high temperature was at least 90 degrees for a majority of days in the month and return false otherwise.

```
PROCEDURE IsHot (temperatureList)
{
    total ← 0
    counter ← 0
    FOR EACH temperature IN temperatureList
    {
        IF ( < MISSING CODE A >  )
        {
            counter ← counter + 1
        }
        total ← total + 1
    }
    RETURN ( < MISSING CODE B > )
}
```
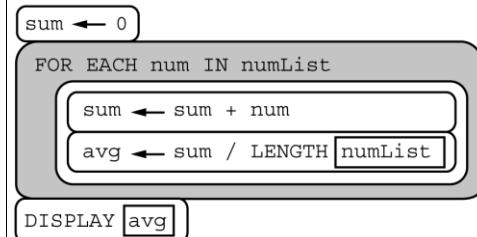

(a) Which of the following can be used to replace <MISSING CODE A> so that the procedure works as intended?

(b) Which of the following can be used to replace <MISSING CODE A> so that the procedure works as intended?

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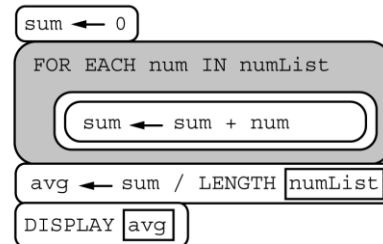Name _____ Period _____

Skill 34.04 Exercise 2

The two code segments below are each intended to display the average of the numbers in the list numList. Assume that numList contains more than one value.

Program I:

```
sum ← 0
FOR EACH num IN numList
    sum ← sum + num
    avg ← sum / LENGTH numList
DISPLAY avg
```

Program II:

```
sum ← 0
FOR EACH num IN numList
    sum ← sum + num
avg ← sum / LENGTH numList
DISPLAY avg
```
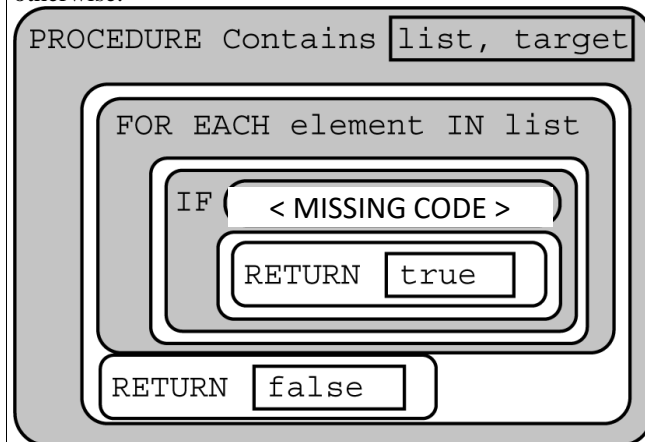
Which of the following is true?

(a) Code segment I displays the correct average, but code segment II does not.
(b) Code segment II displays the correct average, but code segment I does not.
(c) Both code segments display the correct average, but code segment I requires more arithmetic operations than code segment II.
(d) Both code segments display the correct average, but code segment II requires more arithmetic operations than code segment I.

Skill 34.04 Exercise 3

The procedure below searches for the value target in list. It returns true if target is found and returns false otherwise.

```
PROCEDURE Contains list, target
    FOR EACH element IN list
        IF ( < MISSING CODE > )
            RETURN true
    RETURN false
```

(a) What should replace < MISSING CODE > for the procedure to work as intended?

(b) Which of the following are true statements about the procedure?

I. It implements a binary search.
II. It implements a linear search.
III. It only works as intended when list is sorted.