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DATE: 11/21/2023

ALGORITHM EXERCISE # 7

LE 7.11: Largest and Smallest

main

START

1. INITIALIZE numbers to 10, numbers[10]
2. INITIALIZE limit to 10
3. CALL module, readNumbers(numbers, limit)
4. CALL module, largestNumber = findLargestNumber(numbers, limit)
5. CALL module, smallestNumber = findsmallestNumber(numbers, limit)
6. CALL module, displayInputtedNumbers(numbers, limit)
7. DISPLAY the smallest number
8. DISPLAY the largest number

END

readNumbers(int numbers[10], int limit)

START

1. DISPLAY ENTER 10 NUMBERS!
2. FOR i = 0 to limit by 1 THEN
 - a. READ a number, numbers[i]
3. ENDFOR

RETURN main

findLargestNumber(int numbers[10], int limit)

START

1. INITIALIZE largest = numbers[0]
2. FOR i = 0 to limit by 1 THEN
 - a. IF(numbers[i] > largest) THEN
 - i. SET largest = numbers[i]
 - b. ENDIF
3. ENDFOR

RETURN largest



findSmallestNumber(int numbers[10], int limit)

START

1. INITIALIZE smallest = numbers[0]
2. FOR i = 0 to limit by 1 THEN
 - a. IF(numbers[i] < smallest) THEN
 - i. SET smallest = numbers[i]
 - b. ENDIF
3. ENDFOR

RETURN smallest

displayInputtedNumbers(int numbers[10], int limit)

START

1. DISPLAY the numbers you entered are:
2. FOR i = 0 to limit by 1 THEN
 - a. DISPLAY numbers[i]
3. ENDFOR
4. DISPLAY newline

RETURN main



LE 7.12: Vowels and Consonants in String

main

START

1. INITIALIZE char str[256]
2. INITIALIZE vowelCount, consonantCount
3. PROMPT and READ a string
4. CALL module, vowelCount = countVowels(str)
5. CALL module, consonantCount = countConsonants(str)
6. DISPLAY There are _ vowels and _ consonants in the string, vowelCount, consonantCount

END

isVowel(char ch)

START

RETURN (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u' ||
ch == 'A' || ch == 'E' || ch == 'I' || ch == 'O' || ch == 'U')

countVowels (char str[256])

START

1. INITIALIZE vowelCount = 0
2. FOR i = 0 to str[i] by 1 THEN
 - a. IF(CALL module, isVowel(str[i])) THEN
 - i. INCREMENT vowelCount by 1
 - b. ENDIF
3. ENDFOR

RETURN vowelCount

countConsonants (char str[256])

START

1. INITIALIZE consonantCount = 0
2. FOR i = 0 to str[i] by 1 THEN
 - a. IF(str[i] >= 65 && str[i] <= 90 || str[i] >= 97 && str[i] <= 122) THEN
 - i. IF(!CALL module, isVowel(str[i])) THEN
 1. INCREMENT consonantCount by 1
 - ii. ENDIF
 - b. ENDIF
3. ENDFOR

RETURN consonantCount



LE 7.13: Longest String

main

START

1. INITIALIZE char str[5][256]
2. INITIALIZE numStrings = 5
3. CALL module, readStrings(str, numStrings)
4. CALL module, longestStringIndex = findLongestString(str, numStrings)
5. DISPLAY The longest string is:
6. PUTS (str[longestStringIndex])

END

readStrings(char str[][256], int numStrings)

START

1. FOR i = 0 to numStrings by 1 THEN
 - a. READ a string, str[i]
2. ENDFOR

RETURN main

findLongestString(char str[][256], int numStrings)

START

1. INITIALIZE longestStringLength = 0
2. INITIALIZE longestStringIndex = 0
3. FOR i = 0 to numStrings by 1 THEN
 - a. INITIALIZE length = strlen(str[i])
 - b. IF(length > longestStringLength) THEN
 - i. SET longestStringLength = length
 - ii. SET longestStringIndex = i
 - c. ENDIF
4. ENDFOR

RETURN longestStringIndex