Homework # 5

01286120 Elementary Systems Programming

Software Engineering Program

Faculty of Engineering, KMITL

By

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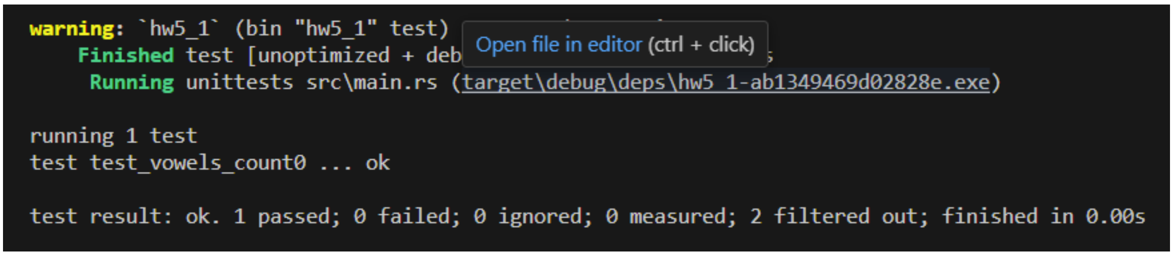
1. Write a function that count the vowel characters in the string

1.1) Write the function count_vowels using ordinary loop. Add more tests to the unit test for the function below to cover use cases.

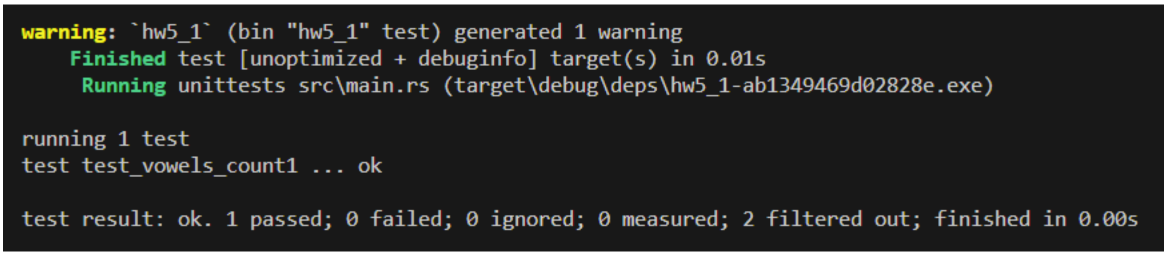
(code in attached file)



```
warning: `hw5_1` (bin "hw5_1" test)
    Finished test [unoptimized + deb                                   ;
     Running unittests src\main.rs (target\debug\deps\hw5_1-ab1349469d02828e.exe)

running 1 test
test test_vowels_count0 ... ok

test result: ok. 1 passed; 0 failed; 0 ignored; 0 measured; 2 filtered out; finished in 0.00s
```

1.2) Rewrite the function count_vowels again (as count_vowels_r), now use recursion instead of ordinary loop in 1.1).

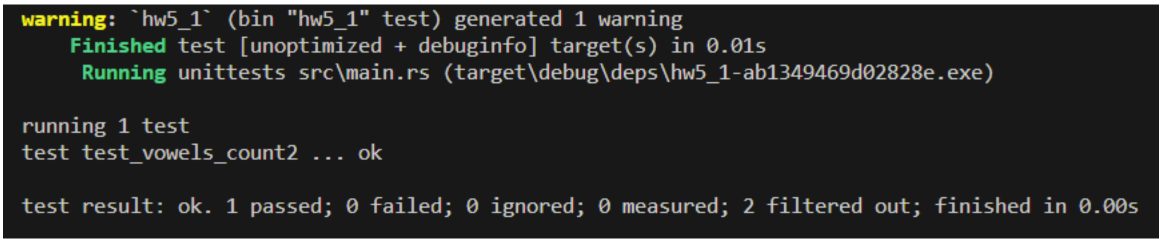
(code in attached file)



```
warning: `hw5_1` (bin "hw5_1" test) generated 1 warning
    Finished test [unoptimized + debuginfo] target(s) in 0.01s
     Running unittests src\main.rs (target\debug\deps\hw5_1-ab1349469d02828e.exe)

running 1 test
test test_vowels_count1 ... ok

test result: ok. 1 passed; 0 failed; 0 ignored; 0 measured; 2 filtered out; finished in 0.00s
```

1.3) Write the function count_vowels_v2 using ordinary loop. Add more tests to the unit test for the function below to cover use cases.

(code in attached file)

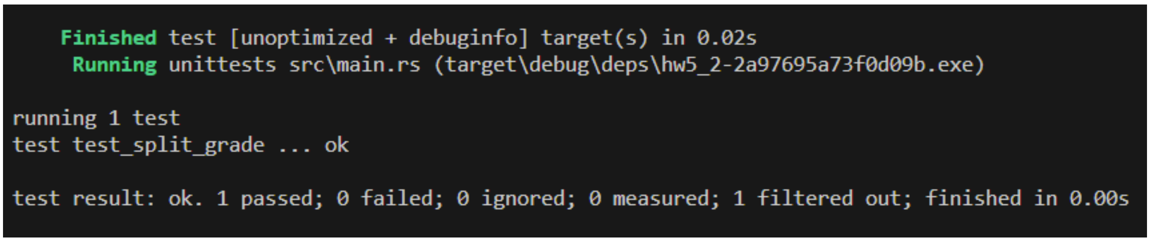


```
warning: `hw5_1` (bin "hw5_1" test) generated 1 warning
    Finished test [unoptimized + debuginfo] target(s) in 0.01s
     Running unittests src\main.rs (target\debug\deps\hw5_1-ab1349469d02828e.exe)

running 1 test
test test_vowels_count2 ... ok

test result: ok. 1 passed; 0 failed; 0 ignored; 0 measured; 2 filtered out; finished in 0.00s
```

2. Write a function to split pass/fail grades from scores

2.1) Write the function split_grades to create a list of the grades above "D" and a list of the grades "D" and "F" . For example, split_grades(["B", "F", "A+", "D", "C"]) would gives (["B", "A+", "C"], ["F", "D"]) as a result. Add a unit test for the function to cover use cases.

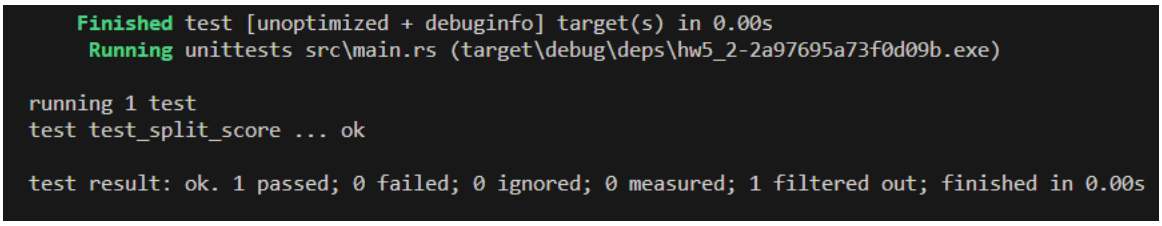
(code in attached file)



```
    Finished test [unoptimized + debuginfo] target(s) in 0.02s
     Running unittests src\main.rs (target\debug\deps\hw5_2-2a97695a73f0d09b.exe)

running 1 test
test test_split_grade ... ok

test result: ok. 1 passed; 0 failed; 0 ignored; 0 measured; 1 filtered out; finished in 0.00s
```

2.2) Using the same criteria as in exercise 1.1) in homework #3, write the function split_scores to create a list of (grade, score) that contains the grades above "D" and a list of (grade, score) that contains the grades "D" and "F" from a list of scores using ordinary loop. For example, split_scores([75, 42, 98, 54, 63]) would gives ([("B", 75), ("A+", 98), ("C", 63)], [("F", 42), ("D", 54)]) as a result. Add a unit test for the function to cover use cases.

(code in attached file)

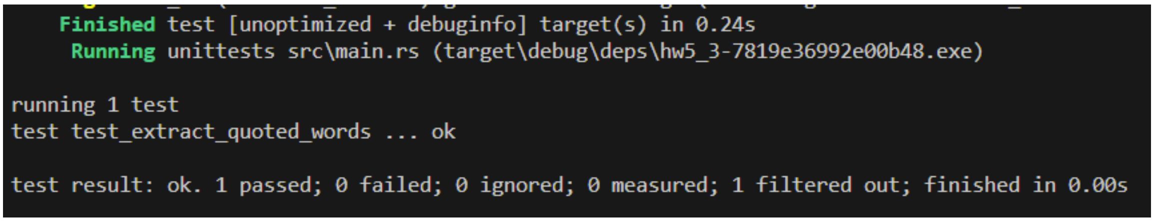


```
    Finished test [unoptimized + debuginfo] target(s) in 0.00s
     Running unittests src\main.rs (target\debug\deps\hw5_2-2a97695a73f0d09b.exe)

running 1 test
test test_split_score ... ok

test result: ok. 1 passed; 0 failed; 0 ignored; 0 measured; 1 filtered out; finished in 0.00s
```

3. Write a function that extract quoted words from a string

3.1) Write the function extract_quoted_words to filter out the unquoted words from the text and remove the quote from each word using ordinary loop. Add more tests to the unit test for the function below to cover use cases.

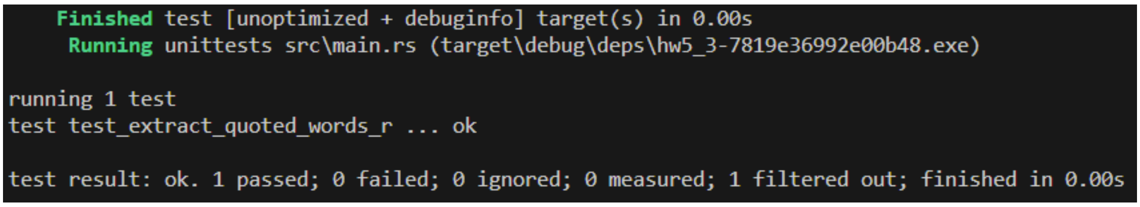
(code in attached file)



```
    Finished test [unoptimized + debuginfo] target(s) in 0.24s
     Running unittests src\main.rs (target\debug\deps\hw5_3-7819e36992e00b48.exe)

running 1 test
test test_extract_quoted_words ... ok

test result: ok. 1 passed; 0 failed; 0 ignored; 0 measured; 1 filtered out; finished in 0.00s
```

3.2) Rewrite the function extract_quoted_words again (as extract_quoted_words_r), now use recursion instead of ordinary loop in 3.1).

(code in attached file)



```
    Finished test [unoptimized + debuginfo] target(s) in 0.00s
     Running unittests src\main.rs (target\debug\deps\hw5_3-7819e36992e00b48.exe)

running 1 test
test test_extract_quoted_words_r ... ok

test result: ok. 1 passed; 0 failed; 0 ignored; 0 measured; 1 filtered out; finished in 0.00s
```