**Homework # 3**

**01286120 Elementary Systems Programming**

**Software Engineering Program**

**Faculty of Engineering, KMITL**

By

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## 1. Write a program to determine the grade from the score

1.1) Write a program to determine the grade from the score using the criteria as follows:

(Code is in attached file)

```
phatt@Macbook_Pro MINGW64 ~/OneDrive/Desktop/Code Files/Rust/Lab_3/HW_Rust_3/q1_determine_grade/src/bin (master)
$ cargo run 96
    Finished dev [unoptimized + debuginfo] target(s) in 0.01s
     Running `C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q1_determine_grade\target\debug\q1_determine_grade.exe 96`
Excellent A+
```

```
phatt@Macbook_Pro MINGW64 ~/OneDrive/Desktop/Code Files/Rust/Lab_3/HW_Rust_3/q1_determine_grade/src/bin (master)
$ cargo run
    Finished dev [unoptimized + debuginfo] target(s) in 0.01s
     Running `C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q1_determine_grade\target\debug\q1_determine_grade.exe`
Invalid Input
```

```
phatt@Macbook_Pro MINGW64 ~/OneDrive/Desktop/Code Files/Rust/Lab_3/HW_Rust_3/q1_determine_grade/src/bin (master)
$ cargo run bro
    Finished dev [unoptimized + debuginfo] target(s) in 0.01s
     Running `C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q1_determine_grade\target\debug\q1_determine_grade.exe bro`
Invalid Score
```

```
$ cargo run 101
    Finished dev [unoptimized + debuginfo] target(s) in 0.01s
     Running `C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q1_determine_grade\target\debug\q1_determine_grade.exe 101`
Invalid Score
```

```
phatt@Macbook_Pro MINGW64 ~/OneDrive/Desktop/Code Files/Rust/Lab_3/HW_Rust_3/q1_determine_grade/src/bin (master)
$ cargo run -- -1
    Finished dev [unoptimized + debuginfo] target(s) in 0.01s
     Running `C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q1_determine_grade\target\debug\q1_determine_grade.exe -1`
Invalid Score
```

1.2) Write a tests for the program in 1.1).

(Code is in attached file)

```
phatt@Macbook_Pro MINGW64 ~/OneDrive/Desktop/Code Files/Rust/Lab_3/HW_Rust_3/q1_determine_grade/tests (master)
$ cargo test
    Compiling determine_grade v0.1.0 (C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q1_determine_grade)
    Finished test [unoptimized + debuginfo] target(s) in 0.29s
     Running unittests src\bin\q1_determine_grade.rs (C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q1_determine_grade\target\
debug\deps\q1_determine_grade-f661ae86a5ed1622.exe)

running 0 tests

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

     Running tests\cli.rs (C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q1_determine_grade\target\debug\deps\cli-da94a79b68ec
6707.exe)

running 5 tests
test main1 ... ok
test main2 ... ok
test main3 ... ok
test main4 ... ok
test main ... ok

test result: ok. 5 passed; 0 failed; 0 ignored; 0 measured; 0 filtered out; finished in 0.07s
```

## 2. Write a program to print temperature tables

2.1) From the Fahrenheit to Celsius formula °C = (5/9)(°F - 32) , write a program to print the following tables:

(Code is in attached file)

```
phatt@Macbook_Pro MINGW64 ~/OneDrive/Desktop/Code Files/Rust/Lab_3/HW_Rust_3/q2_temp/tests (master)
$ cargo run 0 0 0
   Compiling q2_temp v0.1.0 (C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q2_temp)
    Finished dev [unoptimized + debuginfo] target(s) in 0.26s
     Running `C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q2_temp\target\debug\q2_temp.exe 0 0 0`
Fahr       Celcius
0          -17.8
```

```
phatt@Macbook_Pro MINGW64 ~/OneDrive/Desktop/Code Files/Rust/Lab_3/HW_Rust_3/q2_temp/tests (master)
$ cargo run 0 320 40
    Finished dev [unoptimized + debuginfo] target(s) in 0.02s
     Running `C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q2_temp\target\debug\q2_temp.exe 0 320 40`
Fahr       Celcius
0          -17.8
40         4.4
80         26.7
120        48.9
160        71.1
200        93.3
240        115.6
280        137.8
320        160.0
```

```
phatt@Macbook_Pro MINGW64 ~/OneDrive/Desktop/Code Files/Rust/Lab_3/HW_Rust_3/q2_temp/tests (master)
$ cargo run
    Finished dev [unoptimized + debuginfo] target(s) in 0.02s
     Running `C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q2_temp\target\debug\q2_temp.exe`
Invalid Input
```

```
phatt@Macbook_Pro MINGW64 ~/OneDrive/Desktop/Code Files/Rust/Lab_3/HW_Rust_3/q2_temp/tests (master)
$ cargo run I want to be a lawyer
    Finished dev [unoptimized + debuginfo] target(s) in 0.02s
     Running `C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q2_temp\target\debug\q2_temp.exe I want to be a lawyer`
Invalid Input
```

2.2) Write tests for the program in 2.1).

(Code is in attached file)

```
phatt@Macbook_Pro MINGW64 ~/OneDrive/Desktop/Code Files/Rust/Lab_3/HW_Rust_3/q2_temp/tests (master)
$ cargo test
    Finished test [unoptimized + debuginfo] target(s) in 0.02s
     Running unittests src\bin\q2_temp.rs (C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q2_temp\target\debug\deps\q2_temp-77d
d366bc68e2db6.exe)

running 0 tests

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

     Running tests\cli.rs (C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q2_temp\target\debug\deps\cli-215fdd7533482fb9.exe)

running 5 tests
test imsad ... ok
test help ... ok
test runs ... ok
test vroom ... ok
test wee ... ok

test result: ok. 5 passed; 0 failed; 0 ignored; 0 measured; 0 filtered out; finished in 0.07s
```

**3. Write a program to print arrow patterns with varying sizes**

3.1) The program should print arrow patterns like shown below and must not print trailing spaces before the end of each line:

(Code is in attached file)

```
phatt@Macbook_Pro MINGW64 ~/OneDrive/Desktop/Code Files/Rust/Lab_3/HW_Rust_3/q3_pyramid/src/bin
$ cargo run 4
   Compiling q3_pyramidd v0.1.0 (C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q3_pyramid)
    Finished dev [unoptimized + debuginfo] target(s) in 0.16s
     Running `C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q3_pyramid\target\debug\q3_pyramid.exe 4`
*
**
***
****
***
**
*
```

3.2) The program should print arrow patterns like shown below and must not print trailing spaces before the end of each line:

(Code is in attached file)

```
warning: `q3_2new` (bin "q3_2new") generated 4 warnings (run `cargo fix --bin "q3_2new"` to apply 4 suggestions)
    Finished dev [unoptimized + debuginfo] target(s) in 0.24s
     Running `C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q3_2new\target\debug\q3_2new.exe 4`
   *
  **
 ***
****
 ***
  **
   *
```

3.3) Write tests for programs in 3.1) and 3.2).

(Code is in attached file)

```
phatt@Macbook_Pro MINGW64 ~/OneDrive/Desktop/Code Files/Rust/Lab_3/HW_Rust_3/q3_pyramid/src/bin
$ cargo test
   Compiling q3_pyramidd v0.1.0 (C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q3_pyramid)
    Finished test [unoptimized + debuginfo] target(s) in 0.63s
     Running unittests src\bin\q3_pyramid.rs (C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q3_pyramid\target\debug\deps\q3_pyramid-e552173144c8
5343.exe)

running 0 tests

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

     Running tests\cli.rs (C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q3_pyramid\target\debug\deps\cli-ee58db5b533ad268.exe)

running 1 test
test amogus ... ok

test result: ok. 1 passed; 0 failed; 0 ignored; 0 measured; 0 filtered out; finished in 1.01s
```

```
phatt@Macbook_Pro MINGW64 ~/OneDrive/Desktop/Code Files/Rust/Lab_3/HW_Rust_3/q3_2new/src/bin
$ cargo test
   Compiling q3_2new v0.1.0 (C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q3_2new)
    Finished test [unoptimized + debuginfo] target(s) in 0.30s
     Running unittests src\bin\q3_2new.rs (C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q3_2new\target\debug\deps\q3_2new-730d8032628828f2.exe)

running 0 tests

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

     Running tests\cli.rs (C:\Users\phatt\OneDrive\Desktop\Code Files\Rust\Lab_3\HW_Rust_3\q3_2new\target\debug\deps\cli-daedd7fe72ad229d.exe)

running 1 test
test sussy ... ok

test result: ok. 1 passed; 0 failed; 0 ignored; 0 measured; 0 filtered out; finished in 0.02s
```