COMP 4959: Lab 1

For this lab, use only one source file for each program. Submit a zip file containing your two source files. Maximum score: 16

1. Suppose you are given a file of student data where each line consists of a first name, a last name, followed by an integer score. Sample data:

```
ned flanders 99
homer simpson 25
monty burns 65
```

Write a Rust program that reads the file via standard input using I/O redirection (i.e., your program reads standard input) and displays the number of students, the average score, the minimum score with the names of students with that score, and the maximum score, also with the names of students with that score. Note that there may be multiple students attaining the minimum score or the maximum score. Print an appropriate message if there is no student data in the input. You may assume that all input data are valid and that each score is between 0 and 100 inclusive. Sample output:

```
number of students: 10
average: 63.4
minimum score = 25
- simpson, homer
- amadopolis, aristotle
- chalmers, gary
maximum score = 99
- flanders, ned
- simpson, lisa
```

What would be an appropriate output if the minimum score is the same as the maximum score? Name your source file `students.rs`.

2. Write a Rust program to find the size of the largest set of 6-digit primes that are permutations of one another.

Your implementation must have a function

```
// precondition: m < n
fn primes(m: usize, n: usize) -> Vec<usize>
```

that returns a vector containing all primes p in ascending order satisfying $m \leq p < n$. Your implementation should be based on the Sieve of Eratosthenes. As a test, your program must print out the size of the set of all 6-digit primes as well as the size of the largest set of 6-digit primes that are permutations of one another. Name your file `primes.rs`.