

## COMP 4958: Lab 6

For this lab, use only one source file for each program. Name the two files `sort.go` and `primes.go`. Submit a zip file containing the two source files. Maximum score: 13

1. Write a Go 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: 0 <= m < n
func primes(m, n int) []int
```

that returns a slice containing all primes  $p$  satisfying  $m \leq p < n$ . The implementation must be based on the Sieve of Eratosthenes. For testing purposes, 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. Do not print out the set of all 6-digit primes — you only need to print its size. Name your file `primes.go`.

2. Consider 3 goroutines, one keeps printing P's, another keeps printing Q's & the third keeps printing R's. Use mutexes and condition variables to synchronize the 3 goroutines so that at all times

$$\text{number of P's printed} \leq \text{number of Q's printed} \leq \text{number of R's printed}$$

Use comments to explain what you are doing. Put your code in a file named `pqr.go`