

## Phase 1

stop using global variables in subroutines  
find the first 50 prime numbers, store them in array p  
given that 2 is the first prime number  
initialize `index_of_last_known_prime_number`  
initialize `next_number_to_try`

loop:

- check if `next_number_to_try` is prime or not
- if it is prime, add it to the array p
- if not, there is nothing to do
- update `next_number_to_try`

exit the loop when all 50 prime numbers are found and stored in array p

print all 50 elements in p

### How to check if a number is prime or not?

If a number has a factor other than 1 or itself, the number is not prime.

### Phase 2:

make use of the rule that if there is no factor  $f$  of  $n$  such that  $f^2$  is greater than or equal to  $n$ ,  $n$  is its own prime factor

### Phase 3:

use prime numbers to test for factors instead of sequential integers  
refer to elements in the prime number array when you check for factors  
get rid of  $f$ , and introduce another local variable