

9.11

- Key words in Github:
 - 1.clone (copy&join project)
 - 2.pull (get new files or information)
 - 3.commit

variables: sth can be changed

array: a set of value that has some order
element

- Binary Search
cut in two then jump to the middle.
e.g. find 111 in all the prime numbers.....

9.12

$\lceil \log_2(N) \rceil + 1$

bracket **[]**
parenthesis **()**
parentheses **() ()**

Practice 1 (binary search):

My mistakes: don't use the same name for two va

```
prime = [2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97, 101, 103, 107, 109, 113, 127, 131, 137, 139, 149, 151, 157, 163, 167, 173, 179, 181, 191, 193, 197, 199, 211, 223, 227, 229, 233, 239, 241, 251, 257, 263, 269, 271, 277, 281, 283, 293, 307, 311, 313, 317, 331, 337, 347, 349, 353, 359, 367, 373, 379, 383, 389, 397, 401, 409, 419, 421, 431, 433, 439, 443, 449, 457, 461, 463, 467, 479, 487, 491, 499, 503, 509, 521, 523, 541, 547, 557, 563, 569, 571, 577, 587, 593, 599, 601, 607, 613, 617, 619, 631, 641, 643, 647, 653, 659, 661, 673, 677, 683, 691, 701, 709, 719, 727, 733, 739, 743, 751, 757, 761, 769, 773, 787, 797, 809, 811, 821, 823, 827, 829, 839, 853, 857, 859, 863, 877, 881, 883, 887, 907, 911, 919, 929, 937, 941, 947, 953, 967, 971, 977, 983, 991, 997]
begin_index = 0
end_index = len(prime)-1
middle_index = int((end_index+begin_index)/2)
n = eval(input('a number under 977'))
is_prime = False
```

```
while end_index >= begin_index:
    print(prime[middle_index])
    if (n == prime[middle_index]):
        print('the number is in the list')
        is_prime = True
        break
    elif (n > prime[middle_index]):
        begin_index = middle_index + 1
        middle_index = int((end_index + begin_index)/2)
    else:
        end_index = middle_index + 1
        middle_index = int((end_index + begin_index)/2)
if (is_prime == False):
    print('n is not in the list')
```