tu06_re_IfsLoopsFunctions_HW

February 2, 2023

# Ifs, loops, and function homework

0.1 1. A function to reverse a string

Write and test a function that reverses a string entered by a user. This function will have one input value (a string) and one output value (also a string).

Test your function on, among other things, Napoleon's quote 'able was i ere i saw elba'

[5]:

```
x = input('White any words: ') # Ask users for their input
separator = ''                 # The string (empty in this case) to separate␣
  ↪our list elements when using join
reverse_x = []                 # Make an empty list

for i in reversed(x) :         # Loop that make users input backward
    reverse_x.append(i)        # Add each letter to our list in turn

reverse_x = separator.join(reverse_x)   # make a string

print(reverse_x)
```

```
White any words: JEDSADA
ADASDEJ
```

Optional challenge: run the above on "race car" and then fix the resulting string.

[4]:

```
x = input('White any words: ') # Ask users for their input
separator = ''                 # The string (empty in this case) to separate␣
  ↪our list elements when using join
reverse_x = []                 # Make an empty list

for i in reversed(x) :         # Loop that make users input backward
    reverse_x.append(i)        # Add each letter to our list in turn

reverse_x = separator.join(reverse_x)   # make a string

print(reverse_x)
```

```
White any words: Race Car
raC ecaR
```

0.2 2. Determine if a number is prime

Write some code to test whether a number is prime or not, a prime number being an integer that is evenly divisible only by 1 and itself.

Hint: another way to think about a prime number is that, if the smallest number (other than 1) that divides evenly into a number *is* that number, than the number is a prime.

The easiest solution involves one `while` loop and one `if` test.

[13]:

```
num = int(input('Put any number: '))

for i in range(2,num):
    if num % i == 0:
        print(num,'is not a prime number.')
        break
else:
    print(num,'is a prime number.')
```

```
Put any number: 19
19 is a prime number.
```

0.3 3. Find the first 10 primes

Extend your code above to find the first 10 prime numbers. This will involve wrapping your existing code in another "outer" loop.

[19]:

```
n = 30          # Limit of 30 since the 10th prime number is 29
prime = []      # Create Empty List

for num in range(2,n+1):
    counter = 0
    for i in range(1,n+1):
        if(num % i == 0):
            counter = counter + 1
    if(counter == 2):
        prime.append(num)
print(prime)
```

```
[2, 3, 5, 7, 11, 13, 17, 19, 23, 29]
```

0.4 4. Make a function to compute the first n primes

Functionalize (is that a word?) your above code. A user should be able to call your code with one integer argument and get a list back containing that number of primes. Make sure your function handles inputs of an incorrect type gracefully. You should also warn the user if they enter a really big number (which could take a long time…), and give them the option of either bailing or entering a different number.

[86]:

```
def prime(b):
    def prime(n):
        if(n < 2):
            return False
        for i in range (2,n//2+1):
            if(n%i == 0):
                return False
        return True
    if b <= 100:
        for x in range(0,b):
            if prime(x):
                print(x, 'is the prime number.')
    else:
        print('put lower number.')
```

[87]:

```
# Put the maximun number (max 100) in the parentheses.
prime(99)
```

```
2 is the prime number.
3 is the prime number.
5 is the prime number.
7 is the prime number.
11 is the prime number.
13 is the prime number.
17 is the prime number.
19 is the prime number.
23 is the prime number.
29 is the prime number.
31 is the prime number.
37 is the prime number.
41 is the prime number.
43 is the prime number.
47 is the prime number.
53 is the prime number.
59 is the prime number.
61 is the prime number.
67 is the prime number.
71 is the prime number.
73 is the prime number.
79 is the prime number.
83 is the prime number.
89 is the prime number.
97 is the prime number.
```