Lists Continued

Challenge: Given a list give another list with square of each element

```
runs = [100, 150, 99, 20, 99, 200, 99, 120]
```

```
l = [2, 4, 5]
for i in l:
    print(i * i)
```

```
4
16
25
```

```
l[2] * l[2]
```

```
25
```

```
l = [2, 4, 5]
result = [] # empty list
for i in l:
    # append the elements in result after squaring them
    result.append(i * i)
    # print(i * i)
print(result)
```

```
[4, 16, 25]
```

Taking List as input

```
# 3
# 2 4 5

N = int(input())
x = input()
```

```
 3
 2 4 5
```

```
print(N, type(N))
print(x, type(x))
```

```
3 <class 'int'>
2 4 5 <class 'str'>
```

```
l = x.split()
```

```
print(l)
print(l[0], type(l[0]))
```

```
['2', '4', '5']
2 <class 'str'>
```

```
int('5')
```

```
5
```

```
result = []
for i in l:
    result.append(int(i))
print(result)
```

```
[2, 4, 5]
```

```
# This is final code for taking list as input

N = int(input())  # 3
x = input()  # "2 4 5"
l = x.split() # ["2", "4", "5"]

res = []
for i in l:  # iterate on each element and convert then into int
    res.append(int(i))
print(res)
```

```
 3
 2 4 5
```

```
[2, 4, 5]
```

```
# This will not work
# int("2 4 5")

# int(['2', '3', '5'])
```

Updating a list

```
# quizzes

runs
```

```
[100, 150, 99, 20, 99, 200, 99, 120]
```

```
l = [2, 4, 5, 6, 7]
print(id(l))
```

```
140520873435008
```

```
l[0] = 21
print(l, id(l))
```

```
[21, 4, 5, 6, 7] 140520873435008
```

```
# This power is known as Mutability
```

```
# Quizzes
```

```
user_values = [2, 5, 9]
user_values[2] = user_values[2] + 1

print(user_values)
```

```
[2, 5, 10]
```

```
user_values = [3, 5, 9]
user_values[1] = user_values[1] + 1
user_values[2] = user_values[2] + 2
print(user_values)
```

```
[3, 6, 11]
```

```
user_values = [1, 6, 8]
user_values[1] = user_values[0]

print(user_values)
```

```
[1, 1, 8]
```

```
user_values = [3, 6, 7]
user_values[1] = user_values[2]
user_values[2] = user_values[0]
print(user_values)
```

```
[3, 7, 3]
```

```
"r a h u l".split()
```

```
['r', 'a', 'h', 'u', 'l']
```

```
"234".split()
```

```
['234']
```

```
# ["R a h u l"].split()
```

Multiple assignments

```
# swap them

a = 3
b = 4

a = b
b = a
print(a, b)
```

```
4 4
```

```
a = 3
b = 4

c = a
a = b
b = c
print(a, b)
```

```
4 3
```

```
a, b = 3, 4
print(a, b)
```

```
3 4
```

```
a, b = b, a
print(a, b)
```

```
4 3
```

```
runs
```

```
[100, 150, 99, 20, 99, 200, 99, 120]
```

```
runs[0], runs[-1] = runs[-1], runs[0]
print(runs)
```

```
[120, 150, 99, 20, 99, 200, 99, 100]
```

```
# Quiz

l = [1, 5, 2, 3]
l.append(7)
l.insert(0, 5)
l[1] = l[2]
```

```
l[2], l[0] = l[0], l[2]
print(l)
```

```
[5, 5, 5, 2, 3, 7]
```

Removing data

- pop
- remove
- del

```
## pop element: It also returns the element

# quiz

runs

[120, 150, 99, 20, 99, 200, 99, 100]

x = runs.pop()

print(x)

100

print(runs)

[120, 150, 99, 20, 99, 200, 99]

runs.pop(1)

150

print(runs)

[120, 99, 20, 99, 200, 99]

# help(list)

# quiz

l = [1, 2, 3, 3, 5, 6, 7, 5]
l.pop(5)
print(l)

[1, 2, 3, 3, 5, 7, 5]
```

```
## remove element: using an element

## Remove method removes the first occurance of that element

## remove method doesn't return the value

# quiz

runs

[120, 99, 20, 99, 200, 99]

runs.remove(99)

print(runs)

[120, 20, 99, 200, 99]

# quiz

l = [1, 5, 7]
x = 2

l.pop(x-1)

5

print(l)

[1, 7]

l = [1, 2, 3, 3, 5, 6, 7, 5]
l.remove(5)

print(l)

[1, 2, 3, 3, 6, 7, 5]


# del

runs

[120, 20, 99, 200, 99]

del runs[0]

print(runs)

[20, 99, 200, 99]

del runs

print(runs)
```

```
---------------------------------------------------------------------------
-----
NameError                                 Traceback (most recent call
last)
/var/folders/zn/hkv6562d6_d30glfs8yc76900000gn/T/ipykernel_9269/253721
648.py in <module>
----> 1 print(runs)

NameError: name 'runs' is not defined
```

Linear search

```
# First time sachin scored 99

# runs = [0, 1, 55, 67, 99, 120, 200]

runs = [100, 150, 99, 20, 99, 200, 99, 120]

for i in runs:
    print(i)
```

```
100
150
99
20
99
200
99
120
```

```
n = len(runs)
for i in range(n):
    print(runs[i], i)
```

```
100 0
150 1
99 2
20 3
99 4
200 5
99 6
120 7
```

```
n = len(runs)
for i in range(n):
```

```
    if runs[i] == 99:
        print(i)
        break
```

```
2
```

Count of 99 runs by Sachin

```
runs
```

```
[100, 150, 99, 20, 99, 200, 99, 120]
```

```
coun = 0
for i in runs:
    if i == 99:a
        coun += 1
print(coun)
```

```
3
```

```
# Doubts

# help(list)
# use above to know every method for list

for i in range(-6, -10, -1):
    print(i)
```

```
-6
-7
-8
-9
```