# 4 Loop

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# 1. Updating variables.

## Reassignment

```
x = 1
x = 2
print(x)
```

## Updating variables

```
x = 1
y = x
x = 2
print(y)
```

## increment

```
i+=1
```

## decrement

```
i-=1
```

## 2. Repetitions and Loops

```
print("Hello")
print("Hello")
print("Hello")
```

## 3. `while` loops

```
while <condition>:
        <block>
```

# 4. List basics

## List

```
names = ["Jin", "Mark", "Neil"]
numbers = [3, 8, 8]

print(names)
print(numbers)
```

## Getting access to the elements

```
names = ["Jin", "Mark", "Neil"]
numbers = [3, 8, 8]

print(names[0])
print(names[1])
print(names[2])

print(numbers[0])
print(numbers[1])
print(numbers[2])
```

## Updating the elements

```
numbers = [3, 8, 8]
numbers[2] = 5

print(numbers)
```

## `range()` function

```
numbers_range = range(3)
numbers_list = list(numbers_range)

print(numbers_list)
```

## len() function to obtain length

```
numbers = [3, 8, 8]
l = len(numbers)
print(l)
```

## 5. `for` loops

```
for i in range(3):
        print("Hello")
```

## 6. `continue`, `break`

## 7. Practice Questions

1. Create a function named `get_maximum` taking a list of numbers, which can return the maximum number in the list.

2. Calculate the sum of 1 to $n$.
    i. Create a function named `get_number` which returns a positive number. In the function you use `input` function to let user input a positive integer. If user inputs a negative number, reprompt the user with "Please input a positive number: " .
    ii. Create a function named `get_sum` taking a number $n$ and returning the sum of 1 to $n$.
    iii. Create a `main` function which calls the two functions above to calculate the sum of 1 to $n$.

3. Create a function taking a list, which can print the even indices values, i.e., the 2nd value, 4th value, 6th value, ... . For example, given a list `x = ['a', 'b', 'c', 'd']`, the output should print 'b' and 'd'. (try to use `continue` in the loop)

4. Given a list of numbers, try to print the numbers starting with the first one and stop when the sum of the numbers collected is larger than 100.