

ITEC-425 / SENG-425: Python Programming Lab

Lab 5: Loops and Iteration

Task 1

Write a program that uses while loop and produces the following output.

```
Starting countdown ...
10
9
8
7
6
5
4
3
2
1
Liftoff!
```

```
In [1]: print("Starting countdown ...")

t = 10

while t > 0:
    print(t)
    t = t - 1

print("Liftoff!")
```

```
Starting countdown ...
10
9
8
7
6
5
4
3
2
1
Liftoff!
```

Task 2

Modify the above program to use a `for` loop instead of a `while` loop.

Notice the use of the `range(10, 0, -1)` function:

- Starting value is 10
- Ending value is 1
- Step size is -1

```
In [2]: print("Starting countdown ...")

for t in range(10, 0, -1):
    print(t)

print("Liftoff!")
```

```
Starting countdown ...
```

```
10
9
8
7
6
5
4
3
2
1
Liftoff!
```

Task 3

Write a function that takes a list of numbers as argument and uses a `for` loop to find the sum of numbers in the given list.

In python a list of numbers is given as shown in the example below:

```
primes = [2, 3, 5, 7, 11, 13, 17, 19]
```

```
In [3]: def sum_list(list_of_nums):
        ans = 0
        for val in list_of_nums:
            ans = ans + val
        return ans
```

Possible executions and outputs

```
In [4]: list1 = [1, 2, 3, 4, 5]
        print("Sum of numbers in list1 is", sum_list(list1))
```

Sum of numbers in list1 is 15

```
In [5]: list2 = [2, 4, 6, 8]
        print("Sum of numbers in list2 is", sum_list(list2))
```

Sum of numbers in list2 is 20

Task 4

Write a program that uses `for` loop to compute the average of numbers in a given list.

```
In [6]: my_list = [2, 3, 5, 7, 11, 13, 17, 19]

        list_count = len(my_list)
        list_sum = 0

        for item in my_list:
            list_sum = list_sum + item

        list_avg = list_sum / list_count

        print("The average of numbers is: ", list_avg)
```

The average of numbers is: 9.625

Task 5

Write a program that uses a loop to find the maximum number in a given list of numbers.

```
In [7]: my_list = [3, 1, 0, 9, 5, 2, 6, 4, 9, 8, 7]

        largest = my_list[0]
```

```
for num in my_list:
    if num > largest:
        largest = num

print("The largest number is: ", largest)
```

The largest number is: 9

Task 6

Similar to the above task write a program that finds the smallest number in a given list of numbers.

In [8]:

```
# Write your code here
# Write this as a function which takes the list of numbers as an argument
# Call the function with different lists to verify that it's returning the smallest number
```