

CSIS104: Introduction to Computer Science

Lecture 3:

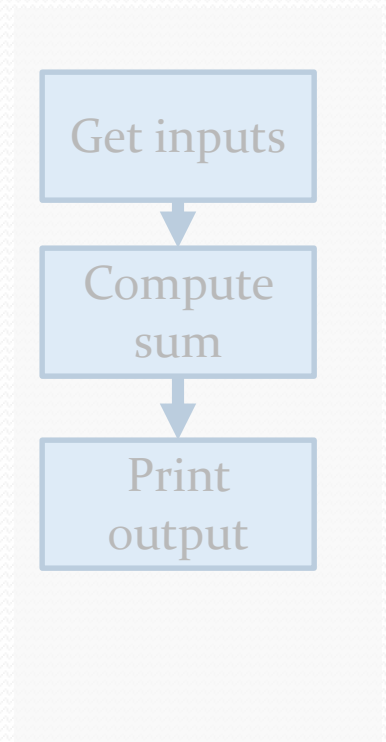
Python and Sequential Algorithms

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Slides are based on: Prof. Dr. Slim Abdennadher's slides

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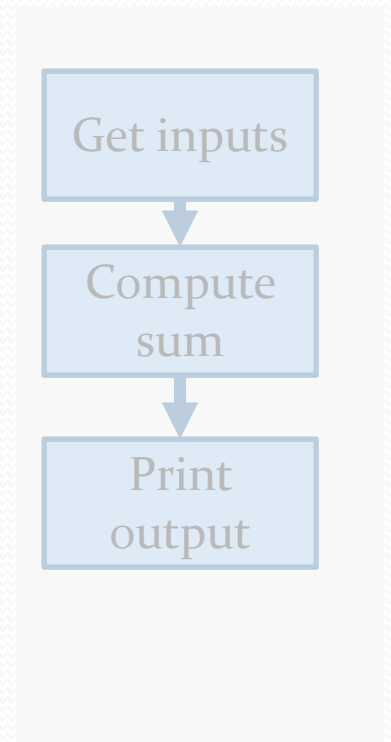
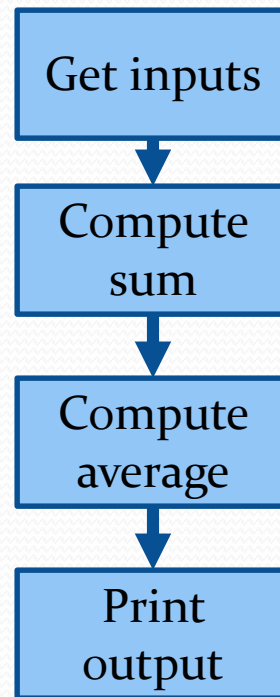
Sequential Operations

- Example (1)
- Algorithm for finding the average of three numbers.



Sequential Operations

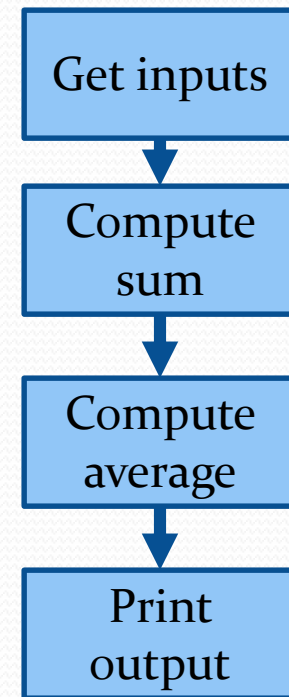
- Example (1)
- Algorithm for finding the average of three numbers.



Sequential Operations

- Example (1)
- Algorithm for finding the average of three numbers.

```
A = eval(input()) # 12
B = eval(input()) # 10
C = eval(input()) # 8
Sum = A + B + C
Average = Sum/3
print(Average) # prints 10
```



Sequential Operations

- Example (2)
 - Write an algorithm which **swaps** the values of two numbers.

Sequential Operations

- Example (2)
 - Write an algorithm which swaps the values of two integers.

```
x = int(input())  
y = int(input())  
temp = x  
x = y  
y = temp  
print(x, " ", y)
```

Sequential Operations

- Example (2)
 - Write an algorithm which swaps the values of two integers.

```
x = int(input())
y = int(input())
temp = x      # Keep original value of x in a safe place
x = y
y = temp      # Get back the original value of x
print(x, " ", y)
```

Sequential Operations

- Example (3)
 - For a given number of eggs, find out how many dozen eggs we have and how many extra eggs are left over.

Sequential Operations

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 - For a given number of eggs, find out how many dozen eggs we have and how many extra eggs are left over.

```
eggs = eval(input())
dozens = int(eggs / 12)           # Number of full dozens
extras = eggs - (dozens * 12)
print("Your number of eggs is ")
print(dozens)
print(" dozen(s) and ")
print(extras)
print(" extra(s)")
```

Where the function **int** rounds down the result to an integer.

For example **int**(73/10) = 7

Similar to integer-division: 73//10 = 7

Sequential Operations

- Example (3)
 - For a given number of eggs, find out how many dozen eggs we have and how many extra eggs are left over.

```
eggs = eval(input())
dozens = eggs // 12
extras = eggs % 12
print("Your number of eggs is ")
print(dozens)
print(" dozen(s) and ")
print(extras)
print(" extra(s)")
```

Where % is the modulo operator. It computes the remainder of the division.
For example $73\%10 = 3$

Sequential Operations

- Example (4)
 - Given a two-digit number, find the sum of its digits.
 - For example:
 - number = 23
 - the output should be 5
 - that is $2 + 3$

Sequential Operations

- Example (4)
 - Given a two-digit number, find the sum of its digits.

```
num = eval(input())
tens = int(num / 10)           # or tens = num // 10
ones = num - (tens * 10)      # or ones = num % 10
sum_of_digits = (tens + ones)
print(sum_of_digits)
```

Sequential Operations

- Example (5)
 - Given a three-digit number, find the sum of its digits.

```
num = eval(input())
hundreds = num // 100
remainder = num % 100
tens = remainder // 10
ones = remainder % 10
sum_of_digits = (hundreds + tens + ones)
print(sum_of_digits)
```

Final Exam WS18

Question 1:

(13 marks)

Write an algorithm that takes as an input the half-life time of a drug in a decimal hours format. The algorithm should then print the half-life time in terms of integer hours, minutes, and days as needed.

Make sure that the output is displayed according to the corresponding input, e.g. if there are 0 minutes then the minutes should not be displayed.

Example1:

Input:

Enter half-life time in decimal hour format: 36.5

Output:

The half-life time is:

1 day(s)

12 hour(s)

30 minute(s)

Example3:

Input:

Enter half-life time in decimal hour format: 6.25

Output:

The half-life time is:

6 hour(s)

15 minute(s)

Example2:

Input:

Enter half-life time in decimal hour format: 36

Output:

The half-life time is:

1 day(s)

12 hour(s)

Example4:

Input:

Enter half-life time in decimal hour format: 24

Output:

The half-life time is:

1 day(s)

Any Question?

