

# Python Programming

## Selection Homework 1

**Mostafa S. Ibrahim**

*Teaching, Training and Coaching since more than a decade!*

*Artificial Intelligence & Computer Vision Researcher*

*PhD from Simon Fraser University - Canada*

*Bachelor / Msc from Cairo University - Egypt*

*Ex-(Software Engineer / ICPC World Finalist)*



# Homework 1: Arithmetic

- Read 2 integers A, B and print based on following cases:
  - if both are odd print their product  $A*B$
  - if both are even print their division  $A/B$  (float division / assume  $B \neq 0$ )
  - if the first is odd and the second is even then find their sum  $A+B$
  - if the first is even and the second is odd then find their subtraction  $A-B$
- Inputs  $\Rightarrow$  outputs
  - 5 7  $\Rightarrow$  35
  - 12 2  $\Rightarrow$  6
  - 5 6  $\Rightarrow$  11
  - 12 3  $\Rightarrow$  9

# Homework 2: Sort 3 numbers

- Given 3 integers, sort (order) them in ascending order and print them .
- Inputs  $\Rightarrow$  outputs
  - 1 2 3  $\Rightarrow$  1 2 3
  - 1 3 2  $\Rightarrow$  1 2 3
  - 2 1 3  $\Rightarrow$  1 2 3
  - 2 3 1  $\Rightarrow$  1 2 3
  - 3 1 2  $\Rightarrow$  1 2 3
  - 3 2 1  $\Rightarrow$  1 2 3
- Do you notice there are only 6 ways to permutate 3 numbers!

# Homework 3: Maximum but constrained

- Given 3 integers, you have to find the biggest one of them which is  $< 100$ .
  - Print -1 if no such number
- Inputs
  - 22 90 115  $\Rightarrow$  90
    - Here [20 90] are only  $< 100$ . Maximum (20, 90) = 90
  - 200 300 400  $\Rightarrow$  -1
    - All of them are  $> 100$ , so no answer
  - 50 100 150  $\Rightarrow$  50
    - Only 50 is  $< 100$ .
  - 10 30 20  $\Rightarrow$  30
    - The 3 numbers  $< 100$ , so their max is 30

# Homework 4: Conditional Count

- Write a program that reads number  $X$ , then other 5 numbers. Print 2 values:
  - How many numbers  $\leq X$
  - How many numbers  $> X$
  - Any relation between these 2 outputs?
- Inputs
  - **10      300 1 5 100 200**
  - Output: 2 3
  - Explanation
  - 2 numbers (1, 5) are  $\leq 10$
  - 3 numbers (100, 200, 300) are  $> 10$

*“Acquire knowledge and impart it to the people.”*

*“Seek knowledge from the Cradle to the Grave.”*