C++ Programming
Selection Homework

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Teaching, Training and Coaching since more than a decade!

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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
    - 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 ⇒ outputs
    - 5 7 => 35
    - 12 2 => 6
    - 5 6 => 11
    - 12 3 => 9

Homework 2: Sort 3 numbers

- Given 3 integers, sort (order) them in ascending order and print them .
- Inputs
  - 1 2 3 ⇒ 1 2 3
  - 1 3 2 ⇒ 1 2 3
  - 2 1 3 ⇒ 1 2 3
  - 2 3 1 ⇒ 1 2 3
  - 3 1 2 ⇒ 1 2 3
  - 3 2 1 ⇒ 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 ⇒ 90
    - Here [20 90] are only < 100. Maximum (20, 90) = 90
  - 200 300 400 ⇒ -1
    - All of them are > 100, so no answer
  - 50 100 150 ⇒ 50
    - Only 50 is < 100.
  - 10 30 20 ⇒ 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 <= X
    - How many numbers > X
    - Any relation between these 2 outputs?
- Inputs
    - 10   300 1 5 100 200
    - Output: 2 3
    - Explantation
    - 2 numbers (1, 5) are <= 10
    - 3 numbers (100, 200, 300) are > 10

Homework 5: Find Maximum of 10

- Read 10 integers, find which of them has the biggest value and print it.
- Inputs
  - 1 67 -9 88 -45 129 90 65 77 34 ⇒ 129
- Restriction: In your whole code there should be 2 integer variables defined ONLY
  - If hard constraint; code it in whatever easier way for you

Homework 6: Find Maximum up to 10

- Read an integer N (2 <= N <= 10)
- Then read N integers, find which of them has the biggest value and print it.
- Inputs
  - 5 **1 3 2 4 2** ⇒ 4
    - 5 means read 5 integers
    - Then we read them [**1 3 2 4 2**]. Their maximum is 4
  - **10** 1 67 -9 88 -45 129 90 65 77 34 ⇒ 129
    - Same as last homework. This time we are given first N (10)
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Homework 7: Intervals

- Read number X then read 6 numbers s1, e1, s2, e2, s3, e3
  - These 6 numbers are for 3 interval
  - Each Interval is a range [start, end]
  - Number X in a range if **start** <= X <= **end**
  - E.g 7 in range [5, 12] but not in range [10, 20]
- Print how many intervals X is part of it
- Inputs
  - 7   1 10   5 6   4 40 ⇒ 2
    - Number 7 exists in 2 intervals [1, 10] and [4, 40]
  - 10   5 15   6 100   3 30 ⇒ 3
    - 10 exists in the 3 intervals [5 15], [6 100], [3 30]
  - 10   100 200   100 101   120 170 ⇒ 0   [doesn't exist in any interval]
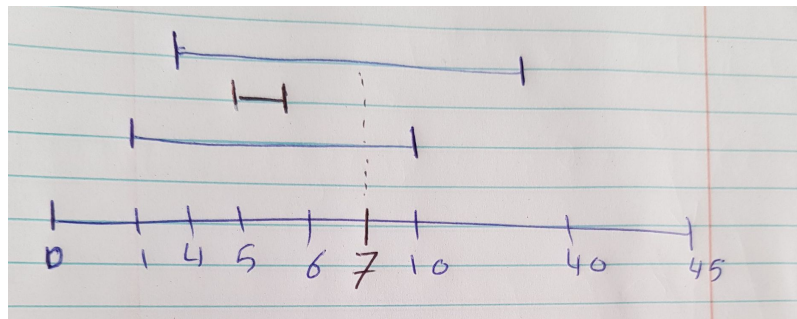
Homework 8: Two Intervals Intersection

- Read 4 numbers representing 2 intervals and print their intersection interval. If they don't intersect, print -1
- Inputs
    - 1 6   3 8   ⇒ 3 6
        - Interval [1 6] and [3 8] only intersects at [3, 6]
        - Why: interval [1, 6] has numbers: {1, 2, **3, 4, 5, 6**}
        - And: interval [3, 8] has numbers: {**3, 4, 5, 6**, 7, 8}
        - So the intersection is {**3, 4, 5, 6**} = [3, 6]
    - 1 15 20 30 ⇒ -1

"Acquire knowledge and impart it to the people."

"Seek knowledge from the Cradle to the Grave."