

Programming

Selection Homework 3

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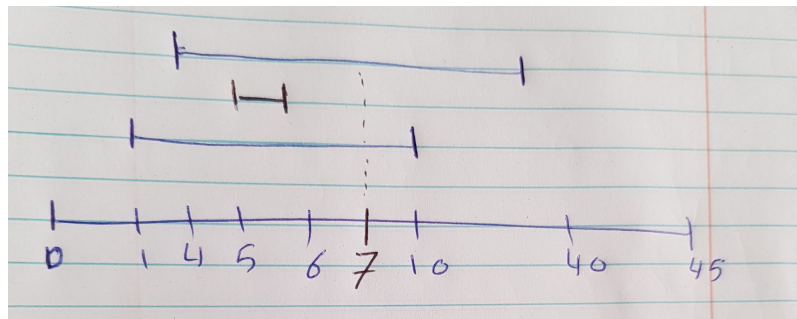
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Problem #1: Intervals

- Read in a number **X**, then read in 6 numbers: **s1, e1, s2, e2, s3, e3** (**s < e**)
 - These 6 numbers make up 3 intervals
 - Each interval is a range [start, end]
 - X is within a range if **start ≤ X ≤ end**
 - e.g. 7 is in the range [5, 12], but isn't in [10, 20]
- Print out how many intervals within which X can be found
- Input:
 - 7 1 10 5 6 4 40 ⇒ 2
 - Number 7 exists within 2 of the intervals: [1, 10] and [4, 40]
 - 10 5 15 6 100 3 30 ⇒ 3
 - 10 exists within all 3 intervals: [5 15], [6 100], [3 30]
 - 10 100 200 100 101 120 170 ⇒ 0 [X doesn't exist within any interval]



Problem #2: Intersection of Two Intervals

- Read in 4 numbers representing 2 intervals, and print out the numbers showing where both intervals intersect. If they don't intersect, print -1
- Input:
 - 1 6 3 8 \Rightarrow 3 6
 - Interval [1 6] and [3 8] only intersects at [3, 6]
 - Why: interval [1, 6] has the numbers: {1, 2, **3, 4, 5, 6**}
 - And: interval [3, 8] contains the numbers: {**3, 4, 5, 6**, 7, 8}
 - So, the full shared range is {**3, 4, 5, 6**}, which means the intersection points are at [3, 6]
 - 1 15 20 30 \Rightarrow -1

“Acquire knowledge and impart it to the people.”

“Seek knowledge from the Cradle to the Grave.”