

C++ Programming

Selection Homework 3

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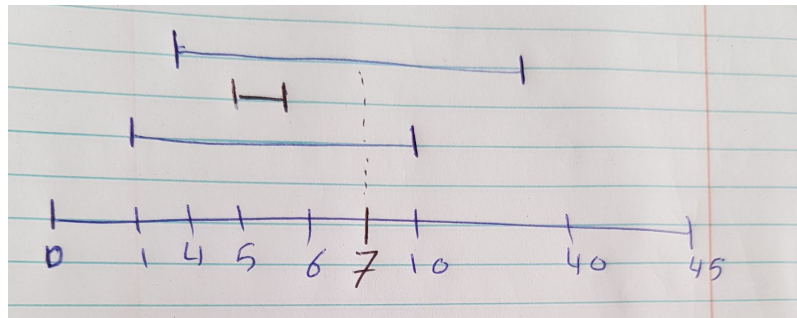
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Problem #1: Intervals

- Read number X then read 6 numbers $s1, e1, s2, e2, s3, e3$ ($s < e$)
 - These 6 numbers are for 3 interval
 - Each Interval is a range $[start, end]$
 - Number X in a range if **start** $\leq X \leq$ **end**
 - E.g 7 in range $[5, 12]$ but not in range $[10, 20]$
- Print how many intervals that X is part of
- Inputs
 - 7 1 10 5 6 4 40 $\Rightarrow 2$
 - Number 7 exists in 2 intervals $[1, 10]$ and $[4, 40]$
 - 10 5 15 6 100 3 30 $\Rightarrow 3$
 - 10 exists in the 3 intervals $[5, 15]$, $[6, 100]$, $[3, 30]$
 - 10 100 200 100 101 120 170 $\Rightarrow 0$ [doesn't exist in any interval]



Problem #2: 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 \Rightarrow 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 \Rightarrow -1

“Acquire knowledge and impart it to the people.”

“Seek knowledge from the Cradle to the Grave.”