

# FINAL PRACTICE!

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## Problem Solving with Computers-II

Link to class handout:

<https://bit.ly/one-problem-to-rule-them-all>

The image shows the C++ logo in blue, with the text "C++" in a bold, sans-serif font. Below the logo is a snippet of C++ code in a monospaced font, with syntax highlighting: 

```
#include <iostream>
using namespace std;

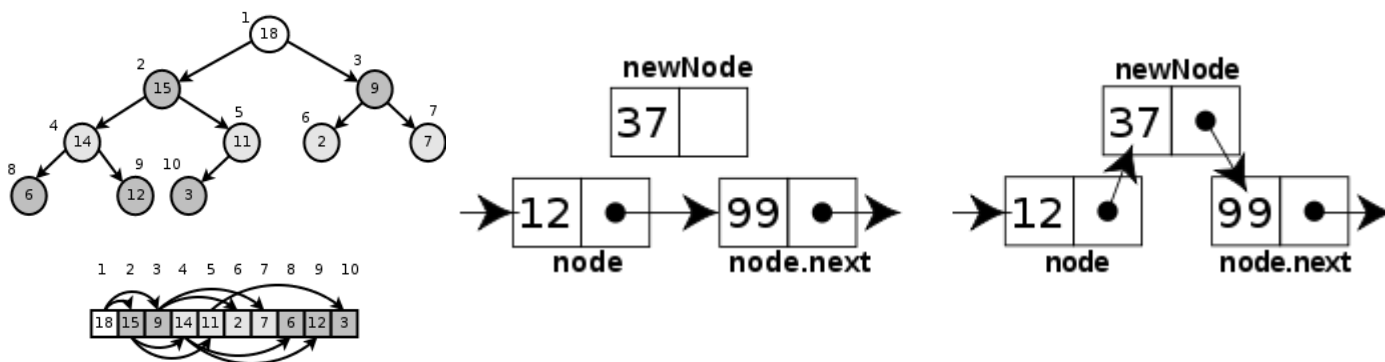
int main(){
    cout<<"Hola Facebook!n";
    return 0;
}
```

I can deal with pressure, and deadlines.



# Resources for the Final Exam

- Leet code problems categorized to help you focus on the most relevant ones.
  - Those marked as “Optional challenge” won’t be on the final
- Code from lectures: <https://github.com/ucsb-cs24-w26/cs24-w26-lectures>
- Last year’s final exam posted on Canvas for Practice (under module 10)
- Tool to visualize data structures: <https://visualgo.net/>
- If you missed your Mock interview, complete during section tomorrow.



INSERTION-SORT( $A$ )

```

1  for  $j = 2$  to  $A.length$ 
2     $key = A[j]$ 
3    // Insert  $A[j]$  into the sorted
   sequence  $A[1..j-1]$ .
4     $i = j - 1$ 
5    while  $i > 0$  and  $A[i] > key$ 
6       $A[i + 1] = A[i]$ 
7       $i = i - 1$ 
8     $A[i + 1] = key$ 

```

*cost*    *times*

$c_1$      $n$

$c_2$      $n - 1$

0     $n - 1$

$c_4$      $n - 1$

$c_5$      $\sum_{j=2}^n t_j$

$c_6$      $\sum_{j=2}^n (t_j - 1)$

$c_7$      $\sum_{j=2}^n (t_j - 1)$

$c_8$      $n - 1$

**Data Structures and C++**

**Complexity Analysis**

# One problem to rule them all!

## Problem (LP04): Longest Consecutive Sequence

**Description:** Given an unsorted array of integers `nums`, return the length of the longest consecutive elements sequence.

**Try solving it in as many different ways as you can, then pick the best!**

**Ex:** `nums = [100, 4, 200, 1, 3, 2]`      `nums = [1, 0, 1, 2]`

# Approach 1

```
nums = [100, 4, 200, 1, 3, 2]
```

```
nums = [1, 0, 1, 2]
```

## Approach 2

```
nums = [100, 4, 200, 1, 3, 2]
```

```
nums = [1, 0, 1, 2]
```

# Approach 3

```
nums = [100, 4, 200, 1, 3, 2]
```

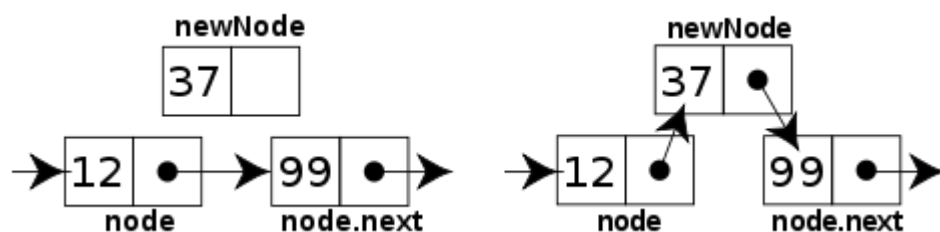
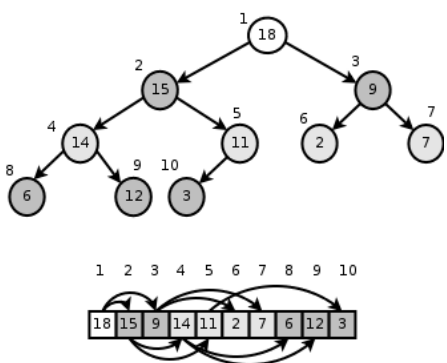
# Approach 4 ?

# CS24: Learning goals

Correct coding, clear thinking, no AI shortcuts

- Design and implement **larger programs** that **run fast**
- Organize **data** in programs using **data structures**
- **Analyze** the **complexity** of your programs
- Prep for **technical interviews**

Grow confident in your problem solving skills!



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8     $A[i + 1] = key$ 

```

<i>cost</i>	<i>times</i>
$c_1$	$n$
$c_2$	$n - 1$
0	$n - 1$
$c_4$	$n - 1$
$c_5$	$\sum_{j=2}^n t_j$
$c_6$	$\sum_{j=2}^n (t_j - 1)$
$c_7$	$\sum_{j=2}^n (t_j - 1)$
$c_8$	$n - 1$

**Data Structures and C++**

**Complexity Analysis**

**Break: Please take a moment to fill the course evaluations!**



## **PROBLEM SOLVING II**

Student-FO

<https://go.blueja.io/2Py4AgwuLkGbGaMq5b8sKg>

To access the evaluation, scan this QR code with your mobile phone.

Thank you and all the best !

