

# WELCOME TO CS 24!

## Problem Solving with Computers-II

<https://ucsb-cs24-sp17.github.io/>

# C++

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

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

Read the syllabus. Know what's required. Know how to get help.

	cost	times
1 for $j = 2$ to $A.length$	$c_1$	$n$
2 $key = A[j]$	$c_2$	$n - 1$
3 // Insert $A[j]$ into the sorted sequence $A[1..j - 1]$ .	0	$n - 1$
4 $i = j - 1$	$c_4$	$n - 1$
5 while $i > 0$ and $A[i] > key$	$c_5$	$\sum_{j=2}^n t_j$
6 $A[i + 1] = A[i]$	$c_6$	$\sum_{j=2}^n (t_j - 1)$
7 $i = i - 1$	$c_7$	$\sum_{j=2}^n (t_j - 1)$
8 $A[i + 1] = key$	$c_8$	$n - 1$

# Instructor

- Diba Mirza ([dimirza@cs.ucsb.edu](mailto:dimirza@cs.ucsb.edu))
  - PhD (Computer Engineering, UCSD)
  - New teaching faculty at the department of Computer Science, UCSB!
  - Before this: Teaching faculty at UCSD for three years
- Office: HFH 1155
- Office hours (starting on Friday 04/07):
  - Tues: 11am-noon, Friday: noon -1pm
  - Or by appointment

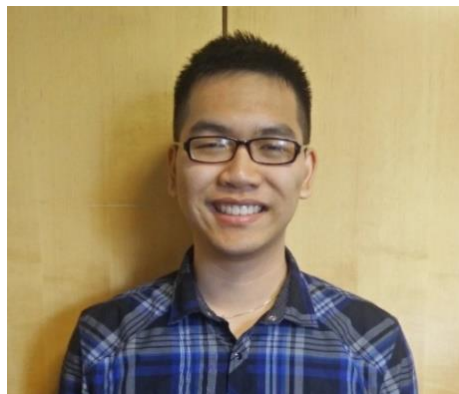
# Our teaching staff and growing tutor program !



Angela Yung  
(UG tutor)



Barbara Korycki  
(UG tutor)



Jimmy Le  
(UG tutor)



Sayali Kakade  
(UG tutor)



Sean Shelton  
(UG tutor)



Steven Fields  
(UG tutor)

Andrew Huang  
(UG tutor)

Bryanna Pham  
(UG tutor)

Natasha Lee  
(UG tutor)

Sherry Li  
(UG tutor)

Shreyas  
Radhakrishnan  
(UG tutor)

Thien Hoang  
(UG tutor)

Clickers out – frequency AB

# About you...

What is your major?

- A. Computer Science
- B. Computer Engineering
- C. Other

# Why are you taking this class?

- A. Its required for my major
- B. Its not required for my major but I am trying to switch to CS
- C. It not required for my major and I am not considering switching into CS
- D. Other

# About you...

What is your familiarity/confidence with programming in C++?

- A. Know nothing or almost nothing about it.
- B. Used it a little, beginner level.
- C. Some expertise, lots of gaps though.
- D. Lots of expertise, a few gaps.
- E. Know too much; I have no life.

# About you...

What is your familiarity/confidence with using version control with Subversion, Git or any other VCS?

- A. Know nothing or almost nothing about it.
- B. Used it a little, beginner level.
- C. Some expertise, lots of gaps though.
- D. Lots of expertise, a few gaps.
- E. Know too much; I have no life.



# Have you been in a class that used peer instruction before?

- A. Yes
- B. No
- C. I'm not sure

# Clickers, Peer Instruction, and PI Groups

- Find 1-2 students sitting near you. If you don't have any move.
- Introduce yourself.
- This is your initial PI group (at least for today)

# About this course

# C++

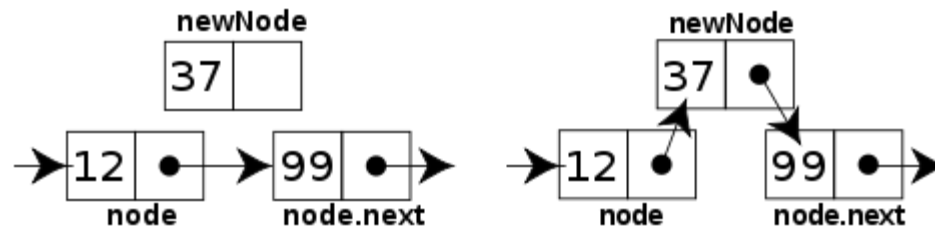
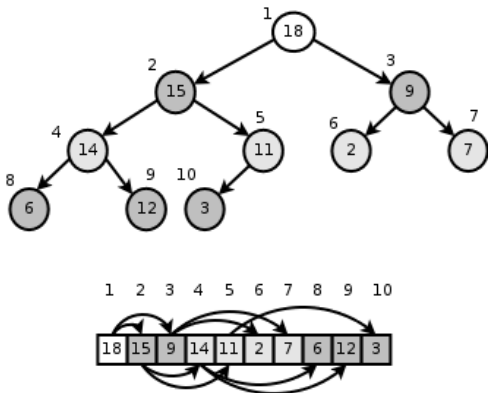
```
#include <iostream>
using namespace std;

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

# GitHub



## Data Structures



## Complexity Analysis

INSERTION-SORT( $A$ )

1	<b>for</b> $j = 2$ to $A.length$	$c_1$	$n$
2	$key = A[j]$	$c_2$	$n - 1$
3	// Insert $A[j]$ into the sorted sequence $A[1..j - 1]$ .	0	$n - 1$
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# Why learn C++?

# C++

```
#include <iostream>
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int main(){
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}
```

(Discuss with your group)

- ① used a lot in the industry (why?)
- ② FAST (but you should know how to drive this fast car)
- ③ Combines benefits of low-level language  
+ clear abstractions & features of object-oriented languages
- ④ Great for working with BIG data  
Jobs!

Which of these reasons is the most important reason to you?

# Why learn data structures?

(Discuss with your group)

What are data structures? Way to organize data in your program  
You know about arrays & linked-lists we'll see more of this

① Clear interface to data

② Speed

Example:  
on the planet.

... less imagine you wanted to maintain a list of everyone  
(How much time will it take to search  
for a random person using a linked list?)  
(in the order of billions of seconds, with a  
Binary Search Tree  
order of 10's !!)

Which of these reasons is the most important reason to you?

# Why learn github?

(Discuss with your group)

Manage large scale programs  
Collaborate with others!



# Course website!

<https://ucsb-cs24-sp17.github.io/>

- \* ATTENDENCE in sections and lecture is REQUIRED!
- \* To complete the labs you need a college of engineering account. Send me an email before tomorrow's section if you don't have an account

## iClickers: You must bring them

- Buy an iClicker at the Bookstore
- Register it on GauchoSpace by Friday
- Bring your iclicker to class

## Required textbook

- Michael Main and Walter Savitch. *Data Structures and Other Objects Using C++ (4th edition)*, Addison-Wesley, 2011.

## Recommended textbook

- Problem Solving with C++, Walter Savitch, Edition 9

You must **attend** class and lab sections

You must **prepare** for class

You must **participate** in class



# Course Logistics

- Grading

- Class and section participation (iclickers): : 2%
  - Homeworks (due every week) : 8%
  - Programming Assignments(including labs) : 40%
  - Midterm exams: (two, 15% each) : 30%
  - Final exam : 20%
- 
- Less than 75% iClicker response  $\equiv$  missing a class/section
  - No makeups for exams. Make sure you have no scheduling conflicts with exams
  - No LATE submissions unless you have a real emergency!

# Lab 00: Must be done individually

Key learning goals:

- Connect remotely to the CSIL unix servers (csil-0X.cs.ucsb.edu)
- Get familiarized with basic UNIX commands
- Create your first C++ program, compile and run it
- Get started with github
- Let us know if you don't have a CoE account before coming into section

Demo- intro to github

# Next time

- Intro to object oriented programming – C++ classes.