

# WELCOME TO CS 16!

## Problem Solving with Computers-I

<https://ucsb-cs16-w18.github.io/>



**Enrollment  
status: 118/105**

# C++

```

#include <iostream>
using namespace std;

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



# About me

- Diba Mirza ([diba@ucsb.edu](mailto:diba@ucsb.edu))
  - PhD (Computer Engineering, UCSD)
  - First year as faculty at UCSB!
  - Before this: Teaching faculty at UCSD for three years
- Office hours, HFH 1155 (starting next week 1/22):
  - Thursdays: 11a - 2p (3 hours)
  - Or by appointment
  - Check the Google calendar on course site
  - You MUST include [CS16] on any emails
- Open lab hours – Phelps 3525 (starting this week):
  - Mondays: 1p - 8p (7 hrs)
  - Fridays: 1p - 5p (4 hrs)

The open lab hours will be held by the TAs and tutors



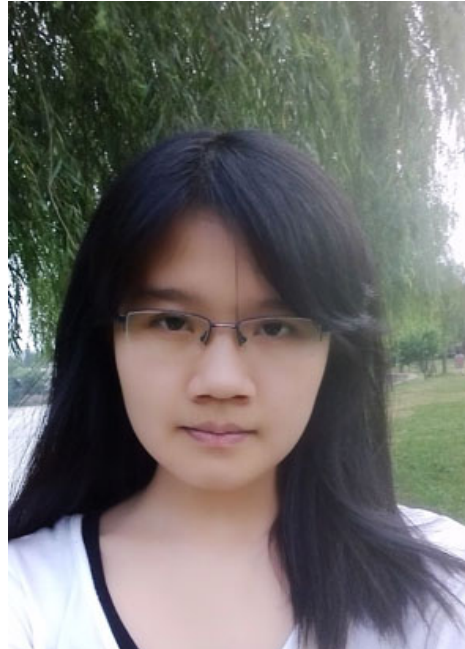
## Types of questions to ask me:

- How does ...a compiler work?
- Why does... this example code seg fault?
- Do you know of ...a better way to debug this code...
- Can we go over ....pointers again?
- How can I improve .....coding from scratch?
- I have not yet received from my mentor can your help?

# Our teaching staff - TAs !



Boyuan Feng



Zhiyu Chen

REMEMBER: You can send messages to individual staff on our class discussion forum

## Types of questions to ask TAs:

- **LOGISTICS:**
  - I was ill and couldn't come to my assigned section, can I come to the noon section?
  - The due date on the lab seems incorrect, can you take a look?
  - I had a real emergency, can I submit lab X late?
- **REGRADES (labs and homeworks):**
  - Could you regrade my lab0x?
- **DUE DATES and DISCREPANCIES on the course site:**
  - When is the review session for the midterm?



# About this course



Instructor (me)



Course Mentors



# How to succeed in this course - first steps

- Come to instructor office hours and introduce yourself
- Get to know your mentor soon (see instructions on lab00)
- Get to know your programming partner (see website)
- Setup a regular time to meet outside of section time with your
  - **Mentor**
  - **Programming partner**
- Communicate with the staff in person and on:

PIAZZA



About this course, more on the course website:  
<https://ucsb-cs16-w18.github.io/>

# C++

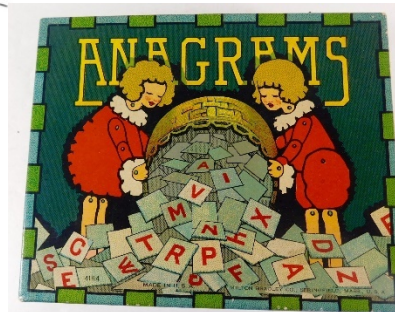
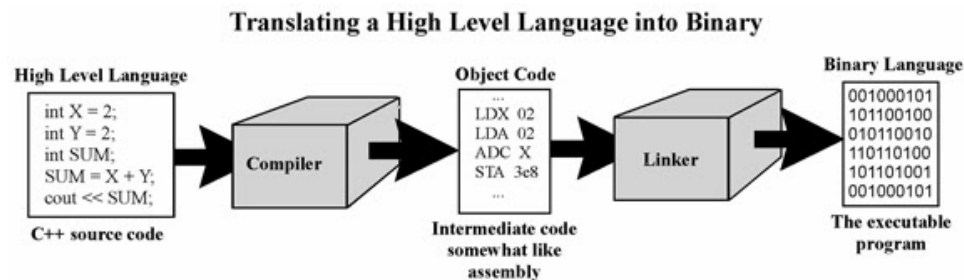
```
#include <iostream>
using namespace std;

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

## Solve fun problems!

## Go under the hood of your programs

GitHub



# Course Logistics

- Grading

- Class and section participation (iclickers): : 2%
- Homeworks/Quizzes (due every week) : 8%
- Lab (programming) Assignments(due weekly) : 40%
- Midterm exam: : 20%
- Final exam : 30%

- No makeups for exams. Make sure you have no scheduling conflicts with exams
- You have 48 hours grace period to submit the labs – choose wisely. DO NOT contact the instructor or TAs for extensions unless you have a real emergency
- ATTENDENCE in sections and lectures is REQUIRED!
- To complete the labs you need a college of engineering account. If you don't have one yet, send an email to [help@engineering.ucsb.edu](mailto:help@engineering.ucsb.edu)

## iClickers: You must bring them

- Buy an iClicker at the Bookstore
- Register it on GauchoSpace (I will make an announcement on Piazza)
- Bring your iclicker to class

## Assigned Reading from

- 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



Clickers out – frequency AB

# 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 UNIX command line

- 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.

# 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)

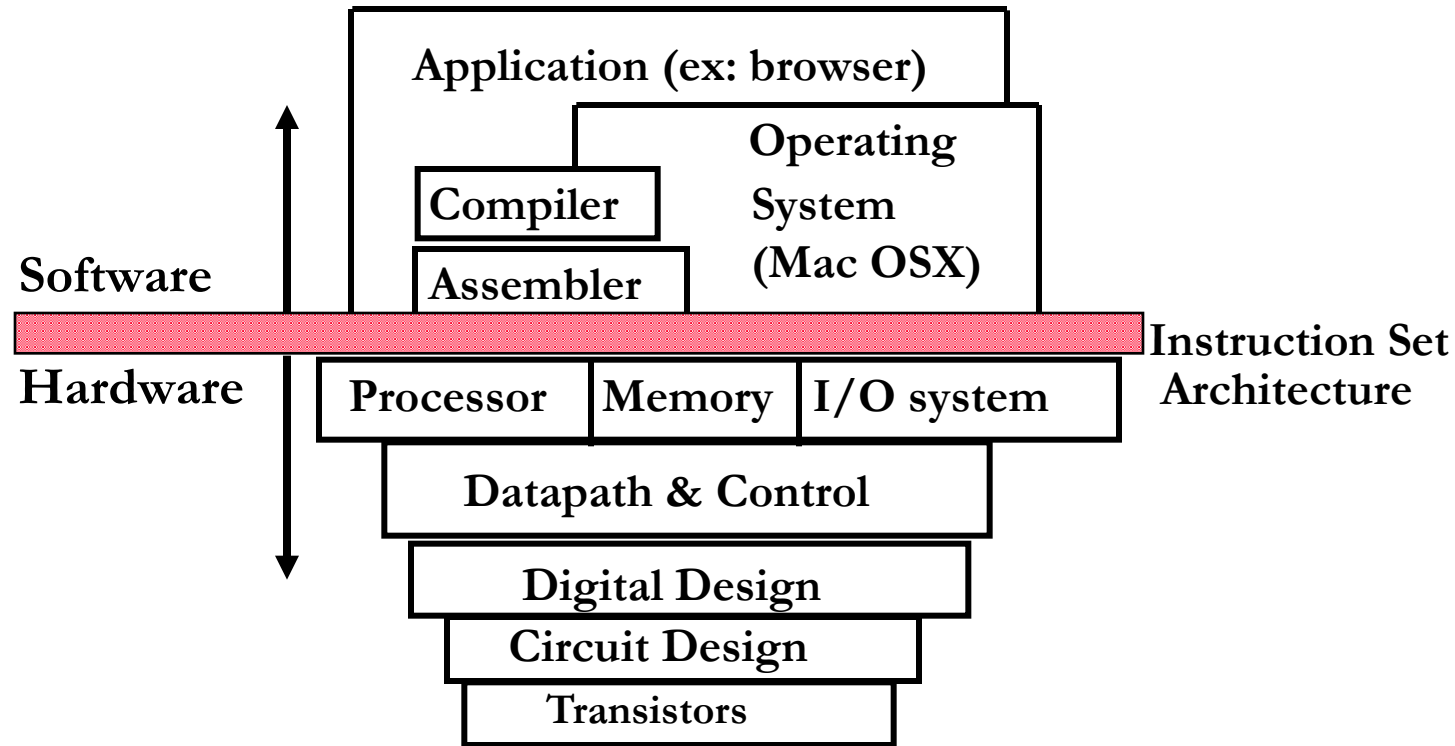


# Basic structure of a C++ program

# Abstracted view of a computer: Five hardware components

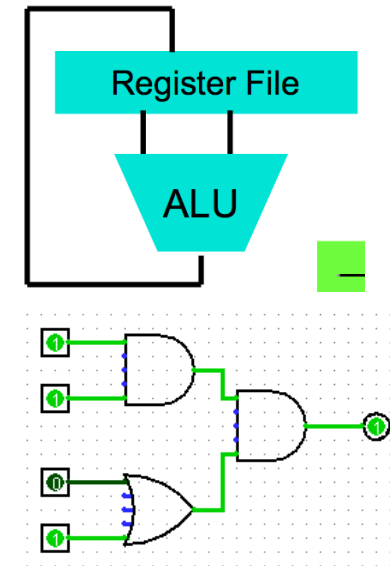
- Input devices
- Output devices
- Processor
- Main memory
- Secondary memory

# How do we handle complexity?



```
temp = v[k];
v[k] = v[k+1];
v[k+1] = temp;
ldr r0, [r2]
ldr r1, [r2, #4]
str r1, [r2]
str r0, [r2, #4]
```

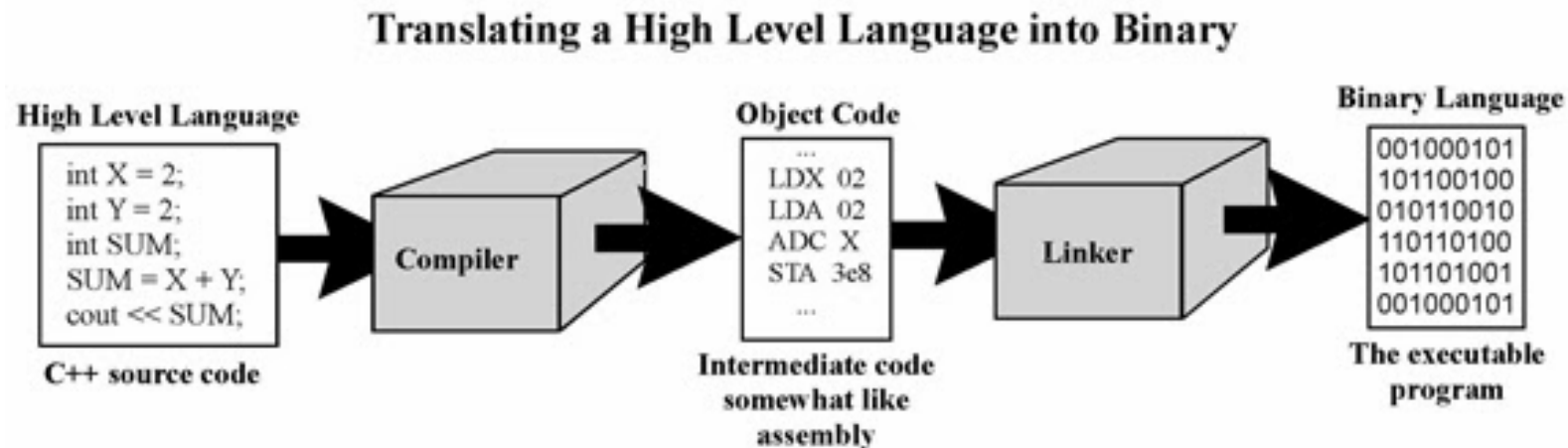
```
0000 1001 1100 0110 1010 1111 0101 1000
1010 1111 0101 1000 0000 1001 1100 0110
1100 0110 1010 1111 0101 1000 0000 1001
0101 1000 0000 1001 1100 0110 1010 1111
```



- Big idea: Coordination of many *levels of abstraction*

# The different stages of writing C++ code

- Editing – basically entering code in a text file
- Compiling – converting your code in a form the processor can understand (using another program called a compiler)
- Running – executing the binary version of your program on the processor



LIVE DEMO of  
writing a simple  
C++ program



Q: Which of the following converts a high level language to machine language

- A. Main Memory
- B. Secondary Memory
- C. Processor
- D. Compiler
- E. Operating System

# 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

LIVE DEMO

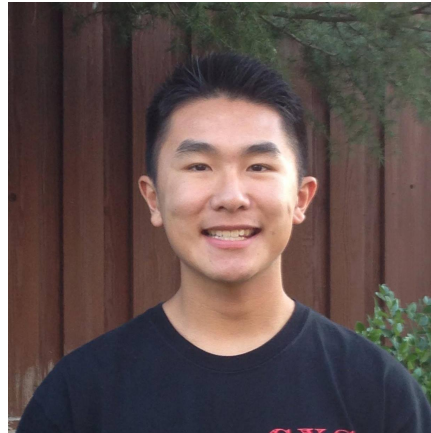
# Our teaching staff – tutors !



Taylor



Barbara



Koa



Ben



Madhu



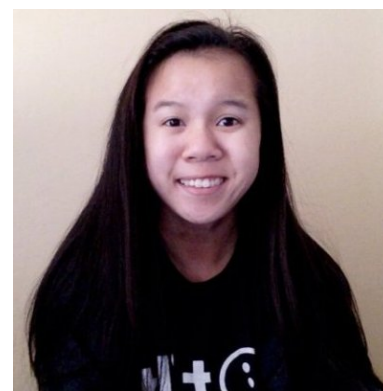
Jake



Jake



Vincent



Dana



Carly



Isaac

# Next time

- Github
- simple flow control- for, while loops, nested and multi-way if-else