

WELCOME TO CS 16!

Problem Solving with Computers-I

<https://ucsb-cs16-s18-mirza.github.io/>



Enrollment
status: 117/105

C++

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

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



About me

- Diba Mirza (diba@ucsb.edu)
 - PhD (Computer Engineering, UCSD)
 - First year as faculty at UCSB!
 - Before this: Teaching faculty at UCSD for three years
- Office hours (starting next week 1/22):
 - M: 3:30p - 5p (right after lecture)
 - R: 11a – 1p
 - Or by appointment
 - Location: HFH 1155
 - Check the Google calendar on course website
 -
- You can reach me via
 - Piazza (highly recommended)
 - **Email: Include [CS16] on the subject line**



Ask me about:

- Course content!
- The how and why of what we are learning

Tell me about:

- Yourself!
- Experience in the class
- Interaction with the staff
- Climate of the labs

Course staff



Sierra

Yanju

TAs and peer mentors about:

- One-one help in labs
- Feedback on code
- Answer questions on course content
- Available during “schedule” and “open labs” in Phelps 3525



Graham



Yossi



Bryanna



Annan



Barbara



Madhu

Peer Mentors

How to succeed in this course - first steps

- Complete the questionnaire that is part of lab00 before tomorrow's section
- Come to instructor office hours and introduce yourself
- 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

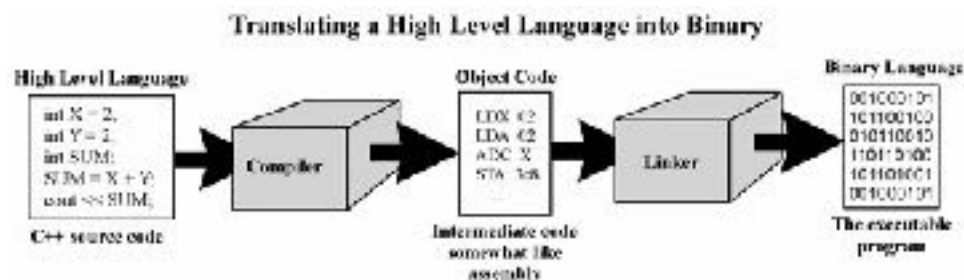
You will learn :

- **C++** (really the C part of C++) - why?
- Understand **what goes on under the hood** of C++ programs - why?
- Learn how to **debug** better
- **Solve fun problems :)**

C++

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

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



GitHub



Course Logistics:

more on the course website: <https://ucsb-cs16-s18-mirza.github.io/>

- 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

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)

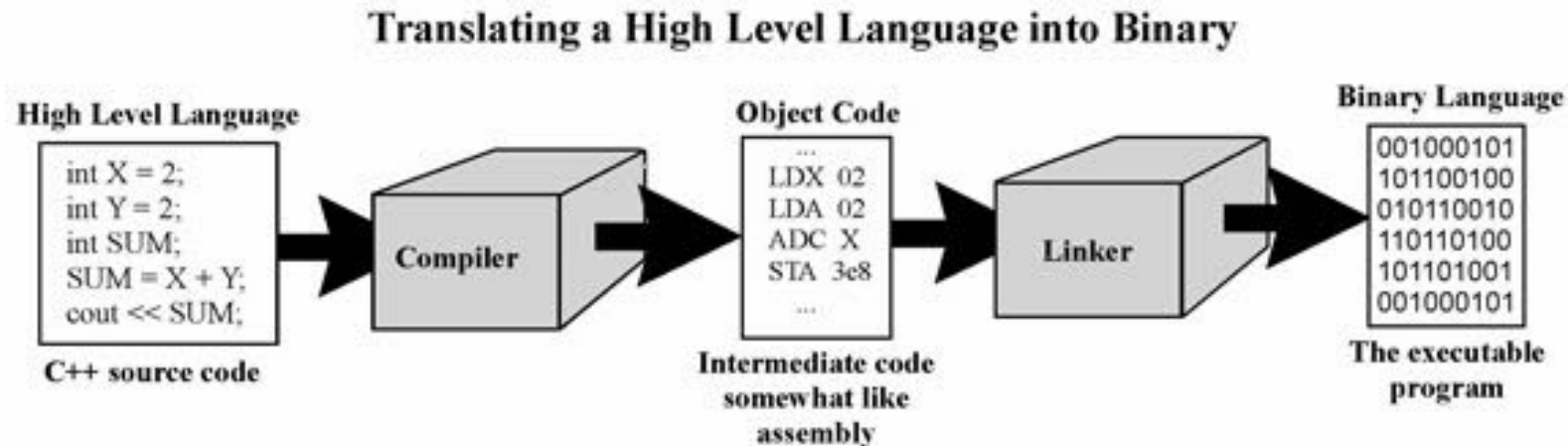
Abstracted view of a computer:

Five hardware components

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

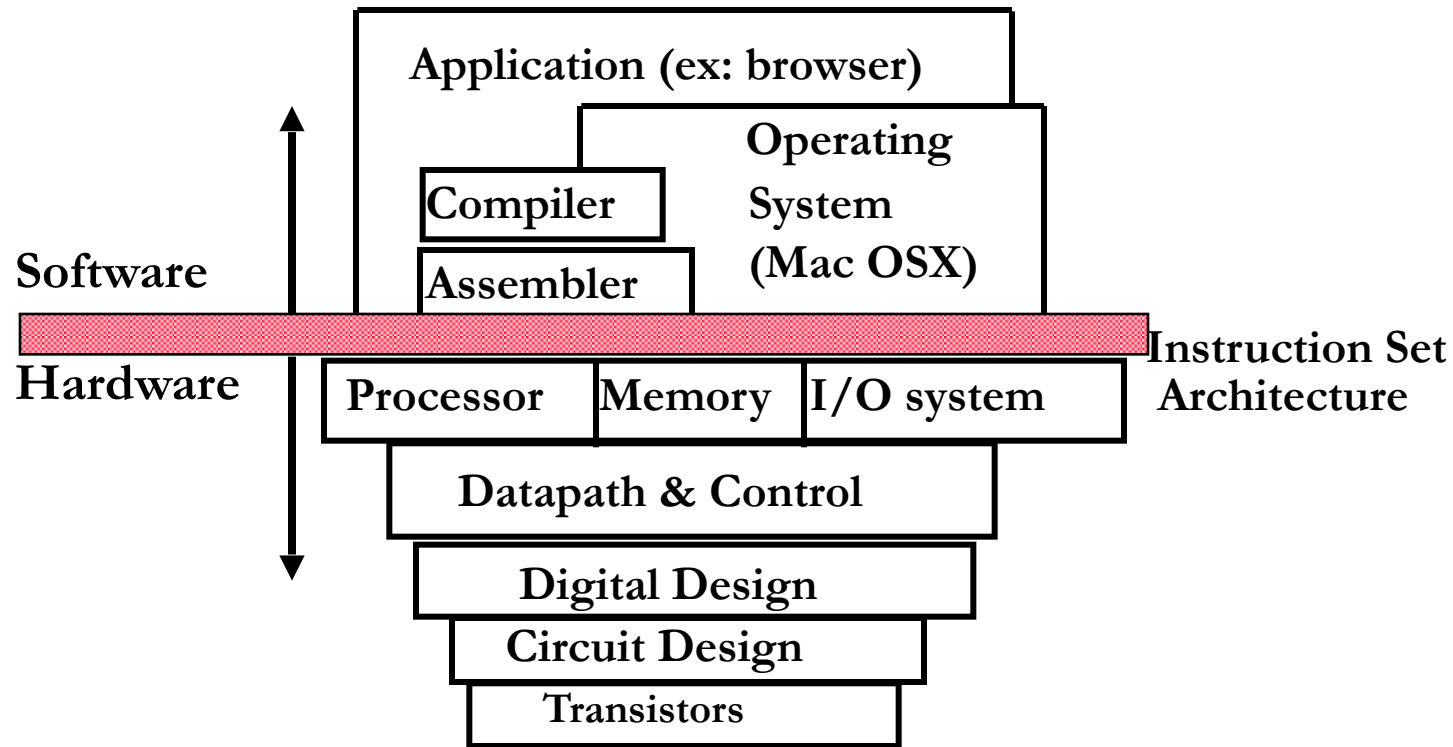
The different stages of writing C++ code

- 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



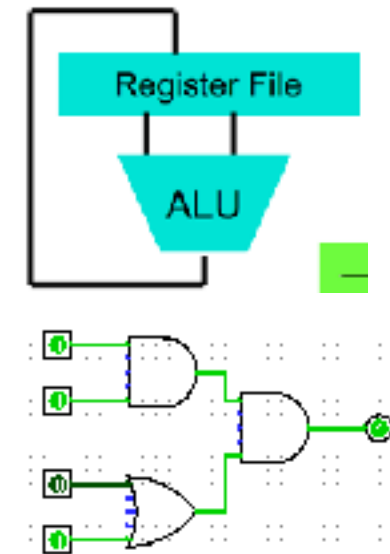
LIVE DEMO of
writing a simple C++
program

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*

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

Before coming to the lab:

- Read the lab00 writeup
- Complete the “About you” questionnaire on lab00
- Get a CoE account if you don’t have one already.
- You can check if you have a working account by trying to remotely log into csil-02.cs.ucsb.edu

Key learning goals of lab00:

- 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

LIVE DEMO

Basic structure of a C++ program

```
// name of the program as a comment: hello.pp
// Everything after the double slash is a comment
#include <iostream>    // Include the "modules" needed for
basic input output
using namespace std; // using the Standard C++ library

int main(){
    //Write code here
    return 0;

}
```

Next time

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