CS 31 *BASICS*
Session 1D
LOGISTICS

• Luis Ángel Larios Cárdenas
  • Computer Graphics | Web Development | Graphic Design

• Office Hours
  • Monday 11:30 AM to 12:30 PM
  • Tuesday 11:30 AM to 1:30 PM
  • Boelter Hall 2432

• Email addresses
  • langel@cs.ucla.edu
  • la_youngmin@naver.com
DISCUSSION SESSIONS

• Check [http://cs.ucla.edu/~langel/cs31](http://cs.ucla.edu/~langel/cs31) for session materials and more!

• What do you expect from these sessions?

• Think of me as NOT your TA, but another classmate that is here to HELP you :-)  

• If you have trouble understanding anything (even beyond this class :P)
  • Participate or ask questions during discussion.
  • Come to office hours.
  • Send me an email, and visit me at my lab (Boelter Hall 3815 — MAGIX lab)
ADVICE ON PROJECTS

• Start early.
• Read, understand, and follow the specs.
• Develop incrementally.
• When asking by email, “quote” the error you are getting — Be specific.
  • Don’t send your code
  • Don’t send screen shots.
The Von Neumann Model

- Memory
- Central Unit Process (CPU)
- Input and Output devices. (I/O)

If everything is stored in memory as integers, how do we represent

- Non-integral numbers?
- Text?
- Images?
- Sound?
- Movies?
**ASCII**

*(American Standard Code for Information Exchange)*

<table>
<thead>
<tr>
<th>Decimal</th>
<th>Hexadecimal</th>
<th>Binary</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>64</td>
<td>40</td>
<td>1000000</td>
<td>@</td>
<td>At symbol</td>
</tr>
<tr>
<td>65</td>
<td>41</td>
<td>1000001</td>
<td>A</td>
<td>Uppercase A</td>
</tr>
<tr>
<td>66</td>
<td>42</td>
<td>1000010</td>
<td>B</td>
<td>Uppercase B</td>
</tr>
<tr>
<td>67</td>
<td>43</td>
<td>1000011</td>
<td>C</td>
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<tr>
<td>68</td>
<td>44</td>
<td>1000100</td>
<td>D</td>
<td>Uppercase D</td>
</tr>
<tr>
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<td>45</td>
<td>1000101</td>
<td>E</td>
<td>Uppercase E</td>
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<tr>
<td>70</td>
<td>46</td>
<td>1000110</td>
<td>F</td>
<td>Uppercase F</td>
</tr>
</tbody>
</table>
REVIEW

- Machine language — why do we need it?

<table>
<thead>
<tr>
<th>Program Fragment:</th>
<th>Y = Y + X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine Language Code (Binary Code)</td>
<td>Assembly Language Code</td>
</tr>
<tr>
<td>Opcode</td>
<td>Address</td>
</tr>
<tr>
<td>1100 0000</td>
<td>0010 0000 0000 0000 0000</td>
</tr>
<tr>
<td>1011 0000</td>
<td>0001 0000 0000 0000 0000</td>
</tr>
<tr>
<td>1001 0000</td>
<td>0010 0000 0000 0000 0000</td>
</tr>
</tbody>
</table>

- Any problem with this?
EXECUTING A PROGRAM

High-level language → Compiler → Machine language

Source Code *.cpp → Compilation error → Executable

Compilation error → Run-time error
AN EXAMPLE OF RUNTIME ERROR
YOUR FIRST C++ PROGRAM

/* My first program in C++ */
#include <iostream>  // Library for input and output functions.
using namespace std;  // Don't worry about this line for now.
int main()  // Entry point function to start execution.
{
    cout << "Hello, World!\n";  // Output something to screen.
    return 0;  // Finish execution!
}
TOOLS TO START UP

• Make sure you have a SEASnet account
  • Visit http://seas.ucla.edu/acctapp/

• Set up a remote desktop connection to SEASnet Terminal Server
  • Visit http://www.seasnet.ucla.edu/classes/seasnet-terminal-server/terminal-server

• On your own computer, select an IDE to do your assignments.
  • If you use Microsoft Visual Studio, test your *.cpp files by using g++
  • If you use Apple’s Xcode, test your *.cpp files in Microsoft Visual Studio.
CREATING A PROJECT IN XCODE

Hello World
Program ended with exit code: 0
CREATING A PROJECT IN VISUAL STUDIO

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

int main()
{
    cout << "Hey, this really works!" << endl;
}
```
COMPILING IN A LINUX SERVER

You can run graphical applications from your PC using SSH and Xming!! Please see http://www.seasnet.ucla.edu/UnixServers/lnxsrv!!

SEASnet Computing Access

Priority is given both on the servers and in the student labs to those students doing coursework. Computing support for research is provided by each department.

For assistance please contact help@seas.ucla.edu or call 206-6864.

```
[luisc@lnxsrv01 ~]$ ls
Application Data Desktop Documents My Documents WINDOWS
CS31 Desktop.old Downloads nsdefault

[luisc@lnxsrv01 ~]$ cd Desktop
desktop.ini hello.cpp $RECYCLE.BIN
[luisc@lnxsrv01 ~]$ g++ -o hello hello.cpp
desktop.ini hello hello.cpp $RECYCLE.BIN
[luisc@lnxsrv01 ~] ls
desktop.ini hello hello.cpp $RECYCLE.BIN

[luisc@lnxsrv01 ~]$ ./hello
Hey, this really works!
```
/*
 * Summing up two integers.
 */

#include <iostream>
using namespace std;

int main()
{
    int integer1, integer2;       // Declare two integer variables.
    int sum;                      // Declare one integer variable.

    cout << "Enter first integer:" << endl;
    cin >> integer1;              // Read first integer.

    cout << "Enter second integer:" << endl;
    cin >> integer2;              // Read second integer.

    sum = integer1 + integer2;
    cout << "The sum is: " << sum << endl;  // Show result.

    return 0;
}
COMPILER (SYNTAX) ERRORS

Find the 3 errors!

/*
 * Summing up two integers.
 */
#include <iostream>
using namespace std;

int main()
{
    int integer1 integer2;   // Declare two integer variables.
    int sum;                // Declare one integer variable.

    cout << "Enter first integer:" << endl;
    cin >> integer1;        // Read first integer.

    cout << "Enter second integer:" << endl;
    cin >> integer2;        // Read second integer.

    sum = integer1 + integer2;
    cout << "The sum is: " << sum << endl;   // Show result.

    return 0;
}
What's wrong here?