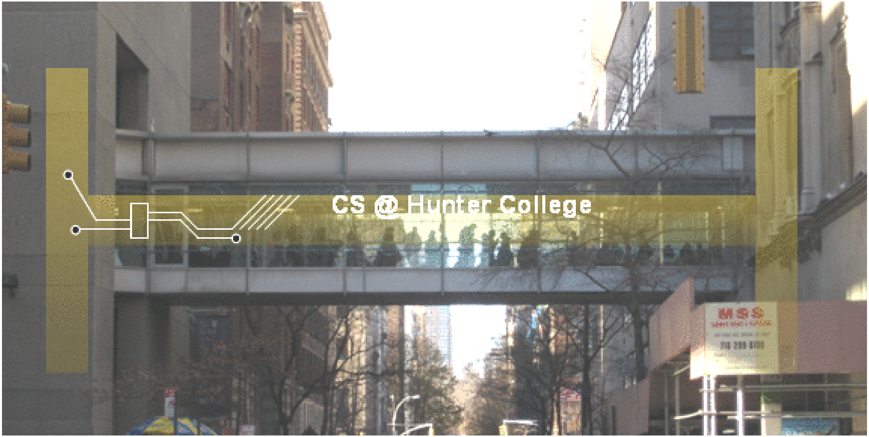
CSci 127: Introduction to Computer Science



hunter.cuny.edu/csci

Frequently Asked Questions

From lecture slips & recitation sections.

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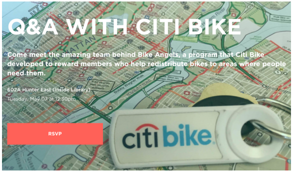
  It's a practice exam that we're holding on 14 May.
  More details at the end of lecture.

Announcements



Q&A WITH CITI BIKE

Come meet the amazing team behind Bike Angels, a program that Citi Bike developed to reward members who help redistribute bikes to areas where people need them.

602A Hunter East (Inside Library)

Tuesday, May 07 at 12:30pm

RSVP

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  - Lecture slip,
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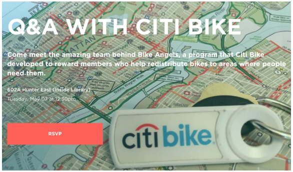

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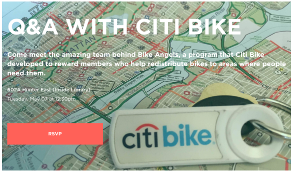
CS Surveys Talk: CitiBike BikeAngels
Collin Waldoch & Carter Wang
CS Surveys Talk



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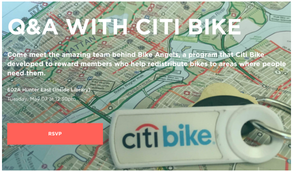

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- Two weeks: Mock Exam (more at end of lecture).
- Three weeks: Final Exam (more at end of lecture).

Today's Topics

- C++: Basic Format & Variables
- I/O and Definite Loops in C++
- More Info on the Final Exam

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- **C++: Basic Format & Variables**
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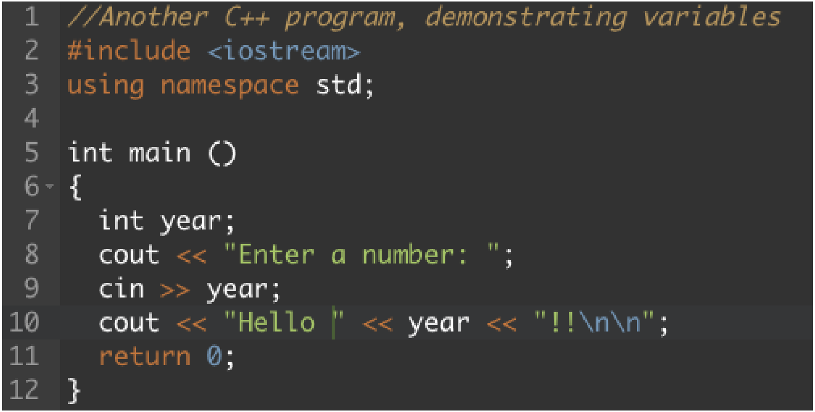
In Pairs or Triples:

- *Using what you know from Python, predict what the C++ code will do:*



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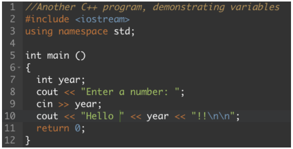
onlinegdb demo



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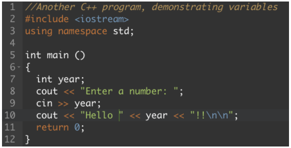
(Demo with `onlinegdb`)

Introduction to C++



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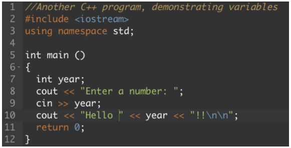
- C++ is a popular programming language that extends C.

Introduction to C++



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- Fast, efficient, and powerful.

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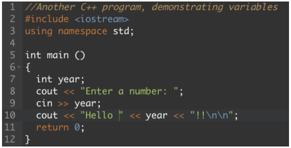

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- Used for systems programming (and future courses!).

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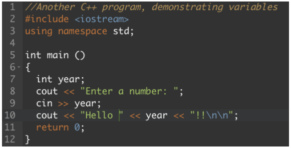

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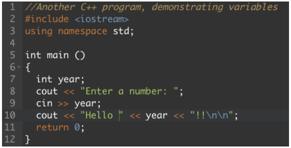
- C++ is a popular programming language that extends C.
- Fast, efficient, and powerful.
- Used for systems programming (and future courses!).
- Today, we'll introduce the basic structure and simple input/output (I/O) in C/C++.

Introduction to C++

- Programs are organized in functions.



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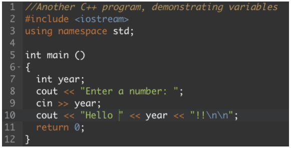

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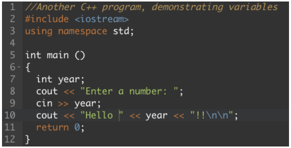

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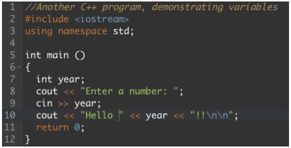

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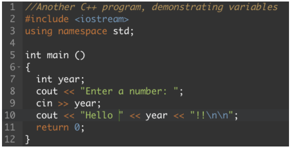

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    cout << "Hello world!";
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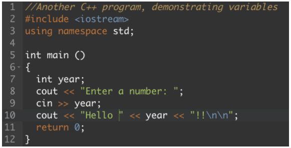

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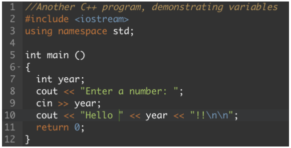

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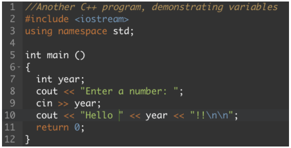

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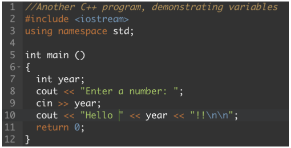

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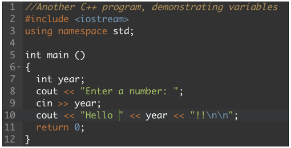

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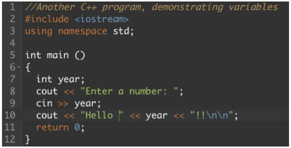

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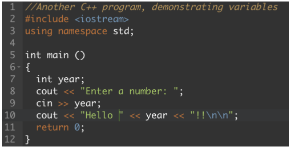

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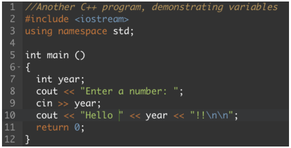

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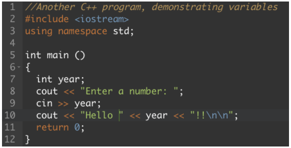

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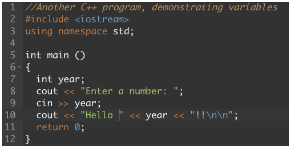

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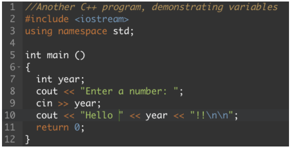

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#include <iostream>
using namespace std;

int main ()
{
  int year;
  cout << "Enter a number: ";
  cin >> year;
  cout << "Hello " << year << "!!\n\n";
  return 0;
}
```

- Programs are organized in functions.
- Variables must be **declared**:
  `int num;`
- Many types available:
  `int, float, char, ...`
- Semicolons separate commands:
  `num = 5; more = 2*num;`
- To print, we'll use `cout <<`:
  `cout << "Hello!!";`
- To get input, we'll use `cin >>`:
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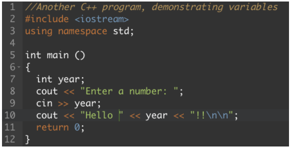
- To use those I/O functions, we put at the top of the program:

Introduction to C++



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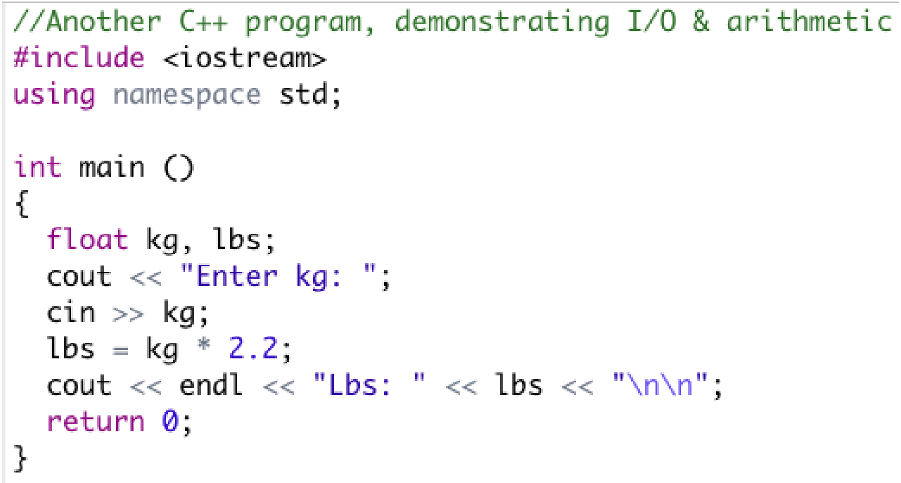
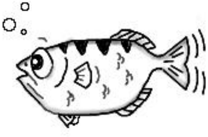


```
//Another C++ program, demonstrating I/O & arithmetic
#include <iostream>
using namespace std;

int main ()
{
  float kg, lbs;
  cout << "Enter kg: ";
  cin >> kg;
  lbs = kg * 2.2;
  cout << endl << "Lbs: " << lbs << "\n\n";
  return 0;
}
```

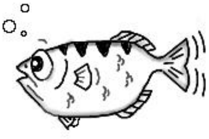
Side Note: gdb



gdb.org

- Part of Richard Stallman's "GNU is Not Unix" (GNU) project.

Side Note: gdb



gdb.org

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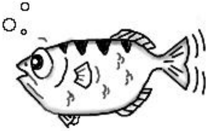
Side Note: gdb



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- Lightweight, widely-available program that allows you to "step through" your code line-by-line.

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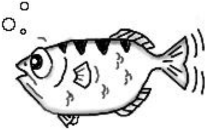

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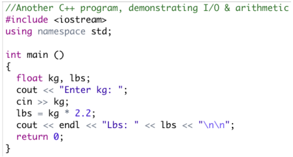
- Lightweight, widely-available program that allows you to "step through" your code line-by-line.
- Available on the lab machines (via command-line and the IDE spyder) and on-line (onlinegdb.com).

C++ Demo



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int main ()
{
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  cout << endl << "Lbs: " << lbs << "\n\n";
  return 0;
}
```
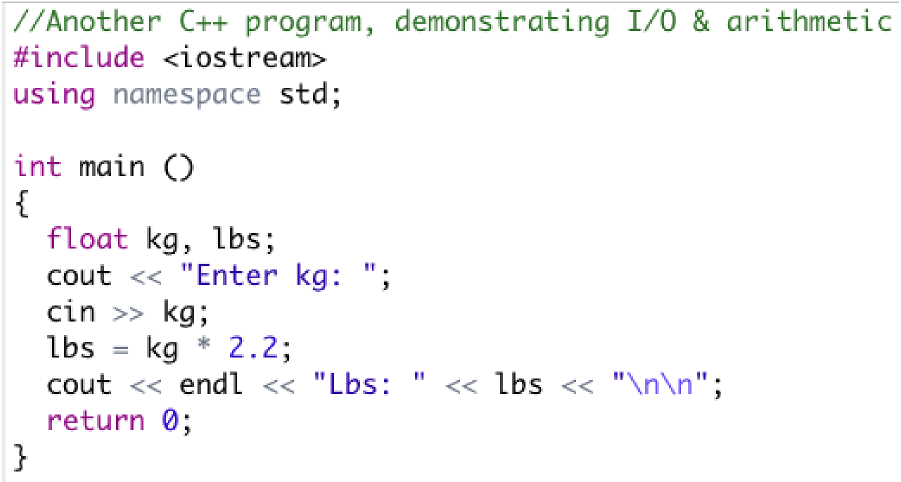

(Demo with `onlinegdb`)

In Pairs or Triples...

Convert the C++ code to a **Python program***:*



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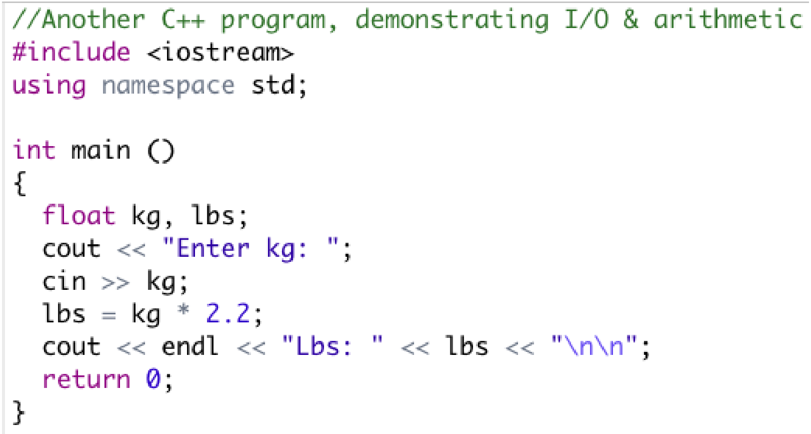
Python Tutor

Convert the C++ code to a **Python program***:*



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using namespace std;

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  cin >> kg;
  lbs = kg * 2.2;
  cout << endl << "Lbs: " << lbs << "\n\n";
  return 0;
}
```

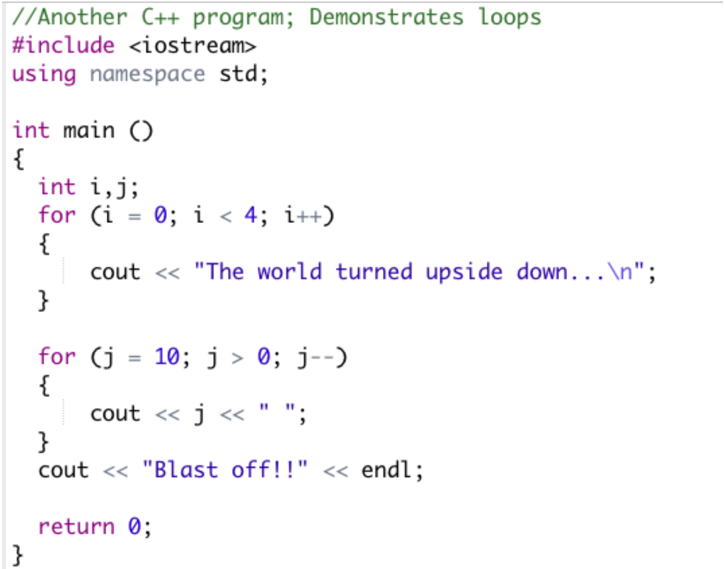
(Write from scratch in `pythonTutor`.)

Today's Topics

- C++: Basic Format & Variables
- **I/O and Definite Loops in C++**
- More Info on the Final Exam

In Pairs or Triples:

Predict what the following pieces of code will do:



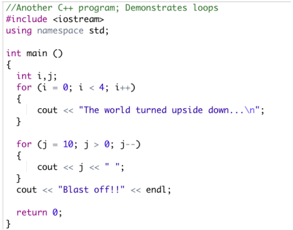
```
//Another C++ program; Demonstrates loops
#include <iostream>
using namespace std;

int main ()
{
  int i,j;
  for (i = 0; i < 4; i++)
  {
    cout << "The world turned upside down...\n";
  }

  for (j = 10; j > 0; j--)
  {
    cout << j << " ";
  }
  cout << "Blast off!!" << endl;

  return 0;
}
```

C++ Demo



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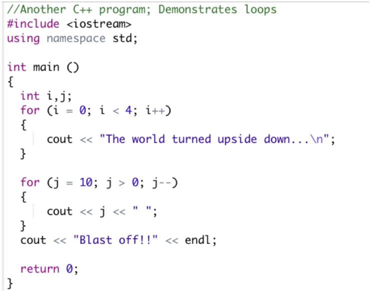
Definite loops



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      cout << j << " ";
  }
  cout << "Blast off!!" << endl;

  return 0;
}
```

General format:

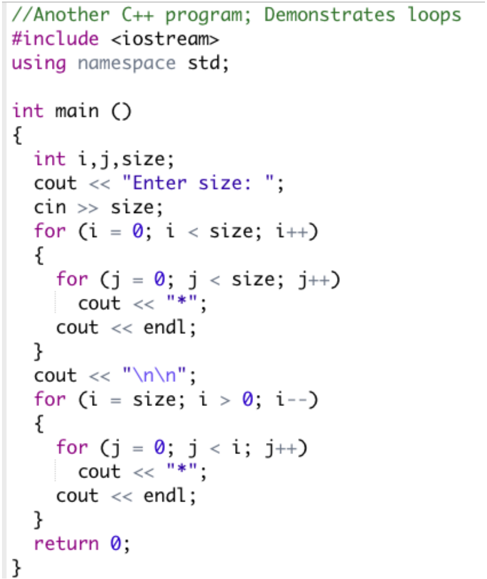
`for` (*initialization* ; *test* ; *updateAction*)
{

command1;
command2;
command3;
...

}

In Pairs or Triples:

Predict what the following pieces of code will do:



```
//Another C++ program; Demonstrates loops
#include <iostream>
using namespace std;

int main ()
{
  int i,j,size;
  cout << "Enter size: ";
  cin >> size;
  for (i = 0; i < size; i++)
  {
    for (j = 0; j < size; j++)
      cout << "*";
    cout << endl;
  }
  cout << "\n\n";
  for (i = size; i > 0; i--)
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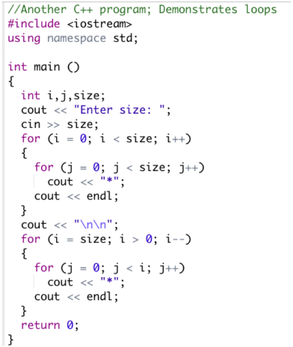

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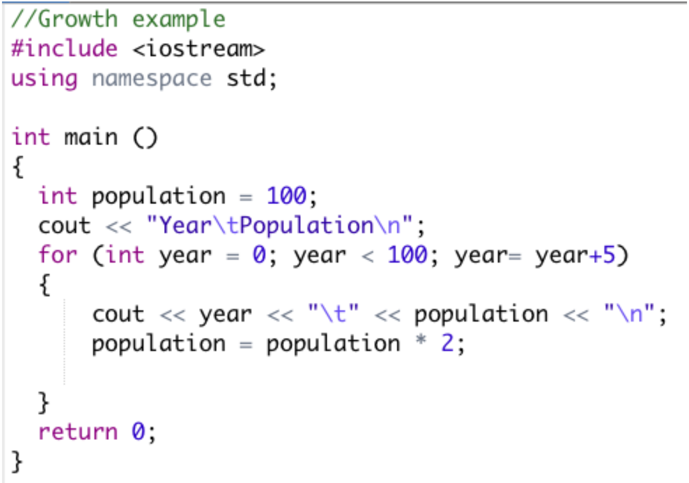
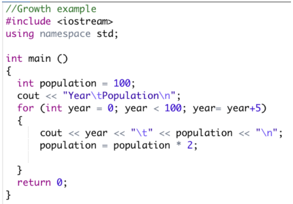


```
//Growth example
#include <iostream>
using namespace std;

int main ()
{
  int population = 100;
  cout << "Year\tPopulation\n";
  for (int year = 0; year < 100; year= year+5)
  {
      cout << year << "\t" << population << "\n";
      population = population * 2;

  }
  return 0;
}
```

C++ Demo



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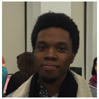
(Demo with `onlinegdb`)

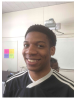
Lecture Slips

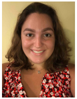
Which UTA have you spoken with most? Why?

Anna Lis

Antonio Bountouvas

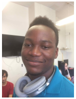

Brian Campbell


Bryan Belmont


Camryn Buonamassa

David Yuen

Erin Williams

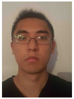

Ferdi Lesporis

Harry Wu

Mandy Yu

Michael Nurilov

Nick Szewczak


Nicky Cen

Owen Kunhardt

Parakram Basnet

Ralph Venté

Rhia Singh

Savannah Nester

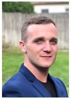
Shaina Lowenthal

Shantel Dixon

Stephanie Yung

Stephen Milani

Such Singh

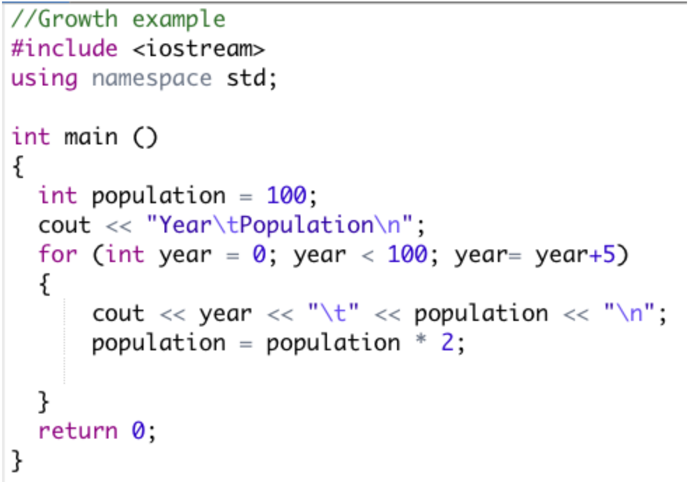

Thomas Joy

Tommi Ann Tsuruga

Vincent Zheng

Lecture Slips

In pairs or triples: **translate** the C++ program into Python:



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```
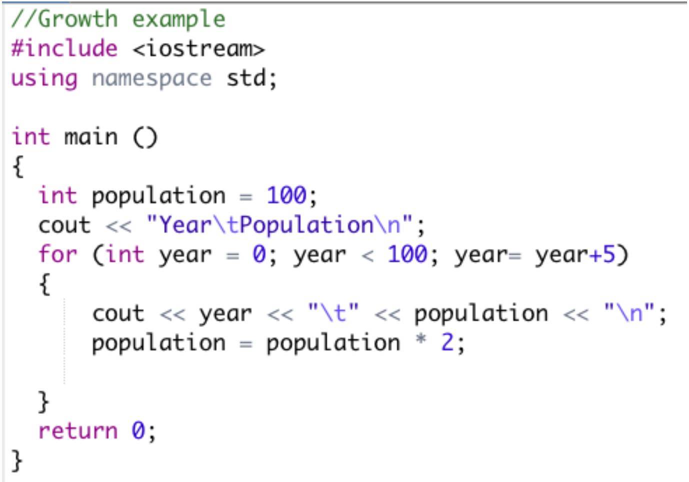

Lecture Slips

Translate line-by-line:



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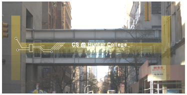
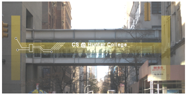
Recap: C++



- On lecture slip, write down a topic you wish we had spent more time (and why).

Recap: C++



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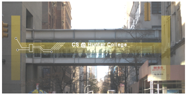
- C++ is a popular programming language that extends C.

Recap: C++



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  - `cout <<`

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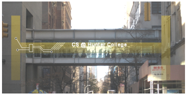

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for (i = 0; i < 10; i++) {
    ...
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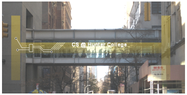
Recap: C++



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```
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     ...
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```

- Pass your lecture slip to the aisles for UTA's to collect.

Today's Topics

- Introducing C++: Basic Format & Variables
- I/O and Definite Loops in C++
- **More Info on the Final Exam**

Final Exam: When

- The final exam is **Tuesday, 21 May, 9am-11am**, Assembly Hall (118 HN).

Final Exam: When

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- If you have a conflict, the alternative time is: Wednesday, 15 May, 8:30-10:30am, 1001E HN.

Final Exam: When

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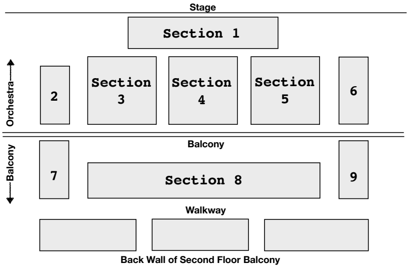
- If you have accommodations via the Accessibility Office, we will send the exam to their testing center. (Must complete by noon, Tuesday, 21 May.)

Final Exam: Logistics

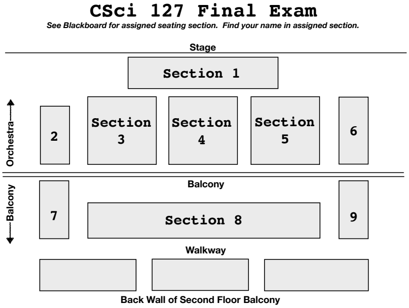
CSci 127 Final Exam

See Blackboard for assigned seating section. Find your name in assigned section.



- Bring ID, note sheet, pencils or pens.

Final Exam: Logistics



CSci 127 Final Exam

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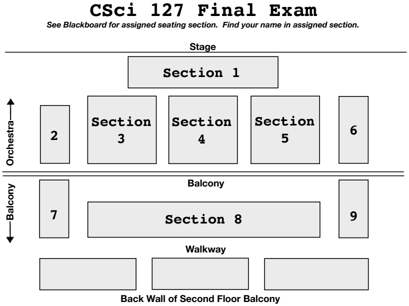

CSci 127 Final Exam

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- Sign out when you turn in your exam.

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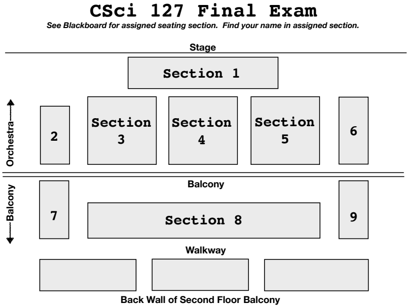

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- Cannot leave during the first 45 minutes of the exam.

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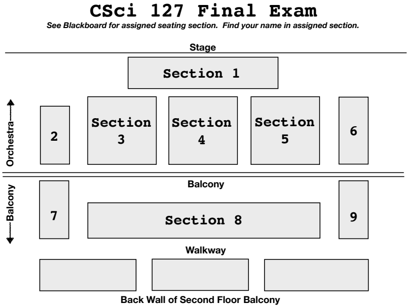

CSci 127 Final Exam

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- Cannot leave during the first 45 minutes of the exam.
- Cannot start the exam after students start leaving.

Final Exam: Format

- The exam is 2 hours long.

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- There are 4 different versions to discourage copying.
- It is on paper. No use of computers, phones, etc. allowed.
- You may have 1 piece of **8.5" x 11"** piece of paper.
  - With notes, examples, programs: what will help you on the exam.
  - No origami– it's distracting to others taking the exam.
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- Past exams available on webpage (includes answer keys).

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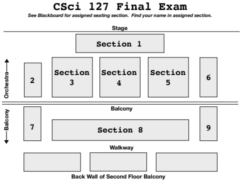


CSci 127 Final Exam

See Blackboard for assigned seating section. Find your name in assigned section.

Stage

Section 1

Orchestra

2

Section 3

Section 4

Section 5

6

Balcony

7

Section 8

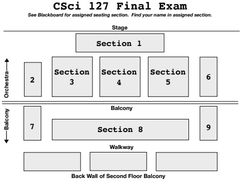
9

Walkway

Back Wall of Second Floor Balcony

- Given in lecture on 14 May.

Mock Final



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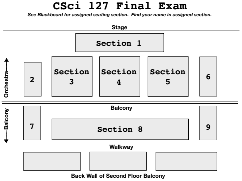

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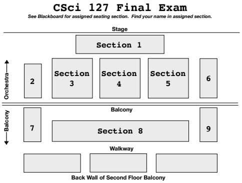

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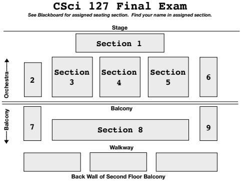

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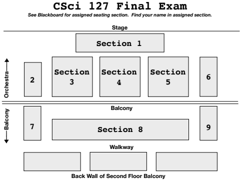

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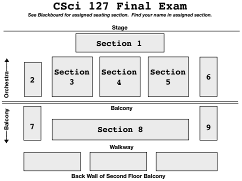

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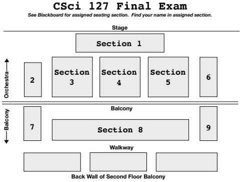

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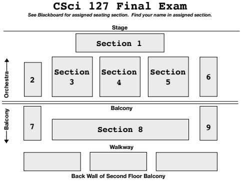
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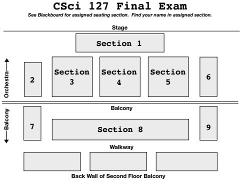

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- Aim to complete 7 to 10 past exams (one a day in the week leading up to the final).

Practice Quiz & Final Questions

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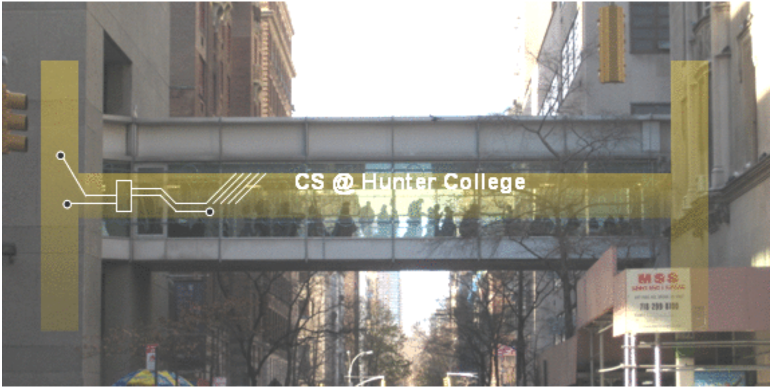
- We'll start with Fall 17, Mock Exam.

Writing Boards



- Return writing boards as you leave...