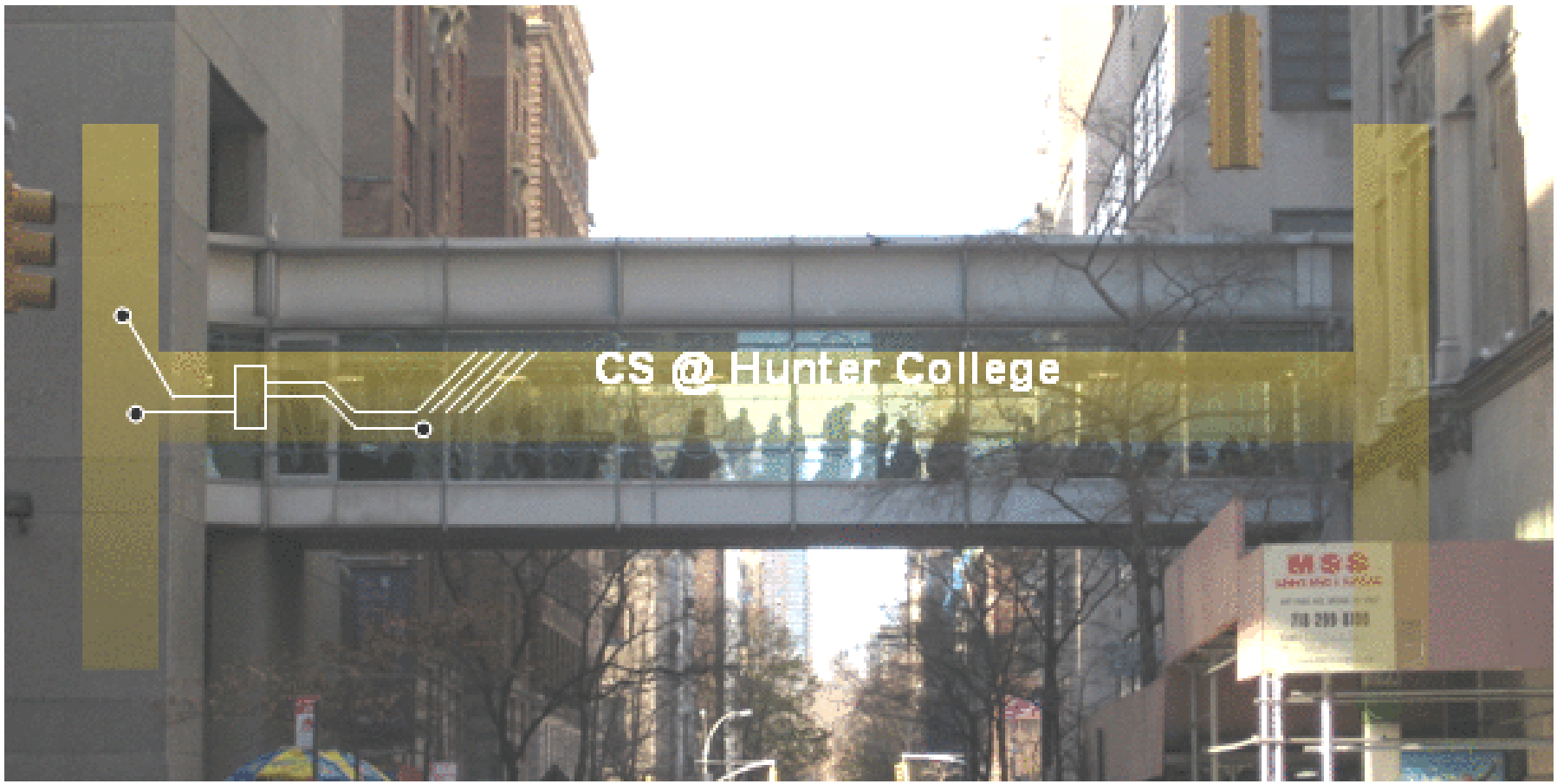
CSci 127: Introduction to Computer Science



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Teacher Evaluation

- Please take a moment to fill out the **Teacher Evaluations**

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  - Room 118 Hunter North (Assembly Hall), ground floor of the North Building
  - Only 1 hr 15 mins for the Mock, 2 hours for the real exam.
  - Just a practice run and it will NOT be graded (answer keys will be posted).
  - However, the mock will have the same logistics and question format as the real final exam.

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- Why do you care about cheating?
  First: it gives unfair advantage & is immoral.
  Second: it degrades the quality of our students.
  Third: it's a standard question on faculty references.
  Industry & graduate schools hate it: don't want someone who falsifies work.

Announcements

For those of you taking CSCI 135 next semester (Fall 2023):

- On the first day of CSCI 135, you will have a graded quiz on the C++ topics covered in CSCI 127.
- This includes all examples covered in the labs and lectures as well as the last 8 homework problems.
- You will have to remember and review all this material during the Summer so you are prepared for the first day of class.

Today's Topics

```cpp
//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;
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- Recap: I/O & Definite Loops in C++
- Conditionals in C++
- Indefinite Loops in C++
- Guest: Prof. Ahearn, Geography

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  `#include <iostream>`
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- Blocks of code uses '{' and '}'.
- Commands generally end in ';'.

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- Recap: I/O & Definite Loops in C++
- **Conditionals in C++**
- Indefinite Loops in C++
- Guest: Prof. Ahearn, Geography

Challenge:

Predict what the following pieces of code will do:

```cpp
//Demonstrates conditionals
#include <iostream>
using namespace std;

int main ()
{
    int yearBorn;
    cout << "Enter year born: ";
    cin >> yearBorn;
    if (yearBorn < 1946)
    {
        cout << "Greatest Generation";
    }
    else if (yearBorn <= 1964)
    {
        cout << "Baby Boomer";
    }
    else if (yearBorn <= 1984)
    {
        cout << "Generation X";
    }
    else if (yearBorn <= 2004)
    {
        cout << "Millennial";
    }
    else
    {
        cout << "TBD";
    }

    return 0;
```

```cpp
using namespace std;

int main ()
{
    string conditions = "blowing snow";
    int winds = 100;
    float visibility = 0.2;

    if ( ( (winds > 35) && (visibility < 0.25) )
         ( (conditions == "blowing snow") ||
           (conditions == "heavy snow") ) )
        cout << "Blizzard!\n";

    string origin = "South Pacific";

    if (winds > 74)
        cout << "Major storm, called a ";
    if ((origin == "Indian Ocean")
        ||(origin == "South Pacific"))
        cout << "cyclone.\n";
    else if (origin == "North Pacific")
        cout << "typhoon.\n";
    else
        cout << "hurricane.\n";
```

Conditionals

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    {
        cout << "Millennial";
    }
    else
    {
        cout << "TBD";
    }

    return 0;
}
```

General format:

```
if ( logical expression )
{
      command1;
      ...
}
else if ( logical expression )
{
      command1;
      ...
}
else
{
      command1;
      ...
}
```

Logical Operators in C++

Very similar, just different names: `&&`, `||`, and `!`:

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in1		in2	*returns:*
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`False`	`&&`	`True`	`False`
`True`	`&&`	`False`	`False`
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not (`!`)

	in1	*returns:*
`!`	`False`	`True`
`!`	`True`	`False`

Lecture Slip

- Write a complete C++ program that prompts the user to enter a time (in 24-hour format) and prints the time of day: morning, afternoon, or evening.
- Assume that afternoon is any time after 12 P.M. (1200), and that the evening is any time after 6 P.M. (1800).

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```

- Recap: I/O & Definite Loops in C++
- Conditionals in C++
- **Indefinite Loops in C++**
- Guest: Prof. Ahearn, Geography

Challenge: predict what the code will do

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

int main ()
{
  int population = 100;
  int year = 0;
  cout << "Year\tPopulation\n";
  while (population < 1000)
  {
      cout << year << "\t" << population << "\n";
      population = population * 2;
      year++;
  }
  return 0;
}
```

C++ Demo

```cpp
///While Growth Example
#include <iostream>
using namespace std;

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  while(population < 1000)
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```

(Demo with `onlinegdb`)

Indefinite Loops: `while`

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    population = population * 2;
    year++;
  }
  return 0;
}
```

General format:

`while` (*logical expression*)
{

command1;
command2;
command3;
...

}

Challenge: predict what the code does

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

int main ()
{
  int num;
  cout << "Enter an even number: ";
  cin >> num;
  while (num % 2 != 0)
  {
      cout << "\nThat's odd!\n";
      cout << "Enter an even number: ";
      cin >> num;
  }
  cout << "You entered: " << num << ".\n";
  return 0;
}
```

C++ Demo

```cpp
//Demonstrates loops
#include <iostream>
using namespace std;

int main ()
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  cout << "Enter an even number: ";
  cin >> num;
  while (num % 2 != 0)
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      cout << "Enter an even number: ";
      cin >> num;
  }
  cout << "You entered: "
       << num << ".\n";
  return 0;
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Indefinite Loops: `while`

```
//Demonstrates loops
#include <iostream>
using namespace std;

int main ()
{
  int num;
  cout << "Enter an even number: ";
  cin >> num;
  while (num % 2 != 0)
  {
      cout << "\nThat's odd!\n";
      cout << "Enter an even number: ";
      cin >> num;
  }
  cout << "You entered: "
       << num << ".\n";
  return 0;
}
```

General format:

`while` (*logical expression*)
{

command1;
command2;
command3;
...

}

Challenge: predict what the code will do

```
//Demonstrates do-while loops
#include <iostream>
using namespace std;

int main ()
{
  int num;
  do
  {
      cout << "Enter an even number: ";
      cin >> num;
  } while (num % 2 != 0);

  cout << "You entered: " << num << ".\n";
  return 0;
}
```

C++ Demo:

```cpp
//Demonstrates do-while loops
#include <iostream>
using namespace std;

int main ()
{
  int num;
  do
  {
      cout << "Enter an even number: ";
      cin >> num;
  } while (num % 2 != 0);

  cout << "You entered: "
       << num << ".\n";
  return 0;
}
```

(Demo with `onlinegdb`)

Indefinite Loops: `do-while`

```
//Demonstrates do-while loops
#include <iostream>
using namespace std;

int main ()
{
  int num;
  do
  {
      cout << "Enter an even number: ";
      cin >> num;
  } while (num % 2 != 0);

  cout << "You entered: "
       << num << ".\n";
  return 0;
}
```

General format:

```
do
{
      command1;
      command2;
      command3;
      ...
} while ( logical expression );
```

Today's Topics

```cpp
//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;
}
```

- Recap: I/O & Definite Loops in C++
- Conditionals in C++
- Indefinite Loops in C++
- **Guest: Prof. Ahearn, Geography**

Weekly Reminders!

Before the next lecture, don't forget to:

- Work on this week's Online Lab

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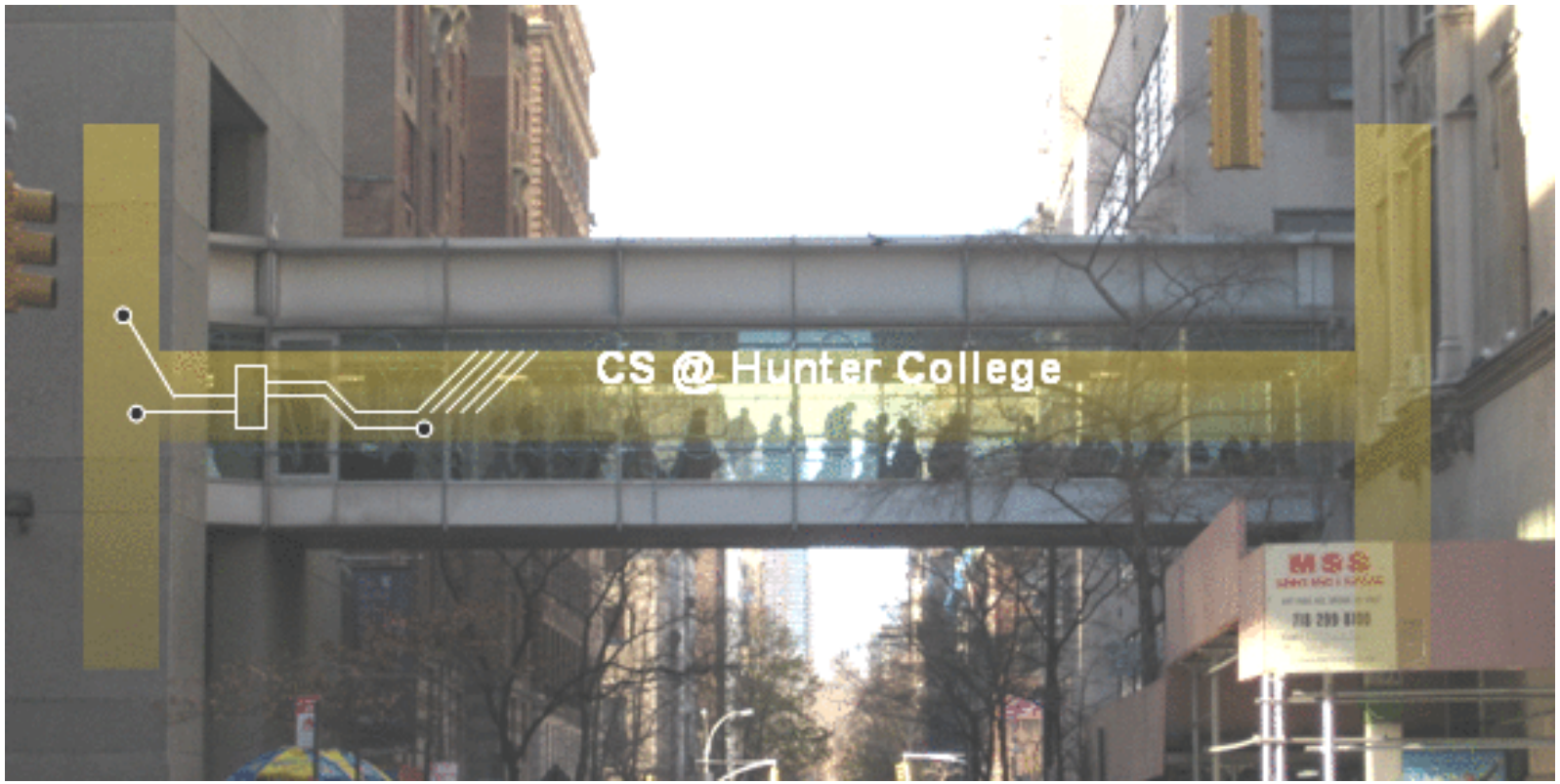
- Schedule an appointment to take the Quiz in lab 1001G Hunter North
- Submit this week's programming assignments
- If you need help, schedule an appointment for Tutoring in lab 1001G
- Take the Lecture Preview on Blackboard on Monday (or no later than 10:15am on Tuesday)

Lecture Slips & Writing Boards



- Hand your lecture slip to a UTA.
- Return writing boards as you leave.