

CSci 127: Introduction to Computer Science



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Announcements

Mock exam next week.
Final exam: 13 days!

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We end lecture with a survey of
computing research and tech.

*Today: Adrienne Posner,
Program Manager, Google*

Frequently Asked Questions

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Today's Topics

CS Survey

Recap: I/O & Definite Loops in C++

Conditionals in C++

Indefinite Loops in C++

Recap: C++ & Python

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CS Surveys Talk: Google

Adrienne Posner

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What Adrienne does and loves about her job.

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What Adrienne does and loves about her job.

Design challenge: work in pairs or triples on project management challenge.

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Lecture Slip: Project Management

Jenn, Adrienne, & Nina

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In computer science jargon, this is a "scheduling with constraints" problem.

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Lecture Slip: Project Management

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Similar questions in network flow, operating systems, and other resource-constrained settings.

Jenn, Adrienne, & Nina

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Recap: Basic Form & I/O in C++

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Blocks of code use `{` and `}`.

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Blocks of code use `{` and `}`.

Commands generally end in `;`.

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Conditionals in C++

Indefinite Loops in C++

Recap: C++ & Python

In Pairs or Triples:

Predict what the following pieces of code will do:

C++ Demo

(Demo with onlinedb)

Conditionals

General format:

```
if ( logical expression )
f
    command1;
    ...
g
else if ( logical expression )
f
    command1;
    ...
g
else
f
    command1;
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```

Logical Operators in C++

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

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and (`&&`)

in1		in2	returns:
False	<code>&&</code>	False	False
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True	<code>&&</code>	False	False
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or (`||`)

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not (`!`)

	in1	returns:
<code>!</code>	False	True
<code>!</code>	True	False

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C++ Demo

(Demo with onlinedb)

Indefinite Loops: while

General format:

```
while ( logical expression )  
f  
  
    command1;  
    command2;  
    command3;  
    ...  
g
```

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(Demo with onlinedb)

Indefinite Loops:do-while

General format:

```
do
f
    command1;
    command2;
    command3;
    ...
g while ( logical expression);
```


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Recap: C++ Control Structures

I/O:

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```
I/O: cin >> ...;
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```
g
```


Recap: C++ Control Structures

I/O: `cin >> ...; & cout << ...;`

Definite loops:

```
for (i = 0; i < 10; i++)
```

```
f
```

```
...
```

```
g
```

Conditionals:

```
if ( logical expression)
```

```
f
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...
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Indefinite loops:

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Indefinite loops:

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g
```

In Pairs or Triples: Definite Loops in Python & C++

Rewrite this program in C++:

```
for i in range(2017, 2000, -2):  
    print("Year is", i)
```

Rewrite this program in Python:

```
#include <iostream >  
using namespace std;  
int main()  
{  
    for (int i = 1; i < 50; i++)  
    {  
        cout << i << endl;  
    }  
    return 0;  
}
```

In Pairs or Triples: Definite Loops in Python & C++

Rewrite this program in C++:

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int main()  
{
```

In Pairs or Triples: Definite Loops in Python & C++

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for i in range(2017, 2000, -2):  
    print("Year is", i)
```

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#include <iostream >  
using namespace std;  
int main()  
{  
    for (int i = 2017; i >= 2000; i=i-2)
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```
for i in range(2017, 2000, -2):  
    print("Year is", i)
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using namespace std;  
int main()  
{  
    for (int i = 2017; i >= 2000; i=i-2)  
    {  
        cout << "Year is" << i << endl;  
    }  
}
```

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    {  
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    }  
    return 0;  
}
```

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    }
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for i in range(1, 50):

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    {
        cout << i << endl;
    }
    return 0;
}
```

```
for i in range(1, 50):
    print(i)
```

In Pairs or Triples: Conditionals in Python & C++

Python: what is the output?

```
year = 2016
```

```
if year % 4 == 0 and n
```

```
    (not (year % 100 == 0) or (year % 400 == 0)):
```

```
    print("Leap!!")
```

```
print("Year")
```

Write a C++ program that asks the user the number of times they plan to ride transit this week. Your program should then print if it is cheaper to buy single ride metro cards or 7-day unlimited card.

(The 7-day card is \$33.00, and the cost of single ride, with bonus, is \$2.75)

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```
    print("Leap!!")
```

```
print("Year")    year = 2016
```

```
if TRUE and n
```

```
    (not (year % 100 == 0) or (year % 400 == 0)):
```

```
    print("Leap!!")
```

```
print("Year")
```


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    (not (year % 100 == 0) or (year % 400 == 0)):
```

```
    print("Leap!!")
```

```
print("Year")
```

```
year = 2016
```

```
if TRUE and n
```

```
    (not FALSE or (year % 400 == 0)):
```

```
    print("Leap!!")
```

```
print("Year")
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year = 2016
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```
    print("Leap!!")
```

```
print("Year")
```

```
year = 2016
```

```
if TRUE and n
```

```
    (TRUE or (year % 400 == 0)):
```

```
    print("Leap!!")
```

```
print("Year")
```

In Pairs or Triples: Conditionals in Python & C++

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year = 2016
if TRUE and n
    (TRUE or FALSE):
    print("Leap!!")
print("Year")
```

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    print("Leap!!")
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```
print("Year")
```

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```
print("Year")
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if TRUE and n
```

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    (TRUE):
```

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```
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```
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```
if TRUE:
```

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In Pairs or Triples: Conditionals in Python & C++

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year = 2016
if year % 4 == 0 and n
    (not (year % 100 == 0) or (year % 400 == 0)):
    print("Leap!!")
print("Year")
```

```
year = 2016
if TRUE:
    print("Leap!!")
print("Year")
```

Prints: Leap!
Year

In Pairs or Triples: Conditionals in Python & C++

Your program should then print if it is cheaper to buy single ride metro card (\$2.75 per ride) or 7-day unlimited card (\$33.00).

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

In Pairs or Triples: Conditionals in Python & C++

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In Pairs or Triples: Conditionals in Python & C++

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int main()
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    int rides;
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    int rides;
    cout << "Enter number of rides:";
```

In Pairs or Triples: Conditionals in Python & C++

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```
#include <iostream >
using namespace std;
int main()
f
    int rides;
    cout << "Enter number of rides:";
    cin >> rides;
```

In Pairs or Triples: Conditionals in Python & C++

Your program should then print if it is cheaper to buy single ride metro card (\$2.75 per ride) or 7-day unlimited card (\$33.00).

```
#include <iostream >
using namespace std;
int main()
{
    int rides;
    cout << "Enter number of rides:";
    cin >> rides;
    if (2.75 * rides < 33.00)
```


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    cout << "Enter number of rides:";
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    if (2.75 * rides < 33.00)
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        cout << "Cheaper to buy single ride metro cards.  \n\n";
g
```

In Pairs or Triples: Conditionals in Python & C++

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    int rides;
    cout << "Enter number of rides:";
    cin >> rides;
    if (2.75 * rides < 33.00)
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        cout << "Cheaper to buy single ride metro cards.  \n\n";
    g
    else
```

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int main()
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    int rides;
    cout << "Enter number of rides:";
    cin >> rides;
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    cout << "Enter number of rides:";
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    f
        cout << "Cheaper to buy single ride metro cards.  \n\n";
    g
    else
    f
        cout << "Cheaper to buy 7-day unlimited card.  \n\n";
    g
    return 0;
```

g

In Pairs or Triples: Indefinite Loops in Python & C++

Write Python code that repeatedly prompts for a non-empty string.

Write C++ code that repeatedly prompts until an odd number is entered.

In Pairs or Triples: Infinite Loops in Python & C++

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In Pairs or Triples: Infinite Loops in Python & C++

Write Python code that repeatedly prompts for a non-empty string.

```
s = ""
```

In Pairs or Triples: Infinite Loops in Python & C++

Write Python code that repeatedly prompts for a non-empty string.

```
s = ""  
while s == "":
```


In Pairs or Triples: Indefinite Loops in Python & C++

Write Python code that repeatedly prompts for a non-empty string.

```
s = ""  
while s == "":  
    s = input("Enter a non-empty string: ")
```

In Pairs or Triples: Infinite Loops in Python & C++

Write Python code that repeatedly prompts for a non-empty string.

```
s = ""
while s == "":
    s = input("Enter a non-empty string: ")
print("You entered: ", s)
```

In Pairs or Triples: Infinite Loops in Python & C++

Write Python code that repeatedly prompts for a non-empty string.

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s = ""  
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int main()
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```

Write C++ code that repeatedly prompts until an odd number is entered.

```
#include <iostream >
using namespace std;
int main()
{
    int num = 0;
```

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```
s = ""
while s == "":
    s = input("Enter a non-empty string: ")
print("You entered: ", s)
```

Write C++ code that repeatedly prompts until an odd number is entered.

```
#include <iostream >
using namespace std;
int main()
{
    int num = 0;
    while (num % 2 == 0)
```

In Pairs or Triples: Infinite Loops in Python & C++

Write Python code that repeatedly prompts for a non-empty string.

```
s = ""
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    {
        cout << "Enter an odd number:";
```


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print("You entered: ", s)
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int main()
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    {
        cout << "Enter an odd number:";
        cin >> num;
    }
}
```

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s = ""
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using namespace std;
int main()
f
    int num = 0;
    while (num % 2 == 0)
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        cout << "Enter an odd number:";
        cin >> num;
    g
```

In Pairs or Triples: Infinite Loops in Python & C++

Write Python code that repeatedly prompts for a non-empty string.

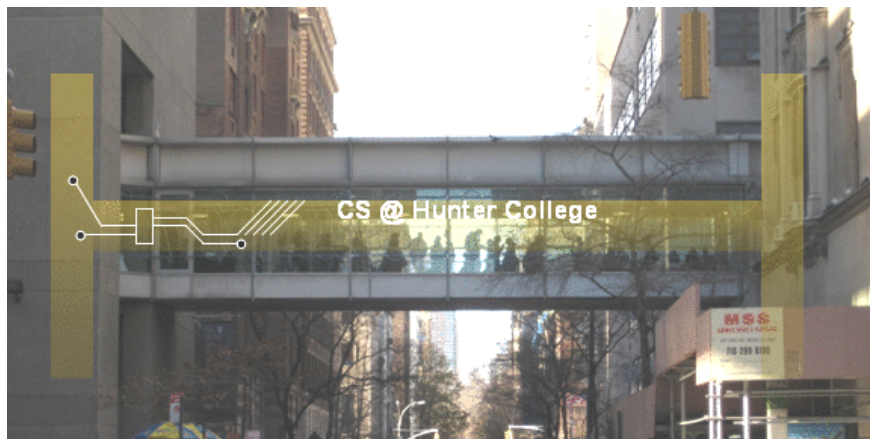
```
s = ""
while s == "":
    s = input("Enter a non-empty string: ")
print("You entered: ", s)
```

Write C++ code that repeatedly prompts until an odd number is entered.

```
#include <iostream >
using namespace std;
int main()
f
    int num = 0;
    while (num % 2 == 0)
    f
        cout << "Enter an odd number:";
        cin >> num;
    g
    return 0;
```

g

Lecture Slips & Writing Boards



Hand lecture slips to UTA's & return writing boards as you leave...