CSci 127: Introduction to Computer Science



hunter.cuny.edu/csci

• Please take a moment to fill out the Teacher Evaluations

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- Your chance to provide feedback!

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• Final Exam December 19 at 9-11 AM

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 - Room 118 Hunter North (Assembly Hall), ground floor of the North Building

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 - ▶ Only 1.15 hours for the Mock, 2 hours for the real exam.

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 Please check now, if there are any problems, email me ASAP
- Next Tuesday December 13, we will have a Mock Exam
 - Room 118 Hunter North (Assembly Hall), ground floor of the North Building
 - ▶ Only 1.15 hours for the Mock, 2 hours for the real exam.
 - Just a practice run, this WILL NOT be the same as the real exam, and it will not be graded.

CSci 127: Introduction to Computer Science

What's the best way to study for the final exam?

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 The final exam problems are variations on the homework, quizzes, lecture examples, and lecture previews.

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 Why do you care about cheating?

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- Why do you care about cheating?
 First: it gives unfair advantage & is immoral.

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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.

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CSci 127 (Hunter) Lecture 13 December 6, 2022

Today's Topics

```
//Amother (-» program, demonstrating I/O & arithmetic Britished constraint of the Imminused Constraint of Immi
```

- Recap: I/O & Definite Loops in C++
- Conditionals in C++
- Indefinite Loops in C++
- Recap: C++ & Python

Today's Topics

```
//Acother C+p program, demonstrating I/O & arithmetic finitude closterose tst; int main () { | filont kg, lbs; cost < "Enter kg, lbs; cost < "Enter kg,"; lbs < "kg," 2.2; cost < mail < "lbs < "kg," 2.2; cost < mail < "lbs; "kg," 18s; " < lbs < "\n\n"; return 0; return 0;
```

- Recap: I/O & Definite Loops in C++
- Conditionals in C++
 - Indefinite Loops in C++
- Recap: C++ & Python

CSci 127 (Hunter) Lecture 13

```
//Another C++ program, demonstrating I/O & arithmetic
#include <iostream>
using namespace std;
int main ()
 float kg, lbs;
  cout << "Enter kg: ";
  cin >> ka;
  lbs = kq * 2.2;
  cout << endl << "Lbs: " << lbs << "\n\n";
  return 0;
```

Efficient for systems programming.

```
//Another C++ program, demostrating I/O & arithmetic simclude ciostream-using namespace std; int main O { floot kg, lbs; cott <= "Enter kg: "; cin >> kg; lbs = kg * 2.2; cott <= end! <= "Lbs: " << "Un\n"; return 0; } }
```

- Efficient for systems programming.
- Programs are organized in functions.

```
//Another C++ program, demonstrating I/O & arithmetic finclude cisotreams using namespace std; int main O { floot kg, lbs; cott < "Enter kg: "; cott < "Enter kg: "; cott <> kg: " cott << end! < "Lbs: " << lbs << "\n\n"; return 0; } kg: cott << end! << "Lbs: " << lbs << "\n\n"; return 0; }
```

- Efficient for systems programming.
- Programs are organized in functions.
- Must declare variables:

```
//Another C++ program, demonstrating I/O & arithmetic
#include <iostream>
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 cout << "Enter kg: ";
 cin >> kg;
 lbs = kg * 2.2;
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- Must declare variables: int num;

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- Efficient for systems programming.
- Programs are organized in functions.
- Must declare variables: int num:
- Many types available:

```
//Another C++ program, demonstrating I/O & arithmetic
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 cin >> kg;
 lbs = kg * 2.2;
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int main ()
{
float kg, lbs;
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cin >> kg;
lbs = kg " 2.2;
cout << endl << "Lbs: " << lbs << "\n\n";
return 0;
}
```

//Another C++ program, demonstrating I/O & arithmetic

- Efficient for systems programming.
- Programs are organized in functions.
- Must declare variables: int num;
- Many types available: int, float, char, ...
- To print:

```
//Another C++ program, demonstrating I/O & arithmetic
finclude cistream
using namespace std;
int main ()
{
  float kg, lbs;
    cout << "Enter kg: ";
    cin >> kg;
    lbs / kg 2.2;
    cout << end! cells: " << lbs << "\n\n";
    teturn 0;</pre>
```

- Efficient for systems programming.
- Programs are organized in functions.
- Must declare variables: int num;
- Many types available: int, float, char, ...
- \bullet To print: cout << "Hello!!";

```
//Monther C++ program, demonstrating I/O & arithmetic
finclude cistream
using namespace std;
int main O {
   float kg, lbs;
   cout << "Enter kg: ";
   cin >> kg;
   lbs = kg " 2.2;
   cout << endl << "Lbs: " << lbs << "\n\n";
   return 0;</pre>
```

- Efficient for systems programming.
- Programs are organized in functions.
- Must declare variables: int num;
- Many types available: int, float, char, ...
- To print: cout << "Hello!!";
- To get input:

```
//Another (++ program, demonstrating I/O & arithmetic sinclude <lastrambusing namespace std; 
int main O {
    float kg, lbs; 
    cout << "Enter kg: "; 
    cin >> kg; 
    loat kg 2.2; 
    cout << end! << "Lbs: " << lbs << "\n\n"; 
    return 0; 
}
```

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- Programs are organized in functions.
- Must declare variables: int num;
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- To print: cout << "Hello!!";
- To get input: cin >> num;

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    chassing 2, 2; 
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- Programs are organized in functions.
- Must declare variables: int num;
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- To use those I/O functions:

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- Must declare variables: int num;
- Many types available: int, float, char, ...
- To print: cout << "Hello!!";
- To get input: cin >> num;
- To use those I/O functions: #include <iostream> using namespace std;

```
//Another C++ program, demonstrating I/O & arithmetic finclude -tostream using nonespoce std; int main () { float kg, lbs: cout << "Enter kg: "; cin >> kg; lbs = kg * 2.2; cout << endl << "Lbs: " << lbs << "\n\n"; return 0; }
```

```
    Efficient for systems programming.
```

- Programs are organized in functions.
- Must declare variables: int num;
- Many types available: int, float, char, ...
- To print: cout << "Hello!!";
- To get input: cin >> num;
- To use those I/O functions: #include <iostream> using namespace std;
- Definite loops:

```
//Another C++ program, demonstrating I/O & arithmetic finclude <id>demonstrating I/O & arithmetic finclude 
int main O

{
float kg, lbs;
cout << "Enter kg: ";
Lbs | kg = 2.2;
cout << endl << "Lbs: " << lbs << "\n\n";
return 0;
}
```

- Efficient for systems programming.
- Programs are organized in functions.
- Must declare variables: int num;
- Many types available: int, float, char, ...
- To print: cout << "Hello!!";
- To get input: cin >> num;
- To use those I/O functions: #include <iostream> using namespace std;
- Definite loops:
 for (i = 0; i < 10; i++) {...}</pre>

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//Another C++ program, demonstrating I/O & arithmetic
#include <iostream>
using namespace std;
int main ()
 float ka, lbs:
 cout << "Enter kg: ";
 cin >> kg;
 lbs = kg * 2.2;
 cout << endl << "Lbs: " << lbs << "\n\n":
 return 0:
```

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- Programs are organized in functions.
- Must declare variables: int num:
- Many types available: int, float, char, ...
- To print: cout << "Hello!!";
- To get input: cin >> num;
- To use those I/O functions: #include <iostream> using namespace std;
- Definite loops: for $(i = 0; i < 10; i++) {...}$
- Blocks of code uses '{' and '}'.

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

```
    Efficient for systems programming.
```

- Programs are organized in functions.
- Must declare variables: int num:
- Many types available: int, float, char, ...
- To print: cout << "Hello!!";
- To get input: cin >> num;
- To use those I/O functions: #include <iostream> using namespace std;
- Definite loops: for $(i = 0; i < 10; i++) {...}$
- Blocks of code uses '{' and '}'.
- Commands generally end in ';'.

Today's Topics

```
//Acother (** program, demonstrating L/O & arithmetic finctude closterous transpose Std): international consequence Std; international consequence of flood to go that consequence consequ
```

- Recap: I/O & Definite Loops in C++
- Conditionals in C++
 - Indefinite Loops in C++
- Recap: C++ & Python

CSci 127 (Hunter)

Challenge:

Predict what the following pieces of code will do:

```
//Demonstrates conditionals
#include <iostream>
using namespace std:
int main ()
    int yearBorn;
    cout << "Enter year born: ";
    cin >> yearBorn;
    if (yearBorn < 1946)
        cout << "Greatest Generation";</pre>
    else if (yearBorn <= 1964)
        cout << "Baby Boomer":
    else if (yearBorn <= 1984)
        cout << "Generation X";</pre>
    else if (vearBorn <= 2004)
        cout << "Millennial":</pre>
    else
        cout << "TBD":
    return 0:
   CSci 127 (Hunter)
```

```
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":</pre>
    string origin = "South Pacific";
    if (winds > 74)
        cout << "Major storm, called a ";</pre>
    if ((origin == "Indian Ocean")
        |/(origin == "South Pacific"))
        cout << "cyclone.\n";</pre>
    else if (origin == "North Pacific")
        cout << "typhoon.\n";</pre>
    else
        cout << "hurricane.\n";</pre>
              4 D > 4 D > 4 D > 4 D >
```

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Lecture 13

C++ Demo

```
//Demonstrates conditionals
#include <iostream>
usina namespace std:
int main ()
    int vearBorn:
    cout << "Enter year born: ";</pre>
    cin >> yearBorn;
    if (yearBorn < 1946)
        cout << "Greatest Generation";
    else if (yearBorn <= 1964)
        cout << "Baby Boomer";
                                              (Demo with onlinegdb)
    else if (yearBorn <= 1984)
        cout << "Generation X";</pre>
    else if (yearBorn <= 2004)
        cout << "Millennial";</pre>
    else
        cout << "TBD":
    return 0;
```

Conditionals

//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;

General format:

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

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

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

and (&&)

	in2	returns:
&&	False	False
&&	True	False
&&	False	False
&&	True	True
	&& &&	&& False && True && False

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

and (&&)

in1		in2	returns:
False	&&	False	False
False	&&	True	False
True	&&	False	False
True	&&	True	True

or (||)

in1		in2	returns:
False		False	False
False	\Box	True	True
True	\Box	False	True
True	11	True	True

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

and (&&)

in1		in2	returns:
False	&&	False	False
False	&&	True	False
True	&&	False	False
True	&&	True	True
or ()			

in1		in2	returns:
False	11	False	False
False	Π	True	True
True	\Box	False	True
True	11	True	True

not (!)

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

Lecture Slip

• Write a C++ program that will ask for the time in 24 hour format and, knowing it is morning before 12pm and evening after 6pm (18), it will print out Morning, Afternoon or Evening.

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Today's Topics

- Recap: I/O & Definite Loops in C++
- Conditionals in C++
- Indefinite Loops in C++
- Recap: C++ & Python

Challenge:

Predict what the following pieces of code will do:

```
///While Growth Example
#include <iostream>
using namespace std;
int main ()
  int population = 100;
  int year = 0;
  cout << "Year\tPopulation\n";</pre>
  while(population < 1000)</pre>
    cout << year << "\t\t" << population << "\n";</pre>
    population = population * 2;
    year++;
  return 0;
```

C++ Demo

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

int main ()
{
    int pear = 0;
    cout <= "Year'tPopulation\n";
    white(population < 1000)
    {
        cout <= year <= "\t\t\t\t\t\" << population <= '\n\";
        population = population * 2;
        year++;
    }
    return 0;
}</pre>
```

(Demo with onlinegdb)

Indefinite Loops: while

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

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

General format: while (logical expression) { command1; command2; command3; ...

Challenge:

Predict what the following piece of code will do:

```
//Demonstrates loops
#include <iostream>
using namespace std;
int main ()
  int num;
  cout << "Enter an even number: ":
  cin >> num;
  while (num \% 2 != \emptyset)
      cout << "\nThat's odd!\n";</pre>
      cout << "Enter an even number: ";</pre>
      cin >> num;
  cout << "You entered: "</pre>
        << num << ".\n";
  return 0:
```

C++ Demo

```
//Demonstrates loops
#include <iostream>
using namespace std;
int main ()
  int num;
  cout << "Enter an even number: ";</pre>
  cin >> num;
  while (num % 2 != 0)
      cout << "\nThat's odd!\n";</pre>
      cout << "Enter an even number: ":
      cin >> num;
  cout << "You entered: "
      << num << ".\n";
  return 0;
```

(Demo with onlinegdb)

CSci 127 (Hunter)

Indefinite Loops: while

```
General format:
while ( logical expression )
{
    command1;
    command2;
    command3;
    ...
}
```

Challenge:

Predict what the following pieces of code will do:

```
//Demonstrates do-while loops
#include <iostream>
using namespace std;
int main ()
  int num;
  do
      cout << "Enter an even number: ";</pre>
      cin >> num;
  } while (num % 2 != 0);
  cout << "You entered: "
       << num << ".\n";
  return 0;
```

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C++ Demo

```
//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;
}</pre>
```

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Indefinite Loops: do-while

```
General format:

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

Today's Topics

```
//Acother (** program, demonstrating L/O & arithmetic film(used conternal members tid) intended to the contended of the conte
```

- Recap: I/O & Definite Loops in C++
- Conditionals in C++
- Indefinite Loops in C++
- Recap: C++ & Python

CSci 127 (Hunter)

${\sf Recap:}\ C++\ {\sf Control\ Structures}$

I/O:

```
//Arother C+s program; Demonstrates loops finclude clostered include clostered inclu
```

CSci 127 (Hunter) Lecture 13 December 6, 2022 27 / 43

• I/O: cin >> ...;

```
//Another C++ program; formostrates loops functioned controverses std; fun
```

CSci 127 (Hunter) Lecture 13 December 6, 2022 27 / 43

• I/O: cin >> ...; & cout << ...;

```
//Another C+s program; Demonstrates loops finclude dostpose using numespose atc; tut main () {
    tit 1,1; for (1 = 0, 1 = 4, 1 += ) {
        cout << "The world turned upside down...\n"; }
    for (j = 10; j > 0; j -- ) {
        cout << "Blast off!!" << end!; return 0; ret
```

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- I/O: cin >> ...; & cout << ...;</pre>
- Definite loops:

```
//Another (++ program) Demonstrates loops
Binclude -dostream
uning nummapace xtd;
int main O;
int i,j;
for (1 = 0; i < 4; i++)
{
    cout << "The world turned upside down...\n";
}
for (j = 10; j > 0; j--)
{
    cout << "Elast offil" << endl;
    return 0;
    return 0;
}</pre>
```

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CSci 127 (Hunter) Lecture 13 December 6, 2022

```
I/O: cin >> ...; & cout << ...;
Definite loops:
  for (i = 0; i < 10; i++)
{
    ...
}</pre>
```

```
I/O: cin >> ...; & cout << ...;
Definite loops:
  for (i = 0; i < 10; i++)
  {
      ...
}</pre>
```

//Another C++ program; Demonstrates loops #include <iostreamusing namespace std;

```
int main ()  \begin{cases} & \text{int } i, j; \\ & \text{for } (i=0; i<4; i++) \\ & \text{cout} << \text{'The world turned upside down...} \text{'N'}; \\ & \text{for } (j=18; j>8; j--) \\ & \text{cout} << j << : "; \\ & \text{cout} << j << : "; \\ & \text{cout} << \text{'start'}; \\ & \text{'start'
```

Conditionals:

```
I/O: cin >> ...; & cout << ...;</pre>
Definite loops:
  for (i = 0; i < 10; i++)
       ...
Conditionals:
  if (logical expression)
  else
```

```
//Another C+s program; Demonstrates loops finclude dostpress std; tint main () 
{
tin main () 
{
tot 1,1; 
for (1 * 8; i * 4; i++) 
{
    cout « "The world turned upside down...\n"; 
}
    cout « j « " "; 
cout « j « " "; 
cout « "Blost off!!" « end1; 
return 8; 
return 8;
```

```
Definite loops:
                                                        for (i = 0; i < 10; i++)
                                                                  ...
                                                    Conditionals:
//Another C++ program; Demonstrates loops
#include <iostream>
using namespace std;
                                                        if (logical expression)
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 << " ":
                                                        else
 cout << "Blast off!!" << endl:
 return 0;
```

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

• Indefinite loops:

Recap: C++ Control Structures

```
I/O: cin >> ...; & cout << ...;</pre>
Definite loops:
  for (i = 0; i < 10; i++)
        ...
Conditionals:
  if (logical expression)
  else
• Indefinite loops:
  while (logical expression)
        ...
                      4 D > 4 D > 4 D > 4 D >
```

using nonespace std; int moin O (int $\{j,j\}$) for $(i=0;\ i<1;\ i+1\}$) for $(i=0;\ i<1;\ i+1)$ (out $i=1,\dots,n$) for $(j=10;\ j>0;\ j=0;\ j=0)$

//Another C++ program; Demonstrates loops #include <iostream>

cout << j << " ":

cout << "Blast off!!" << endl;
return 0;</pre>

• 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;
}</pre>
```

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• Rewrite this program in C++:

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

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Print("Year is", i)

#include <iostream>
using namespace std;

 Rewrite this program in C++:

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Print("Year is", i)

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Print("Year is", i)

#include <iostream>
using namespace std;
int main()
{

for (int i = 2017; i > 2000; i=i-2)

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• Rewrite this program in C++:

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

#include <iostream>
using namespace std;
int main()
{
    for (int i = 2017; i > 2000; i=i-2)
    {
        cout << "Year is " << i << endl;</pre>
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   cout << "Year is " << i << endl;</pre>
 return 0;
```

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• Rewrite this program in Python:

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    {
     cout << i << endl;
    }
    return 0;
}</pre>
```

CSci 127 (Hunter) Lecture 13 December 6, 2022 30 / 43

• Rewrite this program in Python:

```
#include <iostream>
using namespace std;
int main()
  for (int i = 1; i < 50; i++)
    cout << i << endl;</pre>
 return 0;
for i in range(1, 50):
```

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CSci 127 (Hunter) Lecture 13 December 6, 2022

• Rewrite this program in Python:

```
#include <iostream>
using namespace std;
int main()
  for (int i = 1; i < 50; i++)
    cout << i << endl;</pre>
 return 0;
for i in range(1, 50):
    print(i)
```

```
Python: what is the output?
year = 2016
if year % 4 == 0 and \
    (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).

```
Python: what is the output?
year = 2016
if year % 4 == 0 and \
    (not (year % 100 == 0) or (year % 400 == 0)):
    print("Leap!!")
print("Year")
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  if year % 4 == 0 and \\
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```
• Python: what is the output?
  year = 2016
  if year % 4 == 0 and \\
      (not (year \frac{100}{100} == 0) or (year \frac{100}{100} == 0):
       print("Leap!!")
  print("Year")
  year = 2016
  if TRUE and \
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```
• Python: what is the output?
  year = 2016
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  print("Year")
  year = 2016
  if TRUE and \
      (TRUE or (year % 400 == 0)):
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  print("Year")
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```
• Python: what is the output?
  year = 2016
  if year % 4 == 0 and \\
      (not (year \% 100 == 0) or (year \% 400 == 0)):
      print("Leap!!")
  print("Year")
  year = 2016
  if TRUE and \
      (TRUE or FALSE):
      print("Leap!!")
  print("Year")
```

```
• Python: what is the output?
  year = 2016
  if year % 4 == 0 and \\
      (not (year \% 100 == 0) or (year \% 400 == 0)):
      print("Leap!!")
  print("Year")
  year = 2016
  if TRUE and \
      (TRUE or FALSE):
      print("Leap!!")
  print("Year")
```

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• Python: what is the output?
  year = 2016
  if year % 4 == 0 and \\
      (not (year \% 100 == 0) or (year \% 400 == 0)):
      print("Leap!!")
  print("Year")
  year = 2016
  if TRUE and \
     (TRUE):
      print("Leap!!")
  print("Year")
```

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• Python: what is the output?
  year = 2016
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  year = 2016
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• Python: what is the output?
  year = 2016
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  print("Year")
  year = 2016
  if TRUE:
       print("Leap!!")
  print("Year")
```

Prints: Leap! Year

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

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

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

```
#include <iostream>
using namespace std;
int main()
```

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```
#include <iostream>
using namespace std;
int main()
{
  int rides;
```

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

• Your program should then print if it is cheaper to buy single ride metro cards (\$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;
```

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• Your program should then print if it is cheaper to buy single ride metro cards (\$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)</pre>
```

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```
#include <iostream>
using namespace std;
int main()
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  cout << "Enter number of rides:";
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  if (2.75 * rides < 33.00)
  {
    cout << "Cheaper to buy single ride metro cards.\n";
  }</pre>
```

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

```
#include <iostream>
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int main()
  int rides;
  cout << "Enter number of rides:";</pre>
  cin >> rides;
  if (2.75 * rides < 33.00)
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  else
    cout << "Cheaper to buy 7-day unlimited card.\n";
```

CSci 127 (Hunter)

• Your program should then print if it is cheaper to buy single ride metro cards (\$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:";</pre>
  cin >> rides;
  if (2.75 * rides < 33.00)
    cout << "Cheaper to buy single ride metro cards.\n";</pre>
  else
    cout << "Cheaper to buy 7-day unlimited card.\n";
  return 0;
```

Lecture 13

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

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

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

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```
g = ""
```

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

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

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

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

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

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

• 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()
{
  int num = 0:
```

• 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()
{
  int num = 0;
  while (num % 2 == 0)
```

• 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()
{
  int num = 0;
  while (num % 2 == 0)
  {
    cout << "Enter an odd number:";</pre>
```

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

```
s = ""
while s == "":
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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;
  while (num % 2 == 0)
  {
    cout << "Enter an odd number:";
    cin >> num;
```

• 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.

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

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

```
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)
    cout << "Enter an odd number:";</pre>
    cin >> num;
  return 0;
```

December 6, 2022



Before next lecture, don't forget to:

Work on this week's Online Lab



Before next lecture, don't forget to:

- Work on this week's Online Lab
- Schedule an appointment to take the Quiz in lab 1001G Hunter North



Before next lecture, don't forget to:

- Work on this week's Online Lab
- Schedule an appointment to take the Quiz in lab 1001G Hunter North
- Submit this week's 5 programming assignments (programs 57-60)



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- If you need help, schedule an appointment for Tutoring in lab 1001G 11:30am-5pm



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- Schedule an appointment to take the Quiz in lab 1001G Hunter North
- Submit this week's 5 programming assignments (programs 57-60)
- If you need help, schedule an appointment for Tutoring in lab 1001G 11:30am-5pm
- 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.