

# **CS 161**

## **Intro to CS I**

More Variables, Input, and Conditions

# Odds and Ends



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- Peer Reviews due Thursday, 11:59pm
  - Use notepad or any text editor to open
- Get Assignment 1 demoed

- **Study Sessions LINC 268:**

- Tuesdays: 5-6:30pm
- Wednesdays: 6-7:30pm
- Thursdays: 7-8:30pm

*– lecture, lab assign*

*– start today*

# Reflections



- What are C++ primitive types?
- What is an acceptable C++ variable name?
- What is an operand?
- What is an lvalue vs. rvalue?



# Printing Variables/Reading Into Variables

- C++: **cout**

- Example:

- std::cout << "The integer value is: " << value;

- What about the newline?

variable to print

- C++: **cin**

- Example:

- std::cin >> value;

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Close

```
1 #include <iostream> //library for input (cin) and output (cout)
2 using namespace std;
3
4 int main() {
5     int var=30; //garbage until we assign it something
6     float fl_var;
7     cout << "initial vals" << endl;
8     cout << var << endl;
9     cout << fl_var << endl;
10
11     cout << "Enter an int value: ";
12     cin >> var; //do not put endl on cin
13
14     cout << "The variable contents: " << var << endl;
15
16     cout << "Enter an float value: ";
17     cin >> fl_var; //do not put endl on cin
18
19     cout << "The variable contents: " << fl_var << endl;
20
21     return 0;
22 }
```

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```
3. ENGR
Re-attach Fullscreen Stay on top Duplicate Close
1 #include <iostream> //library for input (cin) and output (cout)
2 #include <cstdlib> //rand() and srand()
3 #include <ctime> //time()
4 using namespace std;
5
6 int main() {
7     srand(time(NULL)); //only need to do this once
8     cout << rand() << endl;
9     cout << rand() << endl;
10    cout << rand() << endl;
11
12    /* int var=30; //garbage until we assign it something
13       float fl_var;
14       cout << "initial vals" << endl;
15       cout << var << endl;
16       cout << fl_var << endl;
17
18       cout << "Enter an int value: ";
19       cin >> var; //do not put endl on cin
20
21       cout << "The variable contents: " << var << endl;
22
23       cout << "Enter an float value: ";
24       cin >> fl_var; //do not put endl on cin
25
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```

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# Constants

- What is a constant?
- How do we define a constant?
  - Use of a macro
    - #define
    - Placed at top of program
    - No semicolon at end
    - Example: #define MAX\_SIZE 100
  - Use of const
    - Same as declaring variable but const
    - Example: const int MAX\_SIZE = 100;

direct substitution  
no mem

100  
MAX\_SIZE 0x20

3. ENGR

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```
1 #include <iostream> //library for input (cin) and output (cout)
2 #include <cstdlib> //rand() and srand()
3 #include <ctime> //time()
4 using namespace std;
5
6 #define SIZE 100
7 const int size=100;
8
9 int main() {
10     /*srand(time(NULL)); //only need to do this once
11     cout << rand() << endl;
12     srand(rand()); //only need to do this once
13     cout << rand() << endl;
14     srand(rand()); //only need to do this once
15     cout << rand() << endl;
16 */
17     cout << SIZE << endl;
18
19     /* int var=30; //garbage until we assign it something
20     float fl_var;
21     cout << "initial vals" << endl;
22     cout << var << endl;
23     cout << fl_var << endl;
24
25     cout << "Enter an int value: ";
-- INSERT --
```

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# Additional Operators

- Common operation: fetch/store same variable
  - `var=var + 2; //increment variable contents`
  - `var=var * 2; //double variable contents`
  - operator/assignment combination (all ops supported):
    - `var += 2;`
    - `var *= 2;`
- Pre/Post increment/decrement: `++` and `--`
  - Example: `age++` vs. `++age`

**Demo...**



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# Prediction



- What are conditional statements?
- How do we implement these in C++?

# Decisions in Life

- What is a decision?
- When do we make decisions?
- How do we make decisions?
  - If it is sunny today
    - then I'll go to the beach and fly a kite
  - Else if it is raining today
    - then I'll stay inside and read a book
  - Else if it is snowing
    - then I'll go to the mountains to ski

# Decisions within Decisions

- What happens if there is no wind at the beach?
- How does this change our decisions?

If it is sunny today

then I'll go to the beach

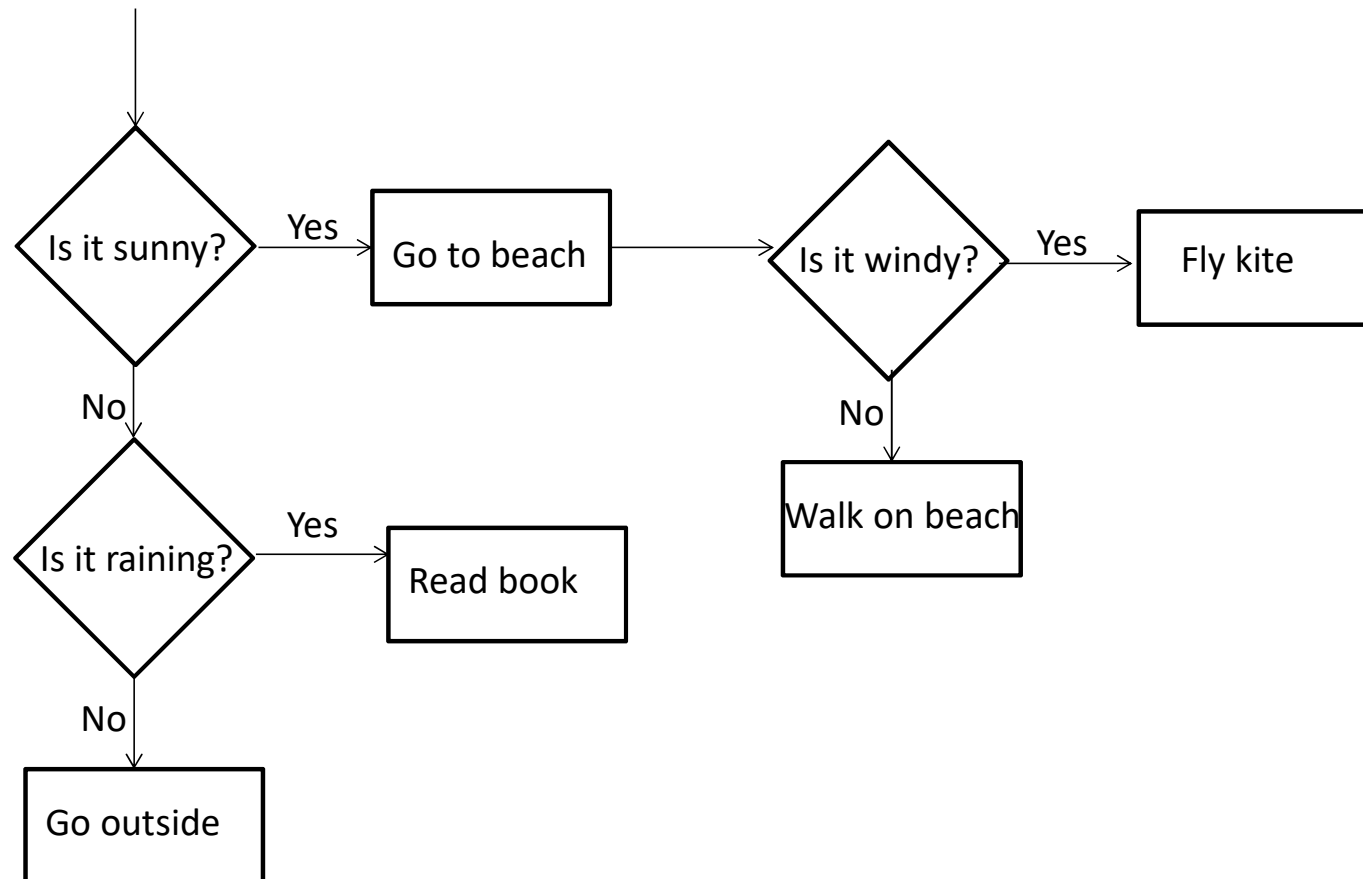
if it is windy at the beach

then I'll fly a kite

if it is not windy at the beach

then I'll walk on the shore

# Flow chart for decisions



# Decisions in our programs



- Use an if/else

```
if (<expression>) {  
    <statement>;  
    ...  
    <statement>;  
}  
else {  
    <statement>;  
    ...  
}
```

# What is the <expression>?

Could be a relational expression:

<expression> <relational op> <expression>

- Relational Ops

== - equal to

!= - not equal to

< - less than

> - greater than

<= - less than or equal to

>= - greater than or equal to



# If/Else Demo...



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