# CSCI 200: Foundational Programming Concepts & Design

C++ Language & Syntax

# On Tap For Today

- A C++ Program

# First, think about context

- Brown bear
- Bear the weight
- Bear Bryant
- Bearing a tray

- Human language is highly “context dependent”

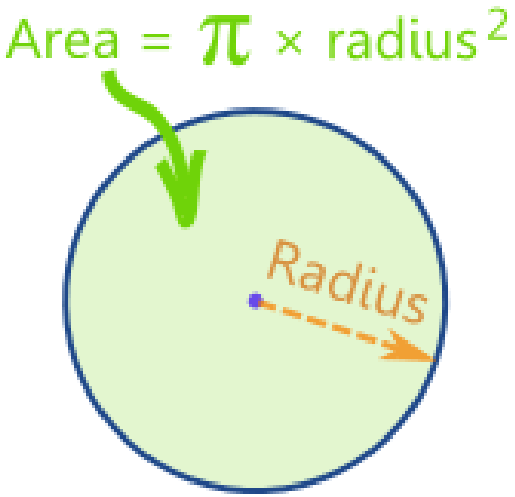
# Programming languages

- Are context free

```
#include <iostream>
using namespace std;
int main() {
    cout << "Hello World!" << endl;
    return 0;
}
```

# Syntax Examples

- C++
  - area = 3.14*(diameter/2)*(diameter/2)
- Matlab
  - area = pi*((diameter/2)^2)
- Python
  - area = 3.14*((diameter/2)**2)
- Basic
  - let a=3.14*(d/2)*(d/2)
- Structure + rules
  => programming syntax



# int main()

- All C++ programs start with and must include main()

- Why?
  - What does your program do?
    - Whatever is in the code block following main()

# My first program!

- { all the code in between the curly braces is a code block }

```
int main() {
    return 0;
}
```

# Preprocessing Directives

- Other things (aka “libraries” or files) your program will use
  - e.g. math functions, input/output, graphics

```
#include <iostream>
#include <cmath>
```

- “Computer, my program is using functions from the iostream and math libraries”

# Comments in a Program

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

int main() {
    // what is the meaning of life?
    cout << "42" << endl;
    cout << 42 << endl;
    return 0;
}
```

Hey look! This line is a comment! It starts with **//** so we know the computer will ignore it

# Comments in a Program

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

int main() {
    // what is the meaning of life?
    cout << "42" << endl; // string
    cout << 42 << endl;   // int
    return 0;
}
```

# Comments in a Program

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

int main() {
    /*
     * what is
     * the meaning of life?
     */
    cout << "42" << endl;
    cout << 42 << endl;
    return 0;
}
```

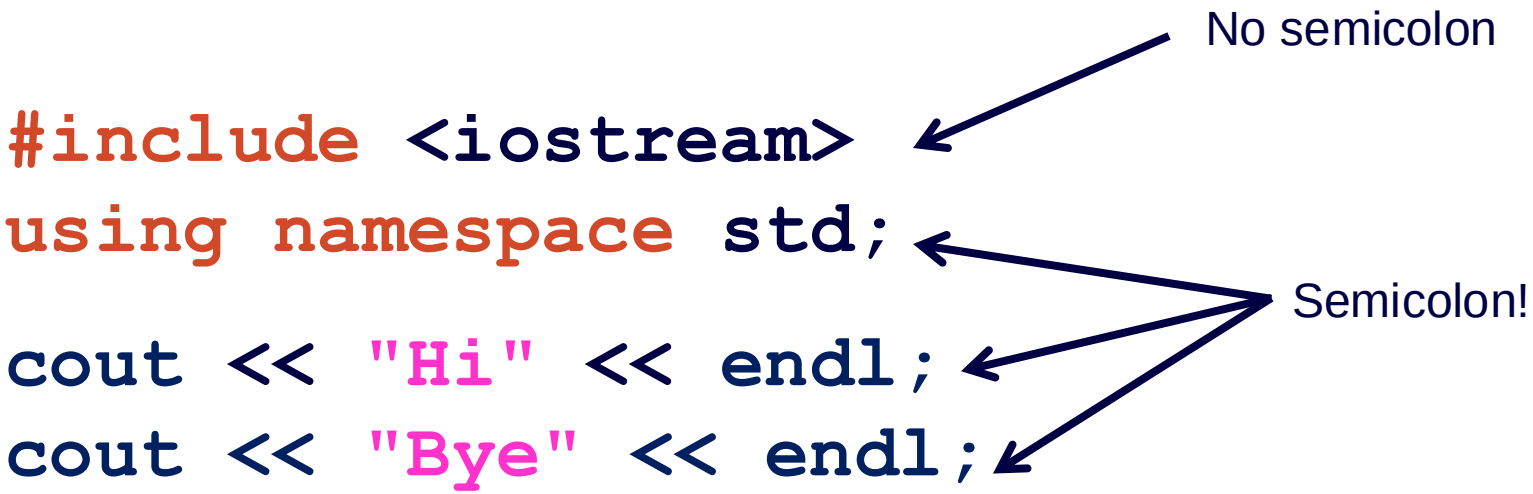
# C++ Program Flow

```
// preprocessing directive

#include <someLibrary>


int main() {

    variable declarations;

     statements;

     return 0;

}
```

Computer starts at `main()` and goes down line by line

# Semicolons ;

- Like a period at the end of a sentence.
- EXCEPT for (most) preprocessing directives (they're special)



# Semicolons ;

- Like a period at the end of a sentence.
- EXCEPT for (most) preprocessing directives (they're special)

```
cout << "Hi" << endl; cout << "Bye"
<< endl;
```