

Basics of C++

Week 1

```
C:\Users\brend\source\repos\VGATestProject\x64\Release\VGATestProject.exe (process 70484) exited with code 0.  
Press any key to close this window . . .
```



IO

Print Statement

```
#include <string>
#include <iostream>

std::cout << "Hello, World!" << std::endl;
```

C:\Users\brend\source\repos\VGATestProject\x64\Release\VGATestProject.exe (process 70484) exited with code 0.
Press any key to close this window . . .

User Input

```
#include <string>
#include <iostream>

std::string userInput;
std::cin >> userInput;

// Grabs up to the first “value” (I’ll explain on the board)
```

C:\Users\brend\source\repos\VGATestProject\x64\Release\VGATestProject.exe (process 70484) exited with code 0.
Press any key to close this window . . .

Variables

Declaration

Type name;

Type name = value;

const Type name = value;

C:\Users\brend\source\repos\VGATestProject\x64\Release\VGATestProject.exe (process 70484) exited with code 0.
Press any key to close this window . . .

Primitive Types

Signed

short int, int, long int

int8_t, int16_t, int32_t, int64_t

float, double

Unsigned

char, wchar_t

unsigned (int, short int, long int)

uint8_t, uint16_t, uint32_t, uint64_t

Objects

```
#include <string>
```

```
std::string
```

```
#include "MyClass.h"
```

```
MyClass
```

C:\Users\brend\source\repos\VGATestProject\x64\Release\VGATestProject.exe (process 70484) exited with code 0.
Press any key to close this window . . .

strings use “”
char use ‘ ’

Arrays

Declaration

```
Type name[ length];
```

```
Type name[ ] = { a, b, c, d, e};
```

```
// FIXED LENGTH
```

C:\Users\brend\source\repos\VGATestProject\x64\Release\VGATestProject.exe (process 70484) exited with code 0.
Press any key to close this window . . .

Use

myList[index]

myList[index] = newValue;

myList[index]++;

sizeOf(myList) / sizeOf(myList[0]);

Vectors

Declaration

```
#include <vector>

std::vector<Type> name;
std::vector<Type> name = {a, b, c, d, e};

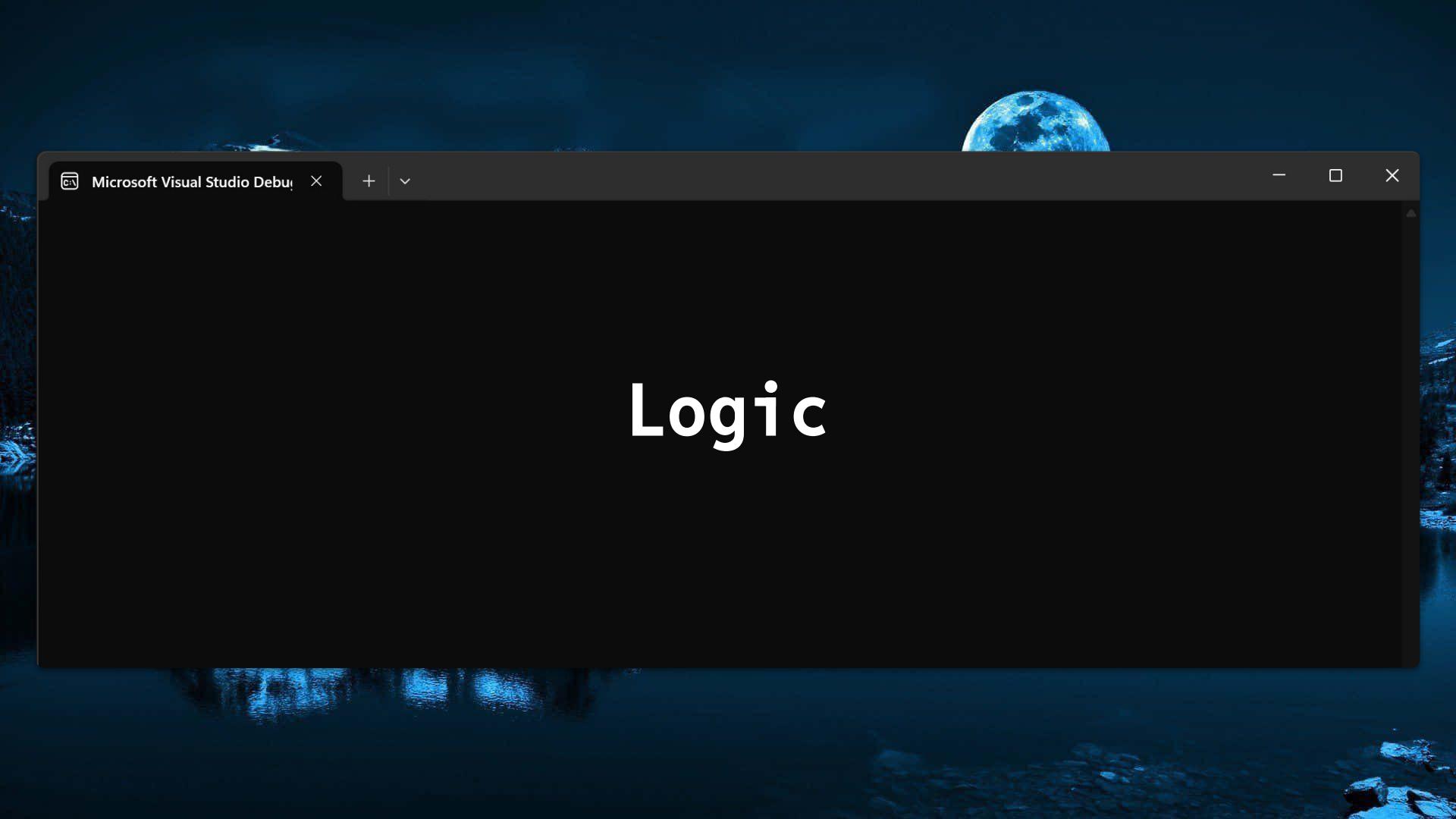
// DYNAMIC LENGTH
```

C:\Users\brend\source\repos\VGATestProject\x64\Release\VGATestProject.exe (process 70484) exited with code 0.
Press any key to close this window . . .

Use

```
myVector.at(index);  
myVector.insert(index, element);  
myVector.back();  
myVector.front();  
myVector.push_back(element);  
myVector.pop_back();  
myVector.erase(index);  
myVector.size();
```

C:\Users\brend\source\repos\VGATestProject\x64\Release\VGATestProject.exe (process 70484) exited with code 0.
Press any key to close this window . . .



Logic

Microsoft Visual Studio Debug

+ | -

- □ ×

Operators

Comparison

<, <=, ==, !=, >, >=

Logical

&&, ||, !

Arithmetic

+, -, *, /, %
++, --

Bitwise

&, |, <<, >>

Conditionals

```
if (condition) {  
    ...  
} else if (condition) {  
    ...  
} else {  
    ...  
}
```

C:\Users\brend\source\repos\VGATestProject\x64\Release\VGATestProject.exe (process 70484) exited with code 0.
Press any key to close this window . . .

Switch

```
switch (expression) {  
    case a:  
        ...  
        break;  
    case b:  
        ...  
        break;  
    Default:  
        ...  
}
```

C:\Users\brend\source\repos\VGATestProject\x64\Release\VGATestProject.exe (process 70484) exited with code 0.
Press any key to close this window . . .

Loops

```
while (condition) {  
    ...  
    continue;  
    break;  
}
```

```
do {}  
while (condition);
```

```
for (int i=0; i<length; i++) {  
    ...  
    continue;  
    break;  
}
```

```
for (declare; condition; iteration) {}
```

Functions

Declaration & Use

```
ReturnType name (parameters) {  
    ...  
    return value;  
}
```

```
receptionVariable = name(values);
```

C:\Users\brend\source\repos\VGATestProject\x64\Release\VGATestProject.exe (process 70484) exited with code 0.
Press any key to close this window . . .

A Word on Scope

Scopes are created automatically based on function placement!

*Later on, when learning about objects, you'll see how public and private functions are set.

```
C:\Users\brend\source\repos\VGATestProject\x64\Release\VGATestProject.exe (process 70484) exited with code 0.  
Press any key to close this window . . .
```

Preprocessing Directives

#Somethin' Somethin'

#include <import_name> <- Library Import

#include “import_name” <- Current Directory Import

#pragma ... <- run a preprocessing command

#define NAME ... <- Creates a macro

 Microsoft Visual Studio Debug

+ | -

- □ ×

“Hello, World!” Program

“Hello, World?”

```
#include <string>

#include <iostream>

int main() {
    std::cout << "Hello, World!" << std::endl;
    return 0;
}
```

C:\Users\brend\source\repos\VGATestProject\x64\Release\VGATestProject.exe (process 70484) exited with code 0.
Press any key to close this window . . .

Assignment

Add Up All Even Numbers

Use assignment2Data.txt on canvas

Don't bother with file reading, get user input in your program and read from that.

```
C:\Users\brend\source\repos\VGATestProject\x64\Release\VGATestProject.exe (process 70484) exited with code 0.  
Press any key to close this window . . .
```