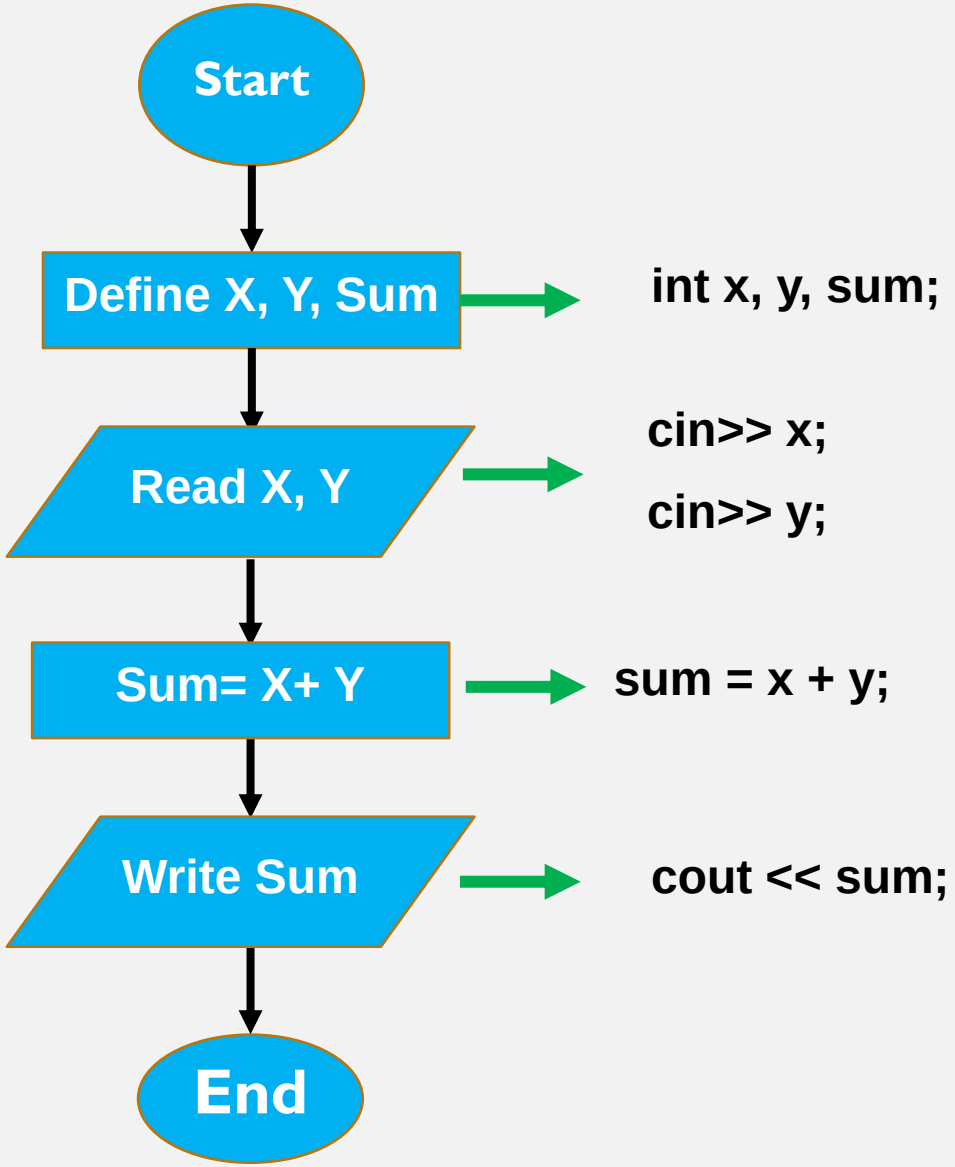
Introduction to Algorithms and Programming

Lecture 3

T. Kinda Al-Issa

EXAMPLE 1 - ADDING TWO NUMBER

1. Define variable x, y, sum
2. Read x, y
3. sum = x + y
4. Write sum



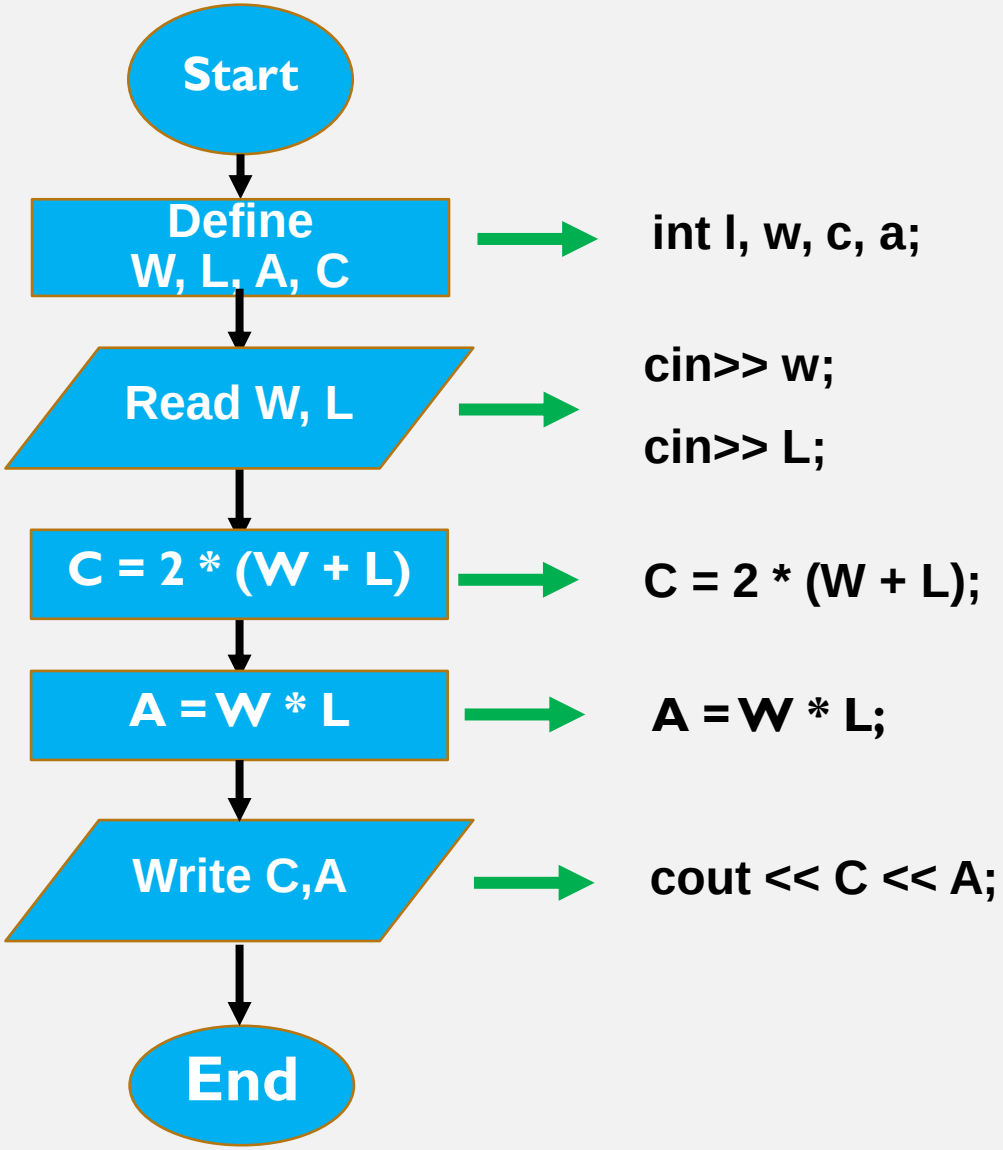
```cpp
#include<iostream>
using namespace std;
int main() {
    int x,y,sum;
    cout << "Enter two numbers: \n";
    cin >> x >> y;
    sum = x + y;
    cout << "the sum is: " << sum << endl;

    system("pause");
    return 0;
}
```

Modify the code to compute the rest of mathematical operations (-, *, /) and display the result.

Example 2 - Circumference And Area Of Rectangle

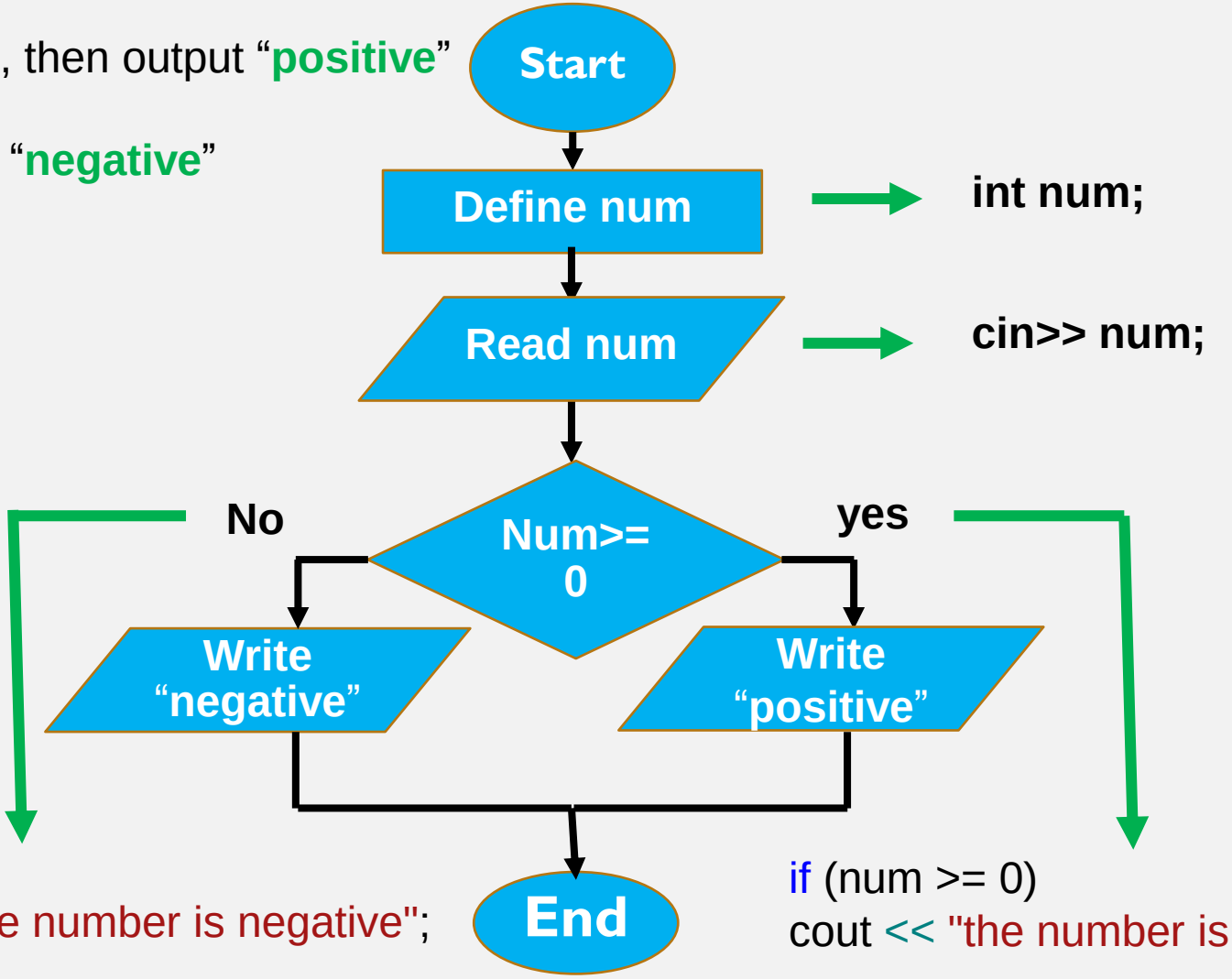
1. Define l, w, c, a
2. Read l, w
3. C = 2 * (w + l)
4. A = w * l
5. Write c, a



```cpp
#include<iostream>
using namespace std;
int main() {
    int l, w, c, A;
    cout << "Enter lengh: \n";
    cin >> l ;
    cout << "Enter width: \n";
    cin >> w;
    c = 2 * (w+ l);
    A = w * l;
    cout << "the Circumference is: " << c << endl;
    cout << "the Area is: " << A << endl;
    system("pause");
    return 0;
}
```

Example 3 - Positive Or Negative Number

1. Define num
2. Read num
3. If num >= 0, then output “**positive**”
4. Else output “**negative**”




```
else
cout << "the number is negative";
```

```
if (num >= 0)
cout << "the number is positive";
```

```
#include<iostream>
using namespace std;
int main() {
    int num;
    cout << "Enter the number: \n";
    cin >> num;
    if (num >= 0)
{
        cout << "the number " << num << "is positive";
}
else
 {
        cout << "the number " << num << "is negative" <<endl;
 }
    system("pause");
    return 0;
}
```

Example 4 - quotient and the remainder

Write C++ program that asks the user to enter two integers (divisor and dividend) and compute the quotient and the remainder of their division

The modulus operator is %

1. Define x, y, q, r

2. Read x, y

3. q = x / y

4. r = x % y

4. Write q, r

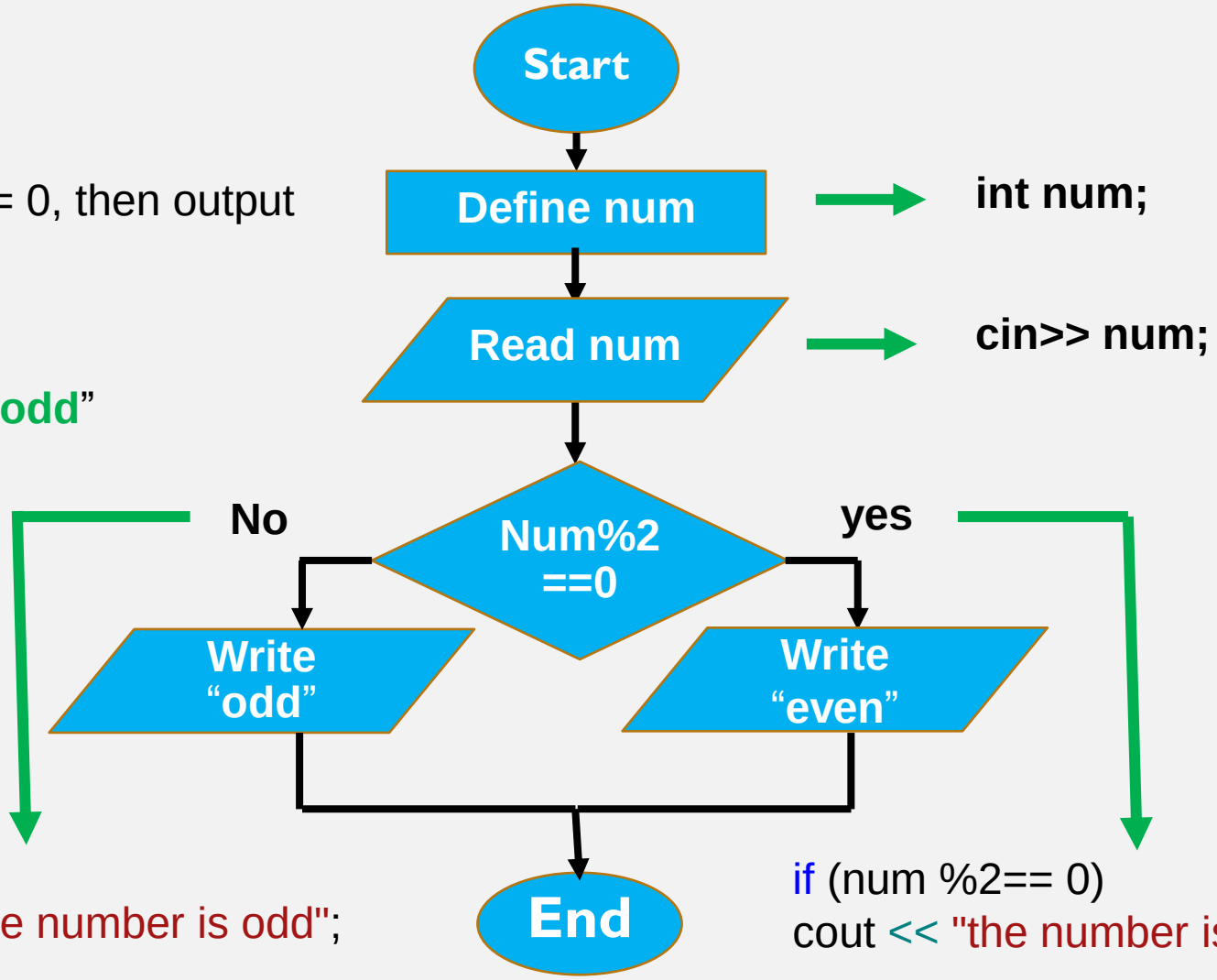
```
#include<iostream>
using namespace std;
int main() {
    int x, y, q, r;
    cout << "Enter x: \n";
    cin >> x;
    cout << "Enter y: \n";
    cin >> y;
    q = x / y;
    r = x % y;
    cout << "quotient = " << q <<endl;
    cout << "reminder = " << r << endl;

    system("pause");
    return 0;
{
```

Example 5 - even and odd

Write C++ program to check whether a number entered by the user is even or odd.

1. Define num
2. Read num
3. If num %2 == 0, then output "**even**"
4. Else output "**odd**"




```
else
cout << "the number is odd";
```

```
if (num %2== 0)
cout << "the number is even";
```

```
#include<iostream>
using namespace std;
int main() {
    int num;
    cout << "Enter the number: \n";
    cin >> num;
    if (num %2== 0)
        cout << "the number " << num << "is even";{
    else
        cout << "the number " << num << "is odd" <<endl;
    system("pause");
    return 0;
}
```

Example 6 - SIZEOF

Write C++ program that declares 4 variables of type int, float, double and char. Then display the size of each variable

Find the size of variable using sizeof(datatype)

```
#include<iostream>
using namespace std;
int main() {
    cout << “size of char " << sizeof(char) << “byte“<<endl;
    cout << “size of int " << sizeof(int) << “bytes“<<endl;
    cout << “size of float " << sizeof(float) << “bytes“<<endl;
    cout << “size of double " << sizeof(double) << “bytes“<<endl;

    system("pause");
     return 0;
}
```

Assignment

- **Write C++ program to find the largest number among three numbers.**