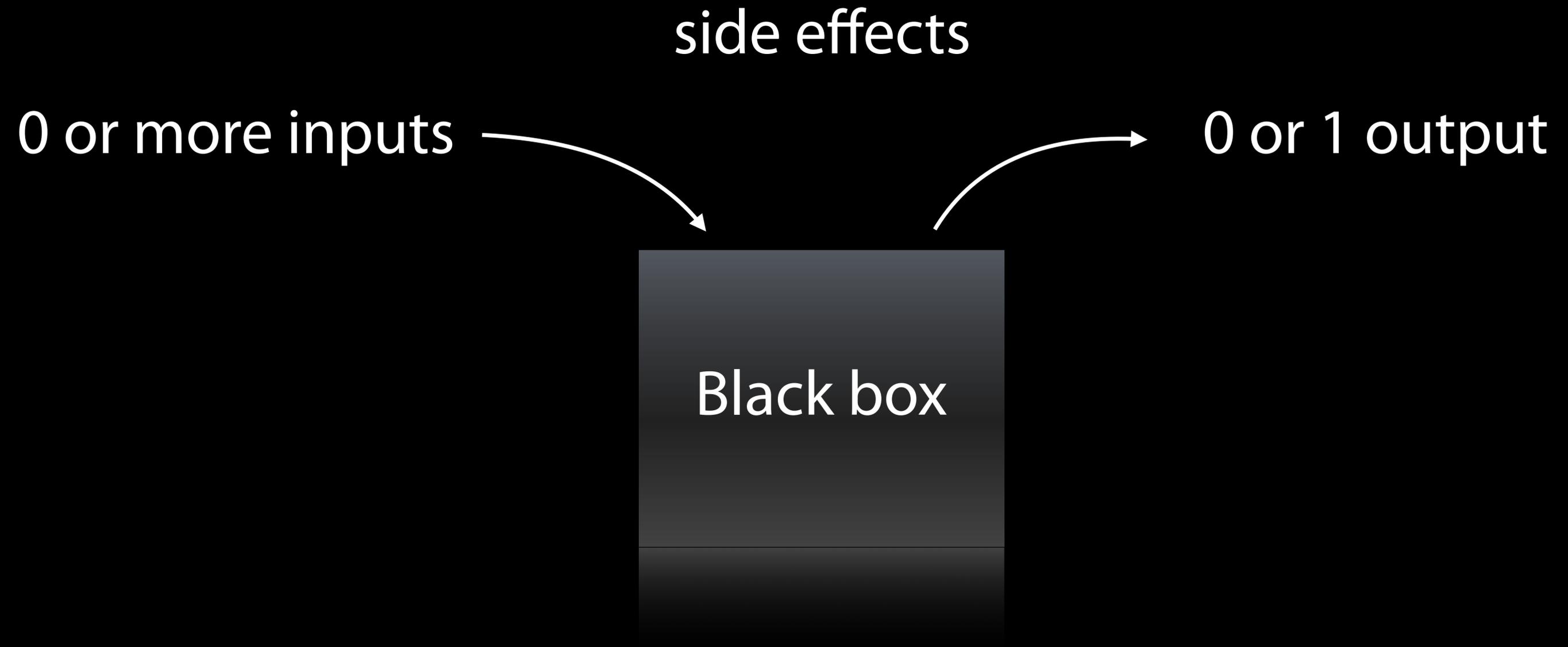


Week 4

EECS 183

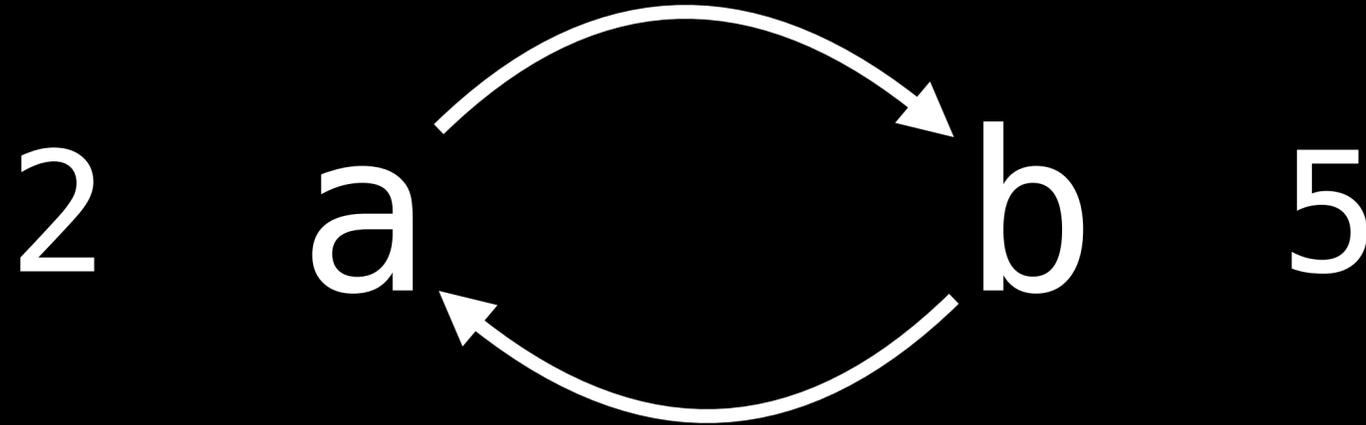
Functions



RME

```
/**  
 * Requires: n >= 0.  
 * Modifies: Nothing.  
 * Effects: Returns square root of n.  
 */  
double sqrt(double n);
```

Swap



Swap

```
int temp = a;  
a = b;  
b = temp;
```

Swap

```
void swap(int a, int b)
{
    int temp = a;
    a = b;
    b = temp;
}
```

Comparison Operators

x

$>$

$>=$

$<$

$<=$

$==$

$!=$

y

Conditions

```
if (condition)
{
    // do this
}
```

Conditions

```
if (condition)
{
    // do this
}
else
{
    // do that
}
```

Conditions

```
if (course == 183)
{
    cout << "EECS 183 is Elementary Programming Concepts"
        << endl;
}
else
{
    cout << "I'm not familiar with that class!" << endl;
}
```

Conditions

```
string pluralize(string singular, string plural,  
                int number)  
{  
    if (number == 1)  
    {  
        return single;  
    }  
    return plural;  
}
```

Conditions

```
if (condition)
{
    // do this
}
else if (condition)
{
    // do that
}
else
{
    // do this other thing
}
```

Conditions

```
if (course == 183)
{
    cout << "EECS 183 is Elementary Programming Concepts"
        << endl;
}
else if (course == 203)
{
    cout << "EECS 203 is Discrete Mathematics" << endl;
}
else
{
    cout << "I'm not familiar with that class!" << endl;
}
```

Conditions

```
if (x < y)
{
    cout << "x is less than y" << endl;
}
else if (x > y)
{
    cout << "x is greater than y" << endl;
}
else
{
    cout << "x is equal to y" << endl;
}
```

Conditions

```
if (condition)
{
    // do something
}
else
{
    // do nothing
}
```

Conditions

```
if (condition)
{
    // do something
}
else
{
}
}
```

Logical Operators

&&

||

!

Boolean Expressions

```
if (condition && condition)
{
    // do this
}
```

Boolean Expressions

```
if (condition || condition)
{
    // do this
}
```

Boolean Expressions

```
if (!condition)
{
    // do this
}
```

Operator Precedence

Level	Operator
2	++ -- () [] .
3	++ -- ! + - &
5	* / %
6	+ -
7	<< >>
8	< > <= >=
9	== !=
13	&&
14	
15	= *= ÷= %= += -=

Conditions

Ask the user for an integer between 1 and 9

Say if that number is small (1, 2, 3), medium (4, 5, 6), large (7, 8, 9) or invalid.



M

Tu

W

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F

22

23

24

25

26

29

30

1

2

3

6

7

8

9

10

Switch

```
switch (n)
{
    case constant0:
        // do this
        break;

    case constant1:
        // do that
        break;

    default:
        // do this other thing
        break;
}
```

Switch

```
switch (lecture)
{
    case 1:
        professor = "Jeremy Gibson";
        break;

    case 2:
    case 3:
        professor = "Mary Lou Dorf";
        break;

    case 4:
        professor = "Bill Arthur";
        break;

    default:
        professor = "Staff";
        break;
}
```

Switch

Ask the user for an integer between 1 and 9

Say if that number is small (1, 2, 3), medium (4, 5, 6), large (7, 8, 9) or invalid.



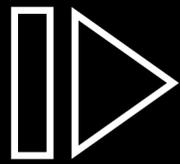
Debugging

Debugging

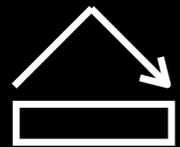
“Everyone knows that **debugging is twice as hard** as writing a program in the first place. So if you’re as clever as you can be when you write it, how will you ever debug it?”

Brian Kernighan

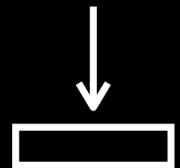
Debugging



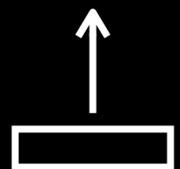
continue



step over



step into



step out

I DON'T UNDERSTAND
HOW MY BRAIN WORKS.

BUT MY BRAIN IS
WHAT I RELY ON
TO UNDERSTAND
HOW THINGS WORK.

IS THAT A PROBLEM?

I'M NOT SURE
HOW TO TELL.