

Introduction to Programming

Class 11, 10 October 2016

Jack Phillips <jack_phillips@asl.org>

Partners

- Naz & Alaa
- Izzy & Kendall
- Matthew & Lorenzo
- Thomas C & Michael
- Nic & Lindsay
- Jack & Dom
- Chloe & Vikram
- Jake & Lauren & Reece
- Thomas B & Max

Goals

Goal 1: You will understand how computers make decisions.

Goal 2: You will understand how to implement nested if statements.

Goal 3: You will know how to generate random numbers.

Vocabulary

If - else if - else statement

Boolean operators

Code

```
if () {  
    if () {  
    }  
}
```

```
Math.random()
```

- **What is your least favorite chore? Why?**

What is DECOMPOSITION? Can

A strategy of breaking a problem down into a series of smaller, simpler problems.

Together with another team and computers closed:

- Write a FLOWCHART for the following task using Boolean operator &&.

Create a program that lets the user know if she has to go to school today. Use the answers to two prompts to determine the response.

Prompt 1: Is it a weekday?

Prompt 2: Is it a holiday?

Write the program.

Together with another team and computers closed:

- Write a FLOWCHART for the same task without using a Boolean operator.

```
if ( condition ) {  
    if ( anotherCondition ) {  
        // Your code here.  
    }  
}
```



Nested if
statement
(like &&)

Write the program using nested if statement.

STRETCH

Random Numbers

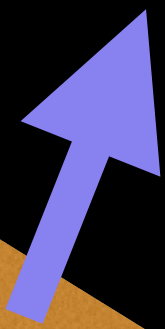
- In general, computers can't generate truly random numbers.
- Computers use something called pseudo-random algorithms to generate random numbers.
- You can get the same "random" numbers by using a seed.

Random Numbers

- Brainstorm at your table at least five reasons you might need a random number in an app.

Random Numbers

```
var myRandNum = Math.random();
```



Will generate random
number between 0 and
0.9999999999999

Random Numbers

```
var MAX = 6;  
var myRandNum = MAX * Math.random();
```

0 - 5.999999

```
var MAX = 6;  
var MIN = 1;  
var myRandNum = (MAX - MIN) * Math.random() + MIN;
```

1 - 5.999999

```
var MAX = 6;  
var MIN = 1;  
var myRandNum = Math.floor((MAX - MIN + 1) * Math.random()) + MIN;
```

1, 2, 3, 4, 5, 6

On one of your computers:

- Write a program that simulates a coin flip.

```
var randNum = Math.random();  
  
if (randNum < 0.5) {  
    alert("Heads.");  
} else {  
    alert("Tails");  
}
```

On the other computer:

- Write a program that simulates craps.
 - Two six-sided die roll. A total of 7 wins. All others lose.

```
var MAX = 6;
var MIN = 1;

var die1 = Math.floor((MAX-MIN+1) * Math.random()) + MIN ;
var die2 = Math.floor((MAX-MIN+1) * Math.random()) + MIN ;

var total = die1 + die2;

if (total == 7) {
    alert("You win!");
} else {
    alert("Sorry, you lose.");
}
```

Goals

Goal 1: You will understand how computers make decisions.

Goal 2: You will understand how to implement nested if statements.

Goal 3: You will know how to generate random numbers.

Vocabulary

If - else if - else statement

Boolean operators

Code

```
if () {  
    if () {  
    }  
}
```

```
Math.random()
```