Introduction to Programming

Class 11, 2 February 2017

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Partners

- Sit with same partners as last class

```
$ sync
```

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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?**

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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 &&.**

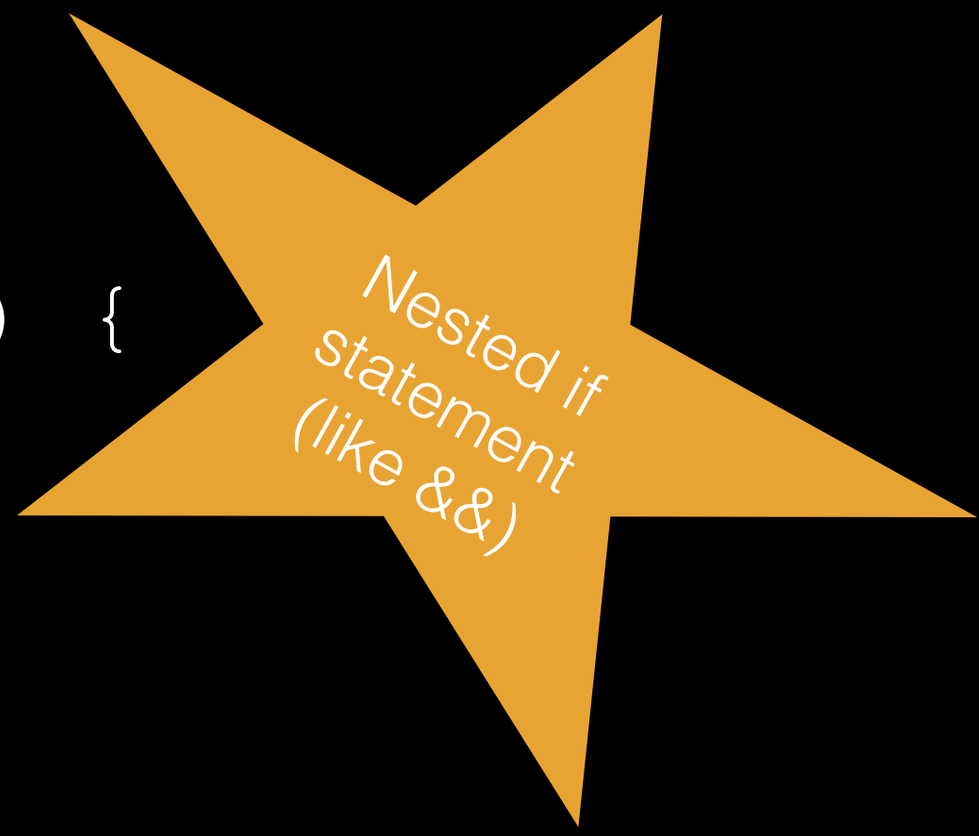
```
Create a program that lets the user know
if she has to go to school today. Use
the answers to two prompts to determine
the response.

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.
   }
}
```



Write the program using nested if statement.

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Complete Task G2-04b: Senator2

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STRETCH

Random Numbers

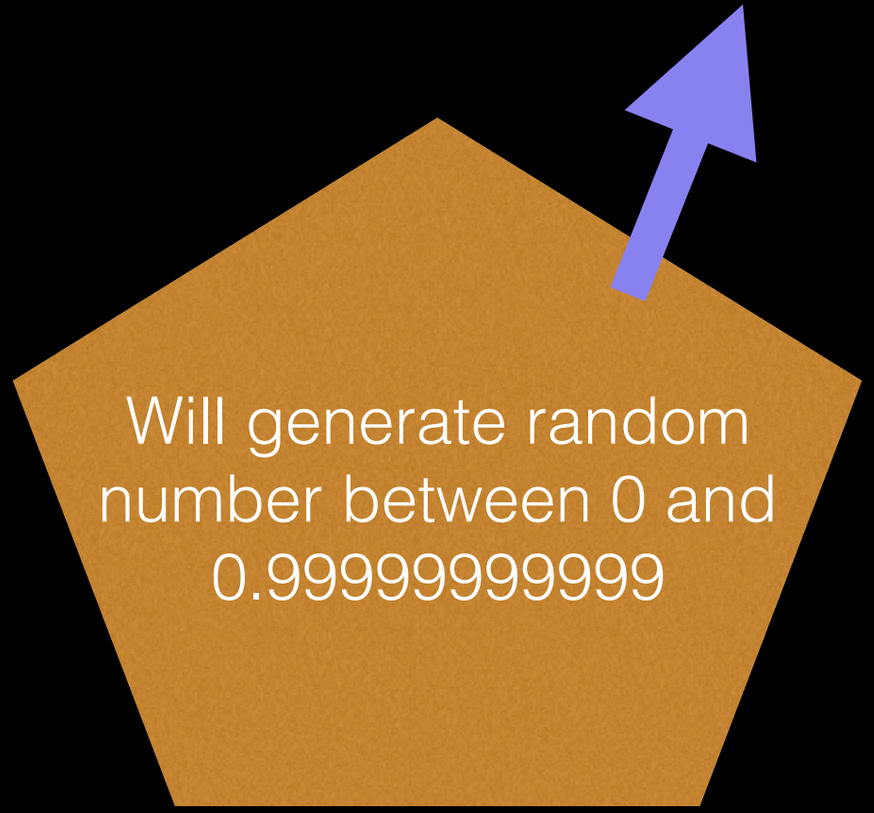
- In general, computers can't generate truly random numbers.
- Computers use something called pseudo-random algorithms to generate random numbers.
- You can get the same "random" numbers by using a seed.

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();
```



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Random Numbers

Try to get a random number from 0-5.999

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

0-5.99999

Try to get a random number from 1-5.999

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

1 - 5.999999

Try to get a random number among 1, 2, 3, 4, 5, 6

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

1, 2, 3, 4, 5, 6

Generate a random number between MAX and MIN

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

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");
}
```

Generate a random number between MAX and MIN

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

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.");
}
```

Generate a random number between MAX and MIN

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

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Complete Task G2-05: Roulette

Homework: TaskG2-06 GuessingGame

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