



# *Girl Develop It Ottawa*

*Introduction to Programming  
With Scratch*

Introduction

# About Me



# About Me



## The Female Perspective of Computer science

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SATURDAY, JULY 23, 2011

### Women and Going Beyond the Game

While it seems to me that many more women are playing traditionally "male" video games these days, there is also a group of women who go beyond the game in ways that, according to [James Paul Gee](#) and Elizabeth Hayes, are important to 21st century learning. An in depth look at this phenomenon and what we can learn from it is described in [Women and Gaming: The Sims and 21st Century Learning](#).



Although not Gee's strongest work in my opinion (I'm not familiar with Hayes), this book does provoke some interesting thought on the state of education today. I must admit, I rather enjoy reading about what's wrong with how education is done and what it takes to make it better. I see a lot of the problems in education today.

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#### Blog Archive

<http://compscigail.blogspot.com>

# *About Me*

**Bachelor of Computer Science (2002-2007)**

**Masters of Computer Science (2007-2009)**

**PhD Computer Science (2009-now)**



# *Today's Plan*

**What is computer science?**

**How do we program in Scratch?**

**<Break>**

**Let's make our own project!**

**Dinner at a nearby pub (optional)**





# *Girl Develop It Ottawa*

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What is computer  
science?

# *What is Computer Science?*

*The big fancy definition:*

**Computer science (or computing science) is the study of the theoretical foundations of information and computation and their implementation and application in computer systems.**

[http://en.wikipedia.org/wiki/Computer\\_science](http://en.wikipedia.org/wiki/Computer_science)



**@fortnow**  
Lance Fortnow

Asked: What is Computer Science?

Answered: Everything that happens after  
you ask a question to Google until you get  
a result.

---



# *What is Computer Science?*

It's all about finding ways to figure stuff out.

**What can be computed automatically?**

**How hard is it to compute?**

**What cool applications are there?  
(Like games!)**

**What's the best way to set up a computer  
so it can do all this stuff fast?**

We are limited only by our imagination...

# *Computer Science Goes Well With...*



[http://www.dailygalaxy.com/photos/uncategorized/2007/10/30/robot\\_5.jpg](http://www.dailygalaxy.com/photos/uncategorized/2007/10/30/robot_5.jpg)

# *Computer Science Goes Well With...*



[http://news.cnet.com/i/bto/20080609/iphone\\_550x550\\_540x539.jpg](http://news.cnet.com/i/bto/20080609/iphone_550x550_540x539.jpg)

# *Computer Science Goes Well With...*



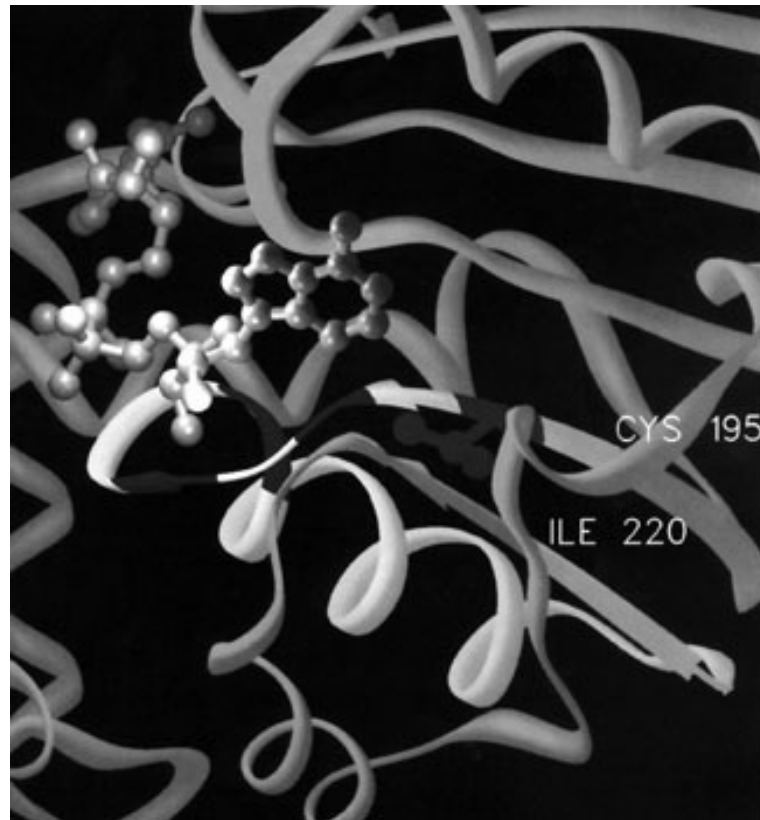
<http://www.waynepubliclibrary.org/images/music%20notes.JPG>

# Computer Science Goes Well With...



[http://www.math.msu.edu/~mshapiro/kidmath\\_files/mathematics.jpg](http://www.math.msu.edu/~mshapiro/kidmath_files/mathematics.jpg)

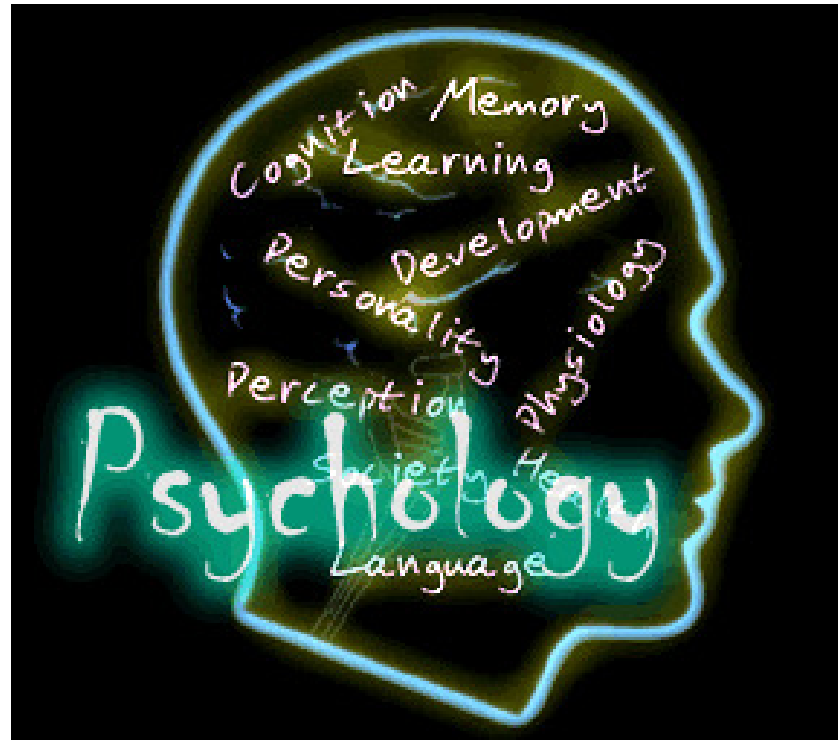
# *Computer Science Goes Well With...*



<http://www.wadsworth.org/cores/images/stats.jpg>

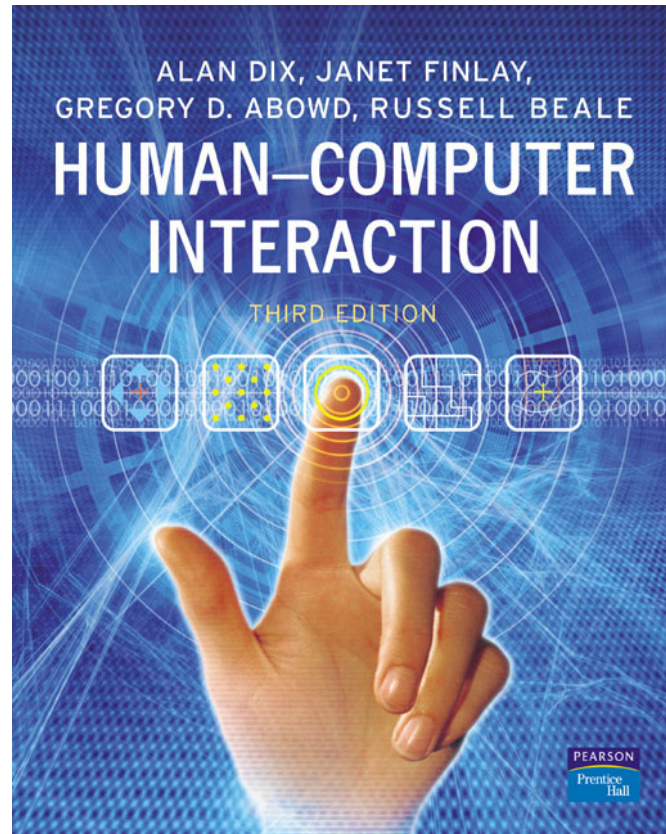


# *Computer Science Goes Well With...*



<http://departments.weber.edu/psychology/Psychology.gif>

# *Computer Science Goes Well With...*



<http://images.pearsoned-ema.com/jpeg/large/9780130461094.jpg>

# *Computer Science Goes Well With...*



<http://hornbillunleashed.files.wordpress.com/2009/10/law.jpg>

*Computer Science Goes Well With...*

**... pretty much anything  
you want it to!**

# *Computational Thinking*

“Computational thinking enables you to bend computation to your needs. It is becoming the new literacy of the 21st century.”



# *Computational Thinking*

“Informally we might define CT as a set of **thinking or problem-solving strategies** that are used to solve problems when working with computers, and that can also be **applied to many problem types**, even absent the computer.”



# *Benefits of Being Able to Think Computationally*

**“Confidence in dealing with  
complexity”**

# *Benefits of Being Able to Think Computationally*

**“Persistence in working with  
difficult problems”**

*Benefits of Being Able to  
Think Computationally*

**“Tolerance for ambiguity”**

# *Benefits of Being Able to Think Computationally*

**“The ability to deal with open-ended problems”**

# *Benefits of Being Able to Think Computationally*

**“The ability to communicate and work with others to achieve a common goal or solution”**





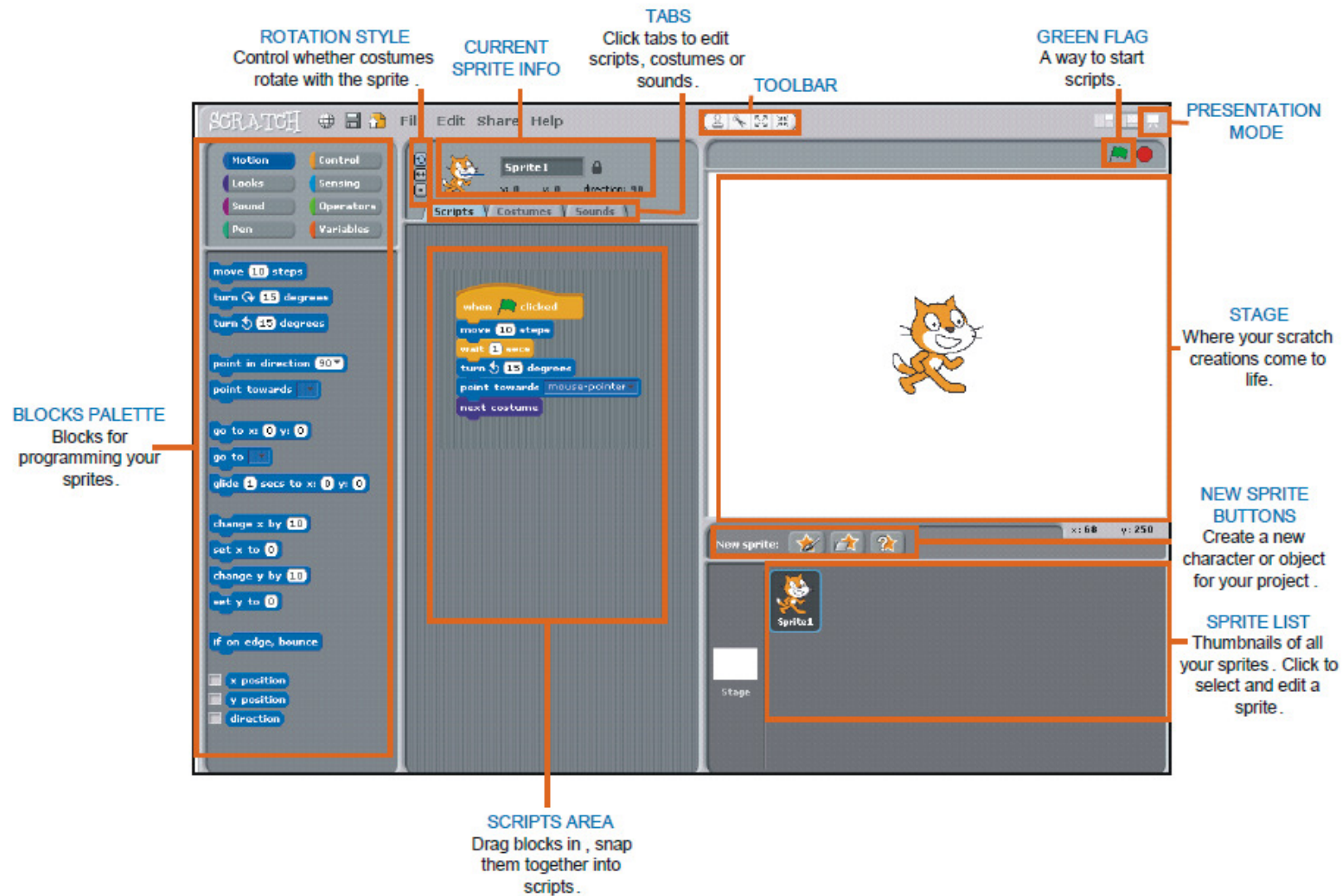


# *Girl Develop It Ottawa*

*Introduction to Programming  
With Scratch*

Programming Concepts  
in Scratch

# A Tour of Scratch



# *Programming Concepts:*

## *Boolean Values*



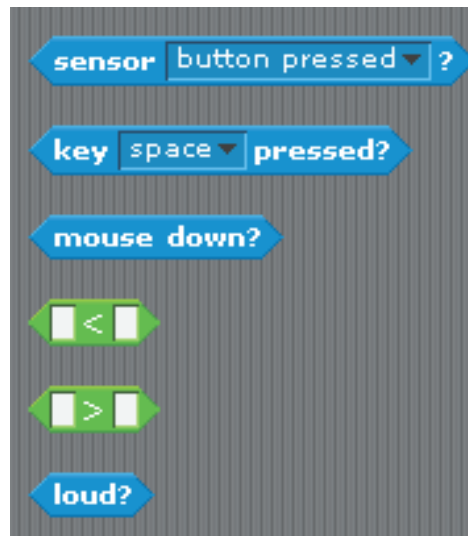
**TRUE**



**FALSE**

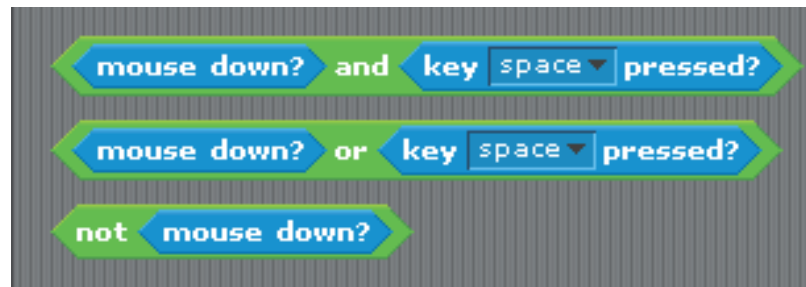
# Programming Concepts:

## Boolean Values



# Programming Concepts:

## Boolean Values



And: Both must be true

Or: One or both must be true

Not: Must be false

# *Programming Concepts:*

## *If Statements*





# Programming Concepts:

## If Statements



# Programming Concepts:

## If Statements



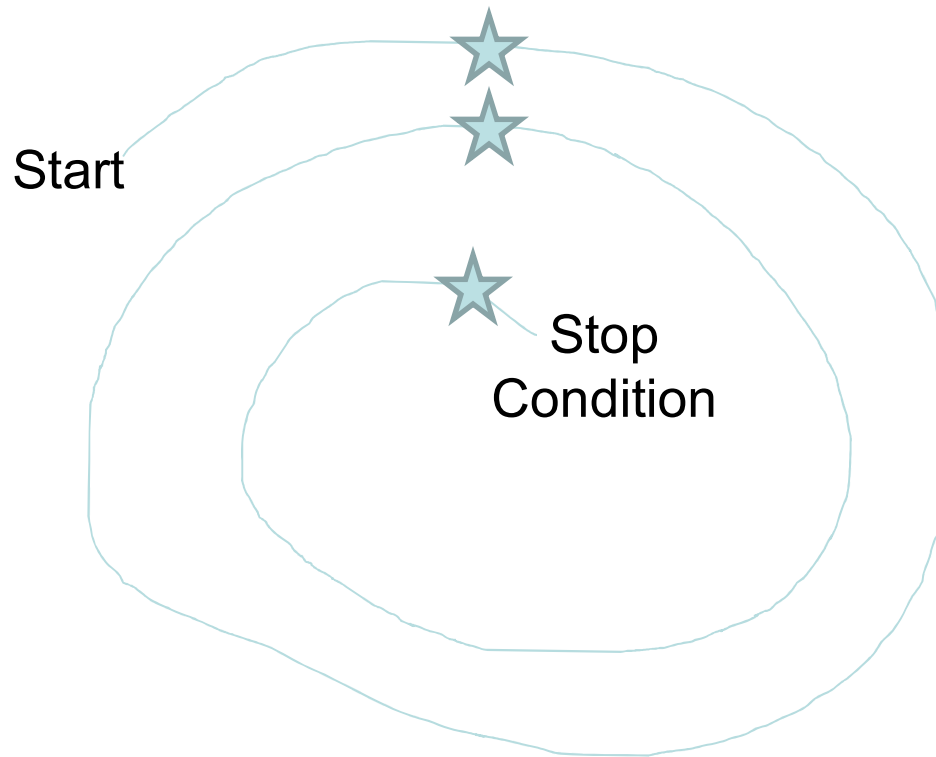
# Programming Concepts:

## If Statements



# Programming Concepts:

## Loops



# Programming Concepts:

## Loops



Forever loop: no stop condition  
(literally goes forever – or at least until the program stops)

# Programming Concepts:

## Loops



Forever if loop: goes forever, but only runs the code inside when the boolean is TRUE

# Programming Concepts:

## Loops



Repeat loop: repeats the code exactly the number of times you tell it to

# Programming Concepts:

## Loops

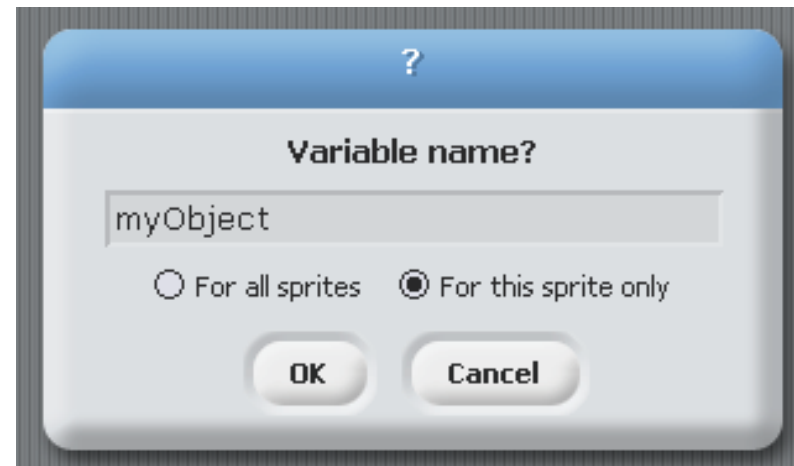
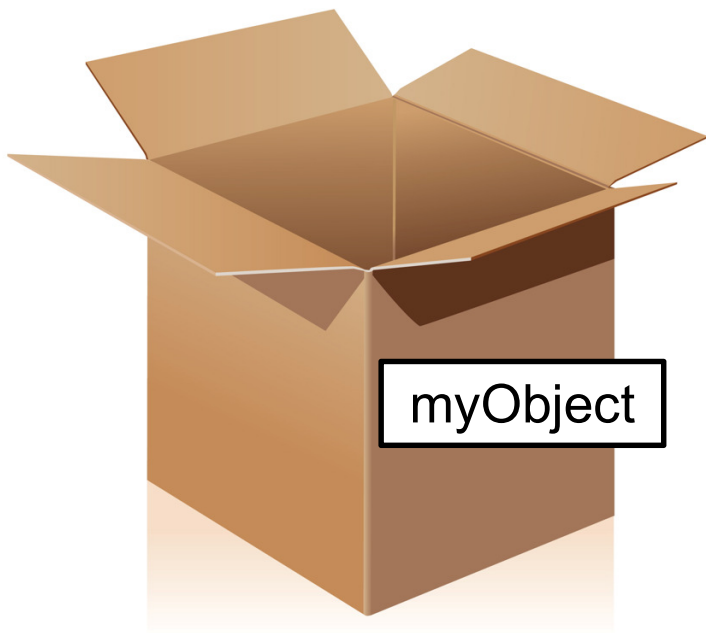


Repeat until loop: continues *until* the boolean value is TRUE, then stops for good



# *Programming Concepts:*

## *Variables*



# Programming Concepts: Variables



set myObject to earth

show variable myObject

hide variable myObject

# Programming Concepts: Variables

Sprite 1 myObject **earth**



# Programming Concepts: Variables



```
if myObject = earth
  play sound meow

if myObject = mars
  play note 60 for 0.5 beats
```

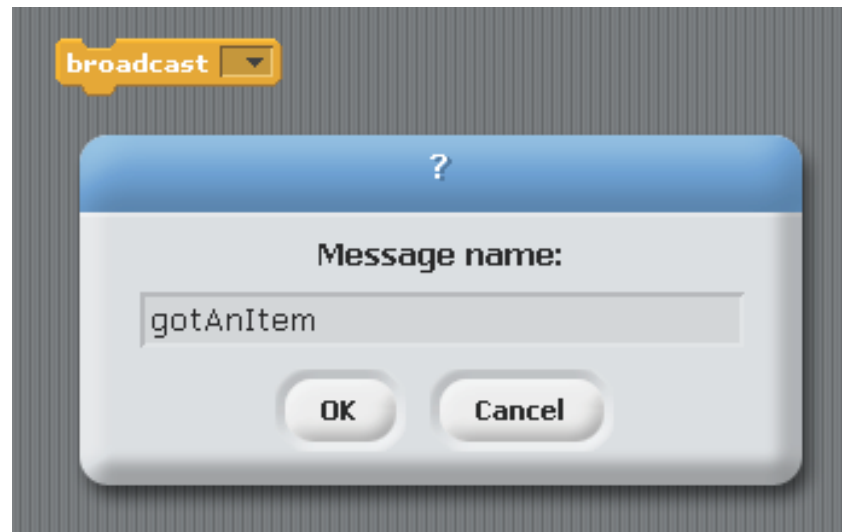
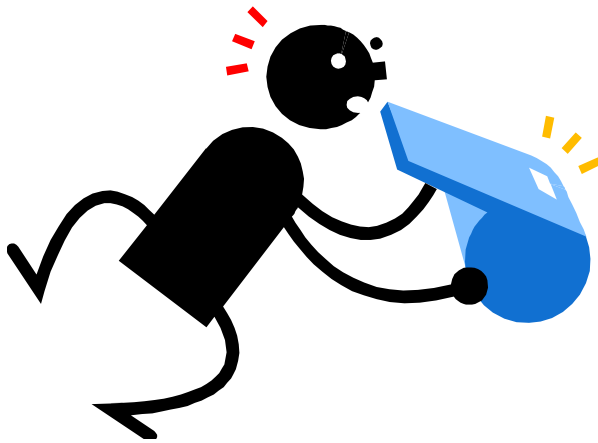
# *Programming Concepts:*

## *Variables*



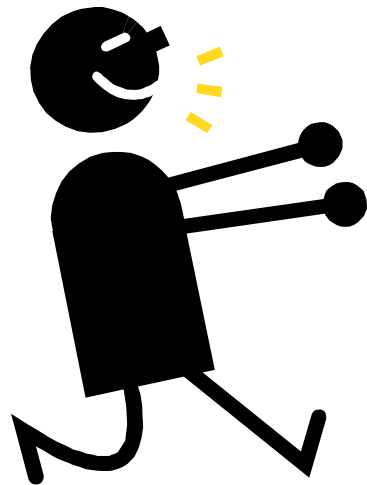
# Programming Concepts:

## Broadcast



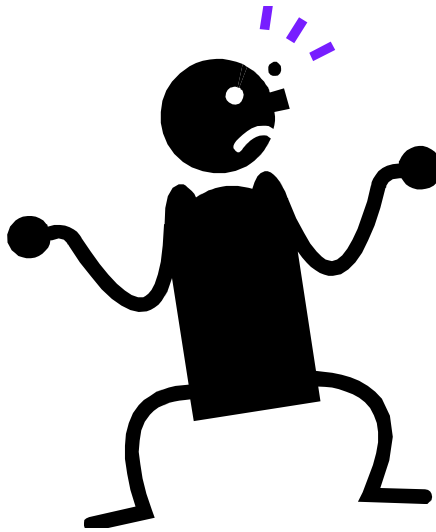
# Programming Concepts:

## Broadcast



# Programming Concepts:

## Broadcast







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**Example: Oscar Time!**

# *Oscar Time*

- Download:

<http://gailcarmichael.com/Oscartime.sb>

- To follow along the tutorial go to:

[http://www.cs.harvard.edu/malan/  
scratch/oscartime.php](http://www.cs.harvard.edu/malan/scratch/oscartime.php)