

MEETING XII

FALL SEMESTER REVIEW

FUNCTIONS

- General
 - Most basic component in cs
 - Take **arguments** in parentheses ()
 - Called on an **object**, usually
- Decomposition
 - Simplify tasks to smaller functions
 - For example, baking cookies would simplify..
 - getting
 - mixing
 - oven-ing

FOR LOOPS

- programming involves the repetition of some tasks, that is simplified by the use of looping
- a for loop repeats the containing actions for a specified number of occurrences

```
for (var i = 0; i < 7; i++){  
    functions();  
}
```

VARIABLES

- declaration

- `var variable;` //make the box
- `variable = 5;` //fill the box

- redefinition

- `variable = 6;` //replace contents

- contents

- `var bool = true;`
- `var s = "Go Bearcats";`
- `var n = 421;`

- operations

- `var x, y, z, s, a;`
- `x = 4, y = 2, z = 1;`
- `s = "string", a = "a";`

- `var j = x + y;`
- `var k = z / y;`
- `var l = x % y;`
- `var s = s + a;`

MATH REVIEW (1 OF 2)

//Operators:

+ Addition

- Subtraction

* Multiplication

/ Division

% Modulos (remainder)

() Parentheses

//Examples:

```
var z = x + y;
```

```
var w = x * y;
```

//Increment:

```
x++;
```

//Decrement:

```
x--;
```

MATH REVIEW (2 OF 2)

//Shortcuts:

`x = x + y; x += y;`

`x = x - y; x -= y;`

`x = x * y; x *= y;`

`x = x / y; x /= y;`

//Absolute Value:

`var abs = Math.abs(x);`

//Square Root:

`var sqrt = Math.sqrt(x);`

GRAPHICS REVIEW (CANVAS)

```
//returns height  
getHeight();
```

```
//returns width  
getWidth();
```

```
//examples:
```

```
var height = getHeigh
```

```
var center = getWidth()/2;
```

```
//removes all objects:  
removeAll();
```

```
//returns type of object  
as string
```

```
obj.getType();
```

GRAPHICS REVIEW (CIRCLE)

```
//new circle
```

```
var circle = new Circle(r);
```

```
//example, 50px radius
```

```
var circle = new Circle(50);
```

```
circle.setPosition(x,y);
```

```
circle.setColor(Color.red);
```

```
circle.setRadius(100);
```

```
//add to screen
```

```
add(circle);
```

```
//move circle
```

```
circle.move(dx, dy);
```


BOOLEANS REVIEW

//Two possible values:

- `true` this is true
- `false` this is not true

//Examples:

- `var a = true;`
- `var b = false;`

LOGICAL OPERATORS

//examples

- `true && true` → `true`
- `true && false` → `false`
- `false && false` → `false`

//three operators

- `!` not
- `&&` and
- `||` or

- `false || false` → `false`
- `true || false` → `true`
- `true || true` → `true`

- `!true` → `false`
- `!false` → `true`

CONDITIONALS

//key terms

```
if (a) {  
    //runs if boolean a is true  
}  
else if (b) {  
    //runs if a is false and b is true  
}  
else {  
    //runs only if a and b are both false  
}
```

//examples

see following slides

CONDITIONALS: EXAMPLE (1 OF 3)

```
//checks if a button is clicked and goes to a page if it's clicked
```

```
if (isClicked) {  
    goToPage();  
}
```

CONDITIONALS: EXAMPLE (2 OF 3)

```
//repairs a bike  
    //pumps the tire up if it's flat  
    //checks the pressure if it's not flat
```

```
if (isFlat) {  
    pumpTire();  
} else {  
    checkPressure();  
}
```

CONDITIONALS: EXAMPLE (3 OF 3)

```
//repairs a bike
```

```
    //patches a puncture if it's punctured
```

```
    //pumps the tire up if it's flat
```

```
    //checks the pressure if it's not flat
```

```
if (isFlat && isPunctured) {  
    patchPuncture();  
    pumpTire();  
} else if (isFlat) {  
    pumpTire();  
} else {  
    checkPressure();  
}
```

BEYOND PROGRAMMING CLUB

- check out that [AR-Drone API](#)
- work on [CodeHS](#) at home: you have premium accounts!
- check out resources featured at [bento.io](#)