

Lesson 15

Add-ons

Pre-Lesson Ideas:

- ♦ Have students practice creating an if statement that makes something happen when a specific key is pressed. To define the key a you say; `key == 'a'`. Inside of the if statement, you also have to say `keyPressed`. In English, the conditional would read; “if the a key is pressed then __”.
- ♦ Simply have students make some action occur when a key is pressed, they can even add this feature to a project they already have.

Post-Lesson Ideas:

Reflection Questions

- 1) What new command did we learn and how does it work?

Possible Answers: `keyPressed`, `keyCode`, `key`. These are different commands that returns either true or false.

- 2) When do you use `key` versus `keyCode`?

Possible Answers: for letters and symbols you use `key`, while you have to use `keyCode` for arrows.

- 3) What would happen if you did not use `keyPressed` inside of the if statement?

Possible Answer: The if statement returns true after the key is pressed only once. Another key would have to be pressed to make the if statement return false.

Further Development

- * Make a more complicated etch a sketch. Try having keys that move the rectangle diagonally. Students could also use keys or buttons to change the color and/ or size of the rectangle. Have students use the skills they already know to make a more complex etch a sketch.

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Set Up

Etch a Sketch:

- * Using knowledge of if statements, use the keys to control the movement of a shape.

Project Goal:

- 1) Generally, what should the project look like?

A drawing tool that allows the student to control a shape with keys. This could look kind of like an etch a sketch.

- 2) What skill(s) are being learned/ practiced?

- 3) What concept are students gaining insight on?

Programming/ Math Vocabulary:

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Outline

Introduction to Topic:

“Today we are going to be creating an etch a sketch using keys.

Project Breakdown:

- 1) Draw a rectangle
- 2) Create a background
- 3) Write an if statement that uses keyPressed and defines a key to be pressed
- 4) Inside the conditional, use a math expression to move shape
- 5) Problem solve and trouble shoot errors

Example Projects/ Basic Source Code:

```
var x = 0;
var y = 0;
background(255,0,102);
draw = function () {
  fill(0);
  rect(x,y,150,10);
  //down key
  if(keyCode == DOWN && keyPressed){
    y = y + 4;
  }//up key
  if(keyCode == UP && keyPressed){
    y = y - 4;
  }//down key
  if(keyCode == LEFT && keyPressed){
    x = x - 4;
  }//left key
  if(keyCode == RIGHT && keyPressed){
    x = x + 4;
  } };
};
```

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Troubleshooting

Common Mistakes and Confusions:

- 1) Using the wrong number of equal signs.

You use one equal sign to set the value of something, two equal signs to compare, and three when using zero.

- 3) Writing an if statement inside of another one

This is one way to write an if statement to create a button. If you are going to do this, make sure the brackets line up. Also, make sure you want this and not two separate if statements.

FAQ's:

- 1) Why write the background command before the draw function?

You want the rectangle to leave a trail as it moves, so you do not want the background to draw over the past rectangles.

- 2) Do I have to use a rectangle?

Nope! Any shape will work, they will just make your project look a little different.