

loadShader()

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

Shaders are programs that run on the graphics processing unit (GPU). They can process many pixels at the same time, making them fast for many graphics tasks. They're written in a language called [GLSL](#) and run along with the rest of the code in a sketch.

Once the [p5.Shader](#) object is created, it can be used with the [shader\(\)](#) function, as in `shader(myShader)`. A shader program consists of two files, a vertex shader and a fragment shader. The vertex shader affects where 3D geometry is drawn on the screen and the fragment shader affects color.

`loadShader()` loads the vertex and fragment shaders from their `.vert` and `.frag` files. For example, calling `loadShader('/assets/shader.vert', '/assets/shader.frag')` loads both required shaders and returns a [p5.Shader](#) object.

The third parameter, `successCallback`, is optional. If a function is passed, it will be called once the shader has loaded. The callback function can use the new [p5.Shader](#) object as its parameter.

The fourth parameter, `failureCallback`, is also optional. If a function is passed, it will be called if the shader fails to load. The callback function can use the event `error` as its parameter.

Shaders can take time to load. Calling `loadShader()` in [preload\(\)](#) ensures shaders load before they're used in [setup\(\)](#) or [draw\(\)](#).

Note: Shaders can only be used in WebGL mode.

Examples

```
// Note: A "uniform" is a global variable within a shader program.

let mandelbrot;

// Load the shader and create a p5.Shader object.
function preload() {
  mandelbrot = loadShader('/assets/shader.vert',
  '/assets/shader.frag');
}

function setup() {
  createCanvas(100, 100, WEBGL);

  // Compile and apply the p5.Shader object.
  shader(mandelbrot);

  // Set the shader uniform p to an array.
  mandelbrot.setUniform('p', [-0.74364388703, 0.13182590421]);

  // Set the shader uniform r to the value 1.5.
  mandelbrot.setUniform('r', 1.5);

  // Add a quad as a display surface for the shader.
  quad(-1, -1, 1, -1, 1, 1, -1, 1);

  describe('A black fractal image on a magenta background.');
}
```

```
// Note: A "uniform" is a global variable within a shader program.

let mandelbrot;

// Load the shader and create a p5.Shader object.
function preload() {
  mandelbrot = loadShader('/assets/shader.vert',
  '/assets/shader.frag');
}

function setup() {
  createCanvas(100, 100, WEBGL);

  // Use the p5.Shader object.
  shader(mandelbrot);

  // Set the shader uniform p to an array.
  mandelbrot.setUniform('p', [-0.74364388703, 0.13182590421]);

  describe('A fractal image zooms in and out of focus.');
}

function draw() {
  // Set the shader uniform r to a value that oscillates
  // between 0 and 2.
  mandelbrot.setUniform('r', sin(frameCount * 0.01) + 1);

  // Add a quad as a display surface for the shader.
}
```

Syntax

```
loadShader(vertFilename, fragFilename, [successCallback], [failureCallback])
```

Parameters

vertFilename	String: path of the vertex shader to be loaded.
fragFilename	String: path of the fragment shader to be loaded.
successCallback	Function: function to call once the shader is loaded. Can be passed the p5.Shader object.
failureCallback	Function: function to call if the shader fails to load. Can be passed an Error event object.

Returns

[p5.Shader](#): new shader created from the vertex and fragment shader files.

This page is generated from the comments in [src/webgl/material.js](#). Please feel free to edit it and submit a pull request!

Related References

[copyToContext](#)

Copies the context from one drawing

[inspectHooks](#)

Logs the hooks available in this shader.

[modify](#)

Returns a new shader, based on the original, but with custom snippets of shader code replacing default behaviour.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)

Sets the shader's uniform (global) variables.

[loadShader](#)

Loads vertex and fragment shaders to create a [p5.Shader](#) object.

[shader](#)

Creates a new [p5.Shader](#) object from vertex and fragment shader files.

[setUniform](#)