

## Task 3: Exploring SVG, HTML Canvas, and HTML Media Elements

### Objective:

Incorporate and manipulate SVGs (Scalable Vector Graphics), utilize the HTML canvas for drawing graphics, and embed various media types (like audio and video) into your webpage. This task aims to provide a comprehensive understanding of advanced HTML elements and their practical applications in web development.

### Pre-requisites:

- Basic understanding of HTML elements and attributes
- Familiarity with a code editor like Visual Studio Code
- Basic knowledge of JavaScript for canvas manipulation

### Concepts Covered:

- SVG (Scalable Vector Graphics)
- HTML Canvas
- HTML Media Elements (Audio and Video)

### Concepts:

#### 1. Working with SVG:

Embed SVG graphics directly into your HTML. SVG is an XML-based format for vector graphics, which allows you to create and manipulate shapes like rectangles, circles, and lines.

```
<svg width="100" height="100">
  <rect x="10" y="10" width="80" height="80" fill="blue" />
</svg>
```

#### 2. HTML Canvas Basics:

The `<canvas>` element is used for drawing graphics via JavaScript. It provides a drawable region defined in HTML but manipulated through JavaScript.

```
<canvas id="myCanvas" width="200" height="200"></canvas>
<script>
  var canvas = document.getElementById('myCanvas');
  var context = canvas.getContext('2d');
  context.fillStyle = 'green';
  context.fillRect(10, 10, 100, 100);
</script>
```

#### 3. Embedding HTML Media:

Use the `<audio>` and `<video>` tags to embed media files into your webpage. These elements allow you to include multimedia content that users can play directly from the webpage.

```
<audio controls>
  <source src="path/to/audiofile.mp3" type="audio/mpeg">
  Your browser does not support the audio element.
</audio>

<video width="320" height="240" controls>
  <source src="path/to/videofile.mp4" type="video/mp4">
  Your browser does not support the video tag.
</video>
```

### Setup:

#### 1. Install Visual Studio Code (VS Code):

Download and install VS Code from [Visual Studio Code](#).

#### 2. Web Browsers:

Use Google Chrome or Mozilla Firefox for viewing your webpage and utilizing their developer tools for debugging.

### Tasks:

#### 1. Working with SVG (30 minutes):

- Embed a simple SVG graphic directly into your HTML.
- Experiment with SVG attributes like `width`, `height`, and `fill` to manipulate the graphic.
- Create basic shapes like a rectangle, circle, or line within the SVG.

#### 2. HTML Canvas Basics (45 minutes):

- Add a `<canvas>` element to your webpage.
- Use basic JavaScript to draw on the canvas. Start with simple shapes (rectangles, circles, lines).
- Experiment with canvas properties like `fillStyle`, `strokeStyle`, and `lineWidth`.









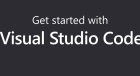

#### 3. Embedding HTML Media (45 minutes):

- Incorporate an audio file using the `<audio>` tag with controls.
- Embed a video using the `<video>` tag, ensuring you include play, pause, and volume controls.
- Explore attributes like `autoplay`, `loop`, and `muted` for both audio and video.

### Instructions:

1. Write the required code in `index.html`.
2. Open the file in your web browser to ensure the code displays correctly.
3. Use the browser's developer tools to debug and inspect the elements.

### Resources:

-  **SVG: Scalable Vector Graphics | MDN**  
Scalable Vector Graphics (SVG) is an XML-based markup language for describing two-dim...  
 <https://developer.mozilla.org/en-US/docs/Web/SVG>
-  **Canvas API - Web APIs | MDN**  
The Canvas API provides a means for drawing graphics via JavaScript and the HTML <canv...  
 [https://developer.mozilla.org/en-US/docs/Web/API/Canvas\\_API](https://developer.mozilla.org/en-US/docs/Web/API/Canvas_API)
-  **<audio>: The Embed Audio element - HTML: HyperText Markup Languag...**  
The <audio> HTML element is used to embed sound content in documents. It may contain...  
 <https://developer.mozilla.org/en-US/docs/Web/HTML/Element/audio>
-  **<video>: The Video Embed element - HTML: HyperText Markup Languag...**  
The <video> HTML element embeds a media player which supports video playback into th...  
 <https://developer.mozilla.org/en-US/docs/Web/HTML/Element/video>
-  **Documentation for Visual Studio Code**  
Find out how to set-up and get the most from Visual Studio Code. Optimized for building and d...  
 <https://code.visualstudio.com/docs>

## Videos:

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## GitHub Instructions:

1. **Open in Visual Studio Code:**

After clicking on the "Open in Visual Studio Code" button from the GitHub Classroom confirmation page, VSCode will open the repository directly. If prompted, select "Open" or "Allow" to open the repository in VSCode.

2. **Open the Terminal in VSCode:**

In VSCode, open a terminal by selecting Terminal > New Terminal from the top menu.

3. **Complete the Task:**

In VSCode, write your solution in the `index.html` file.

4. **Run and Test Your Code:**

Open your `index.html` file in a web browser to ensure it works correctly. Use the following command:

```
open index.html
```

5. **Commit Your Changes:**

In the VSCode terminal, add your changes to git:

```
git add index.html
```

Commit your changes with a meaningful message:

```
git commit -m "Completed task 3"
```

6. **Push Your Changes to Your Repository:**

Push your changes to your forked repository:

```
git push origin main
```

7. **Create a Pull Request:**

Go to your repository on GitHub.

Click on the "Pull Requests" tab.

Click the "New Pull Request" button.

Ensure the base repository is the original template repository and the base branch is `main`.

Ensure the head repository is your forked repository and the compare branch is `main`.

Click "Create Pull Request".

Add a title and description for your pull request and submit it.

**Summary of Commands:**

```
# Open in Visual Studio Code

# Open terminal in VSCode

# Complete the task by editing index.html

# Navigate to the directory containing index.html
cd path/to/your/index.html

# Run your code
open index.html

# Add, commit, and push your changes
git add index.html
git commit -m "Completed task 3"
git push origin main

# Create a pull request on GitHub
```