

Project Report: FLAME ANIMATION USING HTML & CSS

Objective

To create a realistic flame animation using only HTML and CSS, without any JavaScript. The animation mimics a flickering fire by layering color gradients and applying keyframe animations.

Technologies Used

- HTML5: To structure the flame container and flame layers.
- CSS3: For styling, positioning, and animation effects.

Code Description

HTML Structure:

- A single div with class 'container' holds multiple divs representing layers of the flame:
 - .red, .orange, .yellow, .white: main visible flame layers
 - .blue, .black: bottom core and shadow

CSS Styling:

- The body is styled with a black background and centered content using CSS Grid.
- Each flame layer uses position: absolute, border-radius, color with box-shadow.
- @keyframes flicker animates the container to simulate flickering movement.

Animation Logic

```
@keyframes flicker {
```

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```
0% { transform: rotate(-1deg); }  
20% { transform: rotate(1deg); }  
40% { transform: rotate(-1deg); }  
60% { transform: rotate(1deg) scaleY(1.04); }  
80% { transform: rotate(-2deg) scaleY(0.92); }  
100% { transform: rotate(1deg); }  
}
```

Color Layers and Purpose

Red: Outer hot layer

Orange: Mid layer

Yellow: Core flame

White: Bright center

Blue: Combustion base

Black: Ash/smoke shadow

Output

A centered animated flame, flickering continuously, visually realistic using only HTML and CSS no external libraries or JavaScript required.

Conclusion

This project demonstrates the power of pure CSS animations in achieving complex visual effects. It highlights

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creative use of CSS properties like border-radius, box-shadow, transform, and @keyframes.

Future Improvements

- Add smoke particles using pseudo-elements
- Control flame intensity with JavaScript
- Use sound effects for real-time ambiance