

Video Explainer with Python

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The image is a promotional banner for DreamHost. It features a blue background with white text. At the top, it says "97 Day Money-Back Guarantee". Below that, it says "Web & WordPress Hosting". The price is prominently displayed as "\$2.59 /mo". At the bottom left is the DreamHost logo, and at the bottom right is a blue button with the text "Get Started".

Utilizing YouTube API and JavaScript, we can easily control YouTube's Video Player. We can, for instance, get the elapsed time in seconds since the video started playing. The value is then used as start time to show a notification box. Have a look at the screenshot below:

The explanation of this
element is easy.



If you want to build such a program, the code below may help you.

```
<html>
<head>
<style>
#textbox{
  align: center;
  visibility: hidden;
  width: 200px;
  border: 1px solid #004d00;
  background-color: #003300;
  text-align: center;
  padding: 5px;
  color: #ffffff;
}
</style>
</head>
<body>
<br>
<div align='center'>
<div id='textbox'></div>
<br>
<div id='video-placeholder'></div>
</div>
<script src='https://www.youtube.com/iframe_api'></script>
</body>
<script>
var content = [
  ['text1',5,10],
  ['text2',15,18],
];

var idx = 0;

var player;

function onYouTubeIframeAPIReady() {
  player = new YT.Player('video-placeholder', {
    width: 600,
    height: 400,
    videoId: 'UV50M8mHh0s',
    playerVars: {
```

```

        color: 'white'
    },
    events: {
        onReady: initialize
    }
});
}

function initialize(){
    checkTime();

    timeupdater = setInterval(checkTime,1000);
}

function checkTime(){
    var elem = document.getElementById('textbox');
    var curtime = player.getCurrentTime();

    if (Math.floor(curtime) == content[idx][1]){
        elem.innerHTML = content[idx][0];
        elem.style.visibility = 'visible';
    }else if (Math.floor(curtime) == content[idx][2]){
        elem.innerHTML = '';
        elem.style.visibility = 'hidden';
        if (idx < content.length - 1){
            idx = idx + 1;
        }
    }
}
</script>
</html>

```

Explanation:

The text will be placed inside a *div* block:

```
<div id='textbox'></div>
```

In the following code, a placeholder for the player is added. The YouTube API is also included.

```
<div id='video-placeholder'></div>
<script src='https://www.youtube.com/iframe_api'></script>
```

You put the text in a multidimensional array *content*. [*text1*,5,10] means 'text1' will appear 5 seconds (and will disappear 10 seconds) after the video starts playing. The code looks like this:

```
var content = [
    ['text1',5,10],
    ['text2',15,18],
];
var idx = 0;
```

The variable *idx* is used for indexing the array.

```
function onYouTubeIframeAPIReady() {
    player = new YT.Player('video-placeholder', {
        width: 600,
        height: 400,
        videoId: 'UV50M8mHh0s',
        playerVars: {
            color: 'white'
        },
        events: {
            onReady: initialize
        }
    });
}
```

The function above is self-explanatory. The function is called when the API is loaded. When the player is ready, another function, *initialize()* is called.

```
function initialize(){
    checkTime();

    timeupdater = setInterval(checkTime,1000);
}
```

The function *initialize()* will call another function, *checkTime()*, every 1000ms.

```
function checkTime(){
    var elem = document.getElementById('textbox');
    var curtime = player.getCurrentTime();

    if (Math.floor(curtime) == content[idx][1]){
        elem.innerHTML = content[idx][0];
        elem.style.visibility = 'visible';
    }else if (Math.floor(curtime) == content[idx][2]){
        elem.innerHTML = '';
        elem.style.visibility = 'hidden';
        if (idx < content.length - 1){
            idx = idx + 1;
        }
    }
}
```

The function *checkTime()* is the core of the program. The command *player.getCurrentTime()* gets the current position (in seconds) of the video playback. The value is then compared with the start time of the text in the array *content*. If the values match, the text will be displayed. A similar process is applied to the 'end time'. If the values match, the text will be hidden and the index of the array *content* is added by 1. The next item in the array is then ready to use.

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