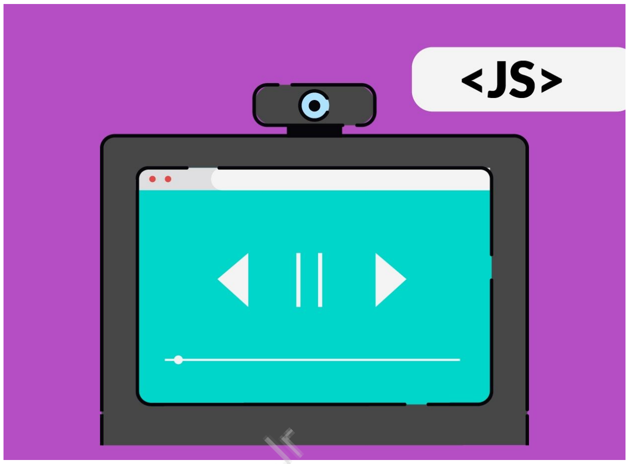
ADV-C127

WhiteHat Jr
Live Online Coding for Kids

PRETRAINED NET MODELS



What is our GOAL for this MODULE?

We learned how to manipulate the volume and the speed of the song by the movements of our body parts.

What did we ACHIEVE in the class TODAY?

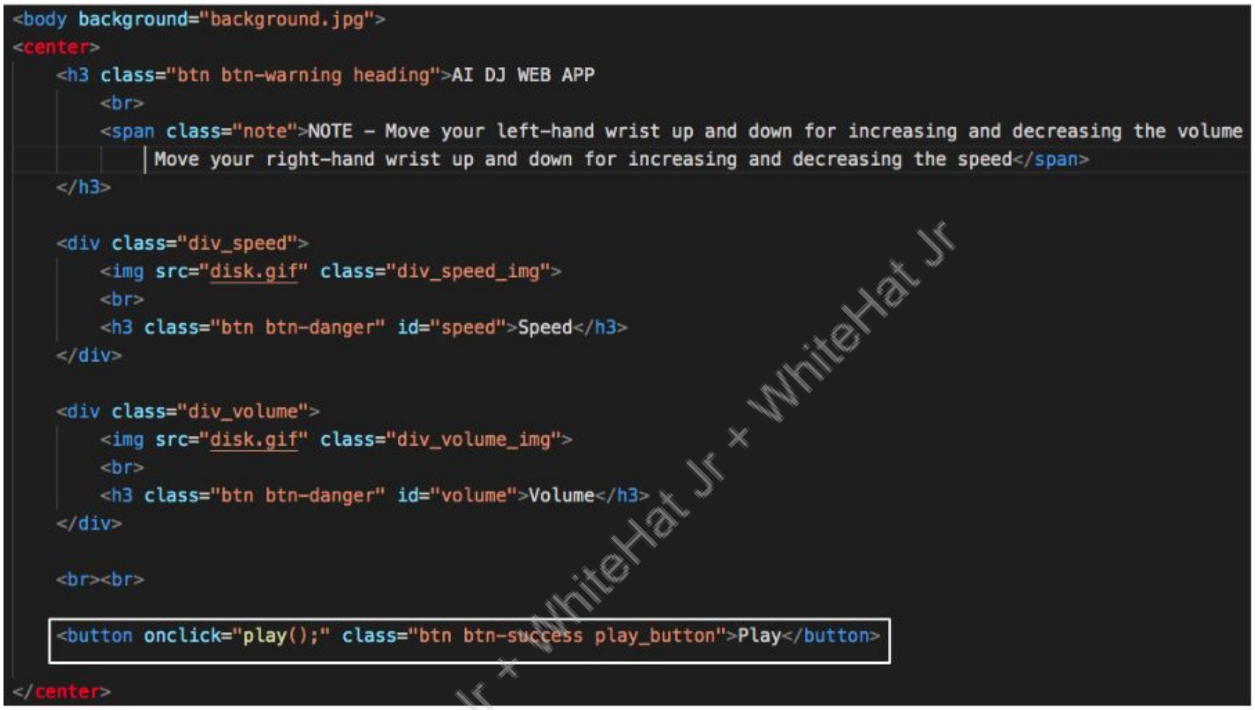
- We have completed the UI for the Web App.
- We started JS coding for the Web App.

Which CONCEPTS/ CODING did we cover today?

- Added play button and styled it.
- Added style for p5.js canvas.
- Created canvas and centered it.
- Accessed webcam and placed its live view on the canvas.
- Loaded the audio file.
- Defined play() function and added code for playing the audio file.

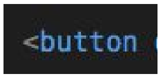
How did we DO the activities?

1. First, we added a play button, gave some bootstrap classes, and also our own class so that we can give additional style to this button. Also mention an “onclick” function to it.



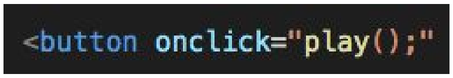
```
<body background="background.jpg">
<center>
    <h3 class="btn btn-warning heading">AI DJ WEB APP
        <br>
        <span class="note">NOTE - Move your left-hand wrist up and down for increasing and decreasing the volume
            Move your right-hand wrist up and down for increasing and decreasing the speed</span>
    </h3>

    <div class="div_speed">
        <img src="disk.gif" class="div_speed_img">
        <br>
        <h3 class="btn btn-danger" id="speed">Speed</h3>
    </div>

    <div class="div_volume">
        <img src="disk.gif" class="div_volume_img">
        <br>
        <h3 class="btn btn-danger" id="volume">Volume</h3>
    </div>

    <br><br>

    <button onclick="play();" class="btn btn-success play_button">Play</button>

</center>
```

Explaining the button code:

- Define a button tag 

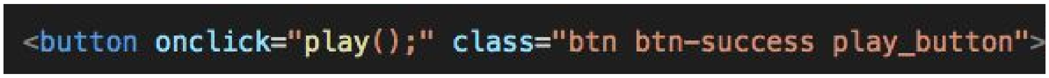
```
<button
```

- Give an onclick event which calls function “**play()**” this will start the music, define this function in JS later in the class.



```
<button onclick="play();"
```

- Now give some bootstrap classes:

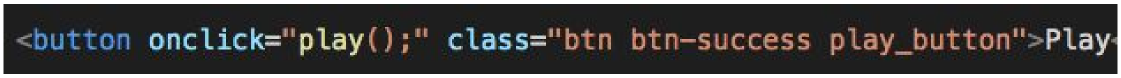


```
<button onclick="play();" class="btn btn-success play_button">
```

  - **btn** - This is a bootstrap class that will add padding and margin to this

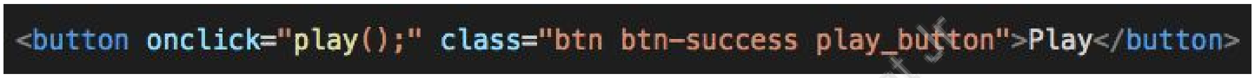
div and to make it look better.
  - ○ **btn-success** - This is a bootstrap class that will add a light green background, and border color to the heading tag.
  - ○ **play_button** - is our class, give style in **style.css.**

- Then give text to the button:



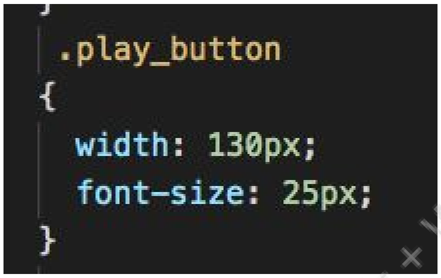
```
<button onclick="play();" class="btn btn-success play_button">Play
```

- Then close the button tag:



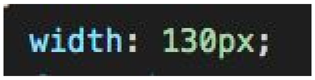
```
<button onclick="play();" class="btn btn-success play_button">Play</button>
```

1. Give style to "**Play**" button using “**play_button**” class:



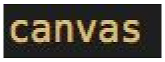
```
 .play_button
{
  width: 130px;
  font-size: 25px;
}
```

We want to increase the width of the button, that’s why -
We are increasing the font by setting font size to 25px.

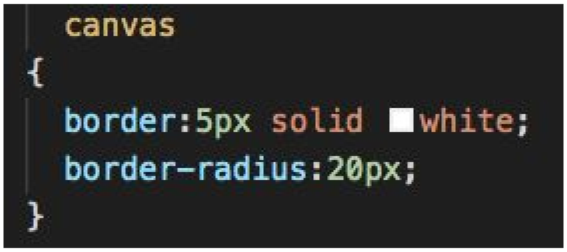


```
width: 130px;
```

2. To give style for p5.js canvas we can directly write - and start adding style properties:



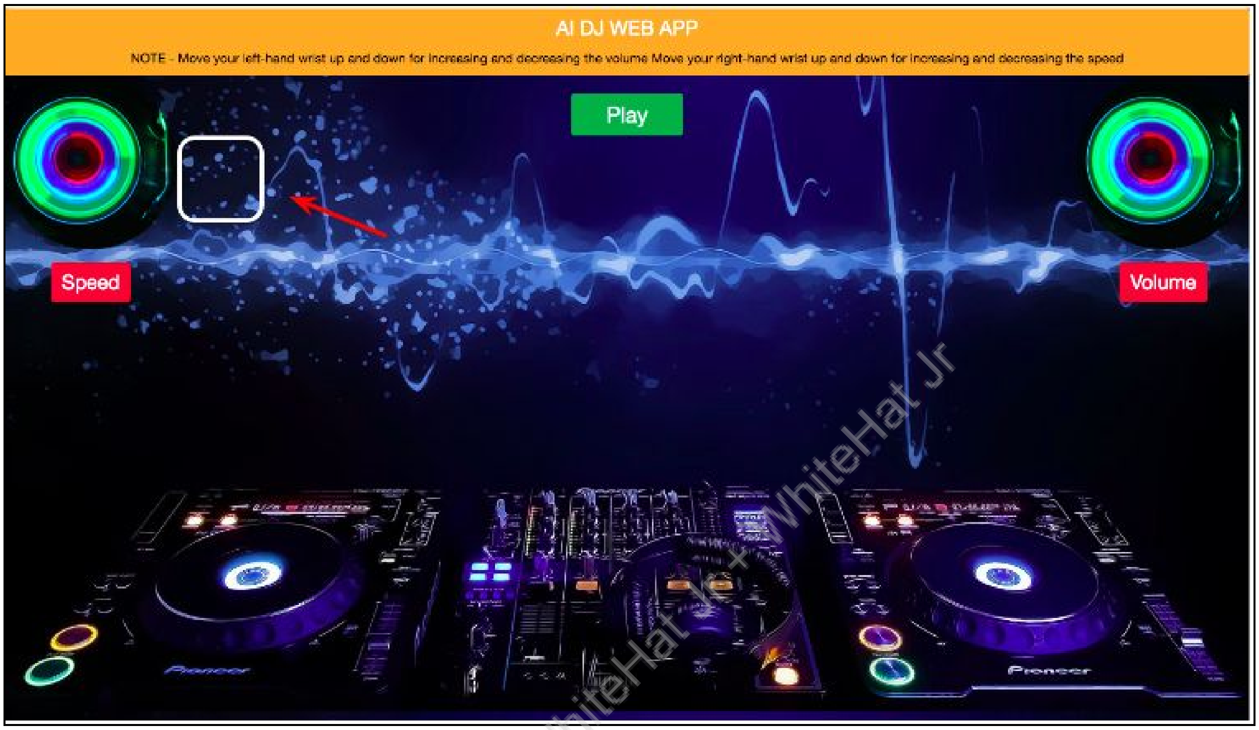
```
canvas
```



```
  canvas
{
  border:5px solid □white;
  border-radius:20px;
}
```

- Give 5px board white color border.

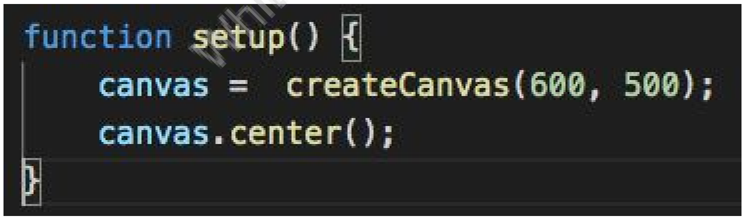
- Add `border-radius:20px;` to give a rounded border effect.
- Output:


AI DJ WEB APP

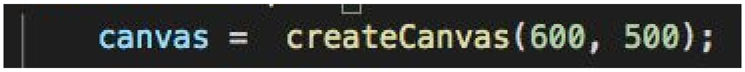
NOTE - Move your left-hand wrist up and down for increasing and decreasing the volume Move your right-hand wrist up and down for increasing and decreasing the speed

Do the JS code in **main.js** file.

1. Define a **setup()** function, and then add a code for creating a canvas inside the same.

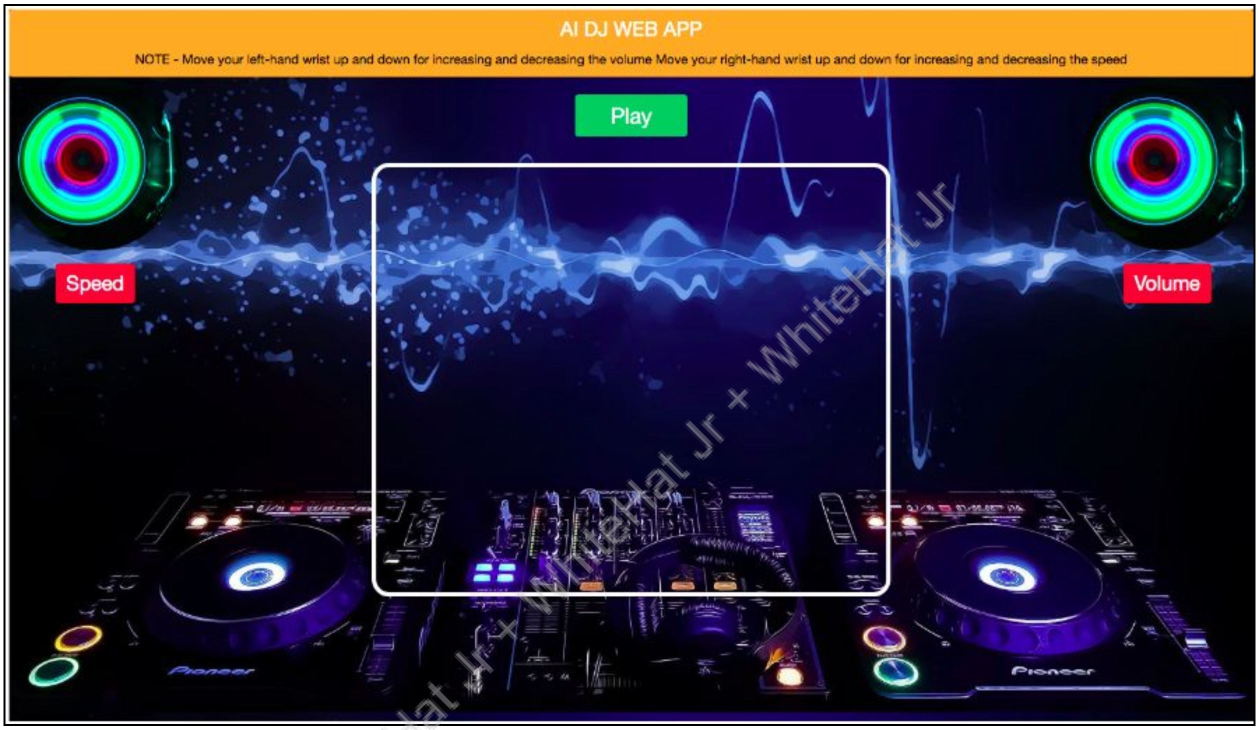

```
function setup() {
    canvas =  createCanvas(600, 500);
    canvas.center();
}
```

- Create a canvas using `createCanvas`, and store it inside a variable. Remember Canvas is a GUI element. We are storing it inside a variable because this way we can use the dot notation and then manipulate the position of the Canvas element.


```
    canvas =  createCanvas(600, 500);
```

- We had given its **width** as **600px** and it's **height** as **500px** to the canvas.
- This time it is **mandatory** to give the same width and height, use this width and height for building the logic of changing the volume and speed of the song.

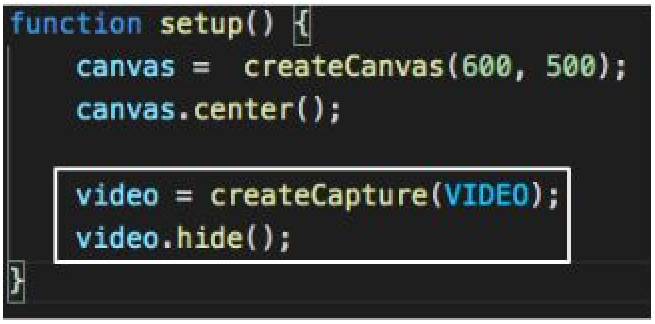
2. Now give position to this canvas such that the canvas should be placed in the center of the webpage.
    - Output:



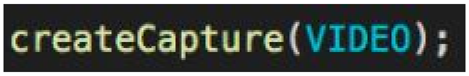
AI DJ WEB APP

NOTE - Move your left-hand wrist up and down for increasing and decreasing the volume Move your right-hand wrist up and down for increasing and decreasing the speed

3. Now write code for accessing the webcam.

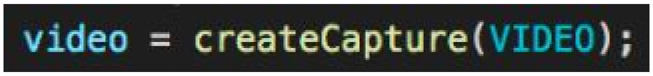


```
function setup() {
    canvas =  createCanvas(600, 500);
    canvas.center();

    video = createCapture(VIDEO);
    video.hide();
}
```

- Code for accessing the webcam.  `createCapture(VIDEO);`
- **createCapture()** is the function that helps to access the webcam. And we

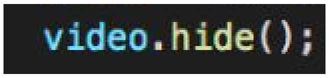
have to pass `VIDEO` inside **createCapture()** function. Now we want the live view of the webcam to be displayed on the canvas.

But in the case of p5.js when we access the webcam by default it makes another **component** for it, and displays the webcam live view on the canvas. So we won't need this extra **component.** So we need to hide this extra **component** for that first assign `createCapture(VIDEO);` to a variable, like this:



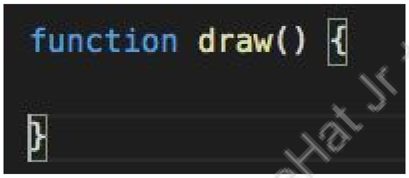
```
video = createCapture(VIDEO);
```

- This variable will hold the live preview of the webcam.
- **So the code for hiding the extra component created by p5.js for live preview of the webcam will be:**



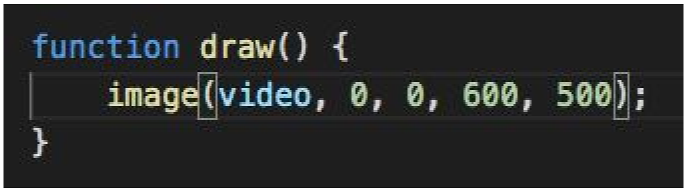
```
 video.hide();
```

4. Place the webcam live view on the canvas. This code should be written inside the **draw()** function. So define **draw()** function first.



```
function draw() {

}
```

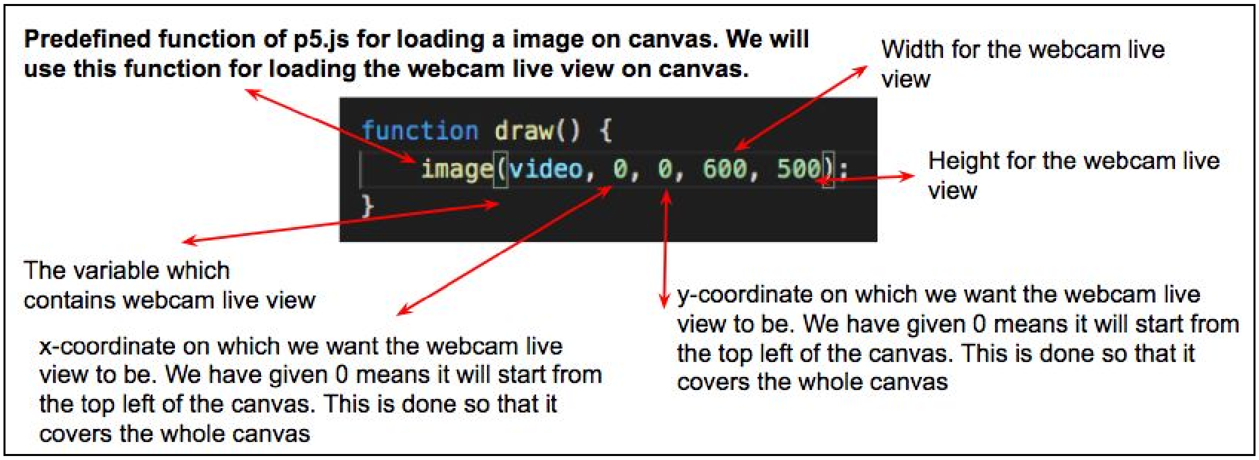
5. Add the code for placing the webcam live view on the canvas.



```
function draw() {
    image(video, 0, 0, 600, 500);
}
```

The explanation of the above code is there in the below image.

The below image is there in https://docs.google.com/document/d/e/2PACX-1vTm4T7RTiZbt779ygwIZp5sRyekFmYNEy0jqmQzgG6QPwZNPzx0yZBYddjRGAkbd2dU-LSB73tKjBH/pub for visual representation.



Predefined function of p5.js for loading a image on canvas. We will use this function for loading the webcam live view on canvas.

```
function draw() {
    image(video, 0, 0, 600, 500);
}
```

Width for the webcam live view

Height for the webcam live view

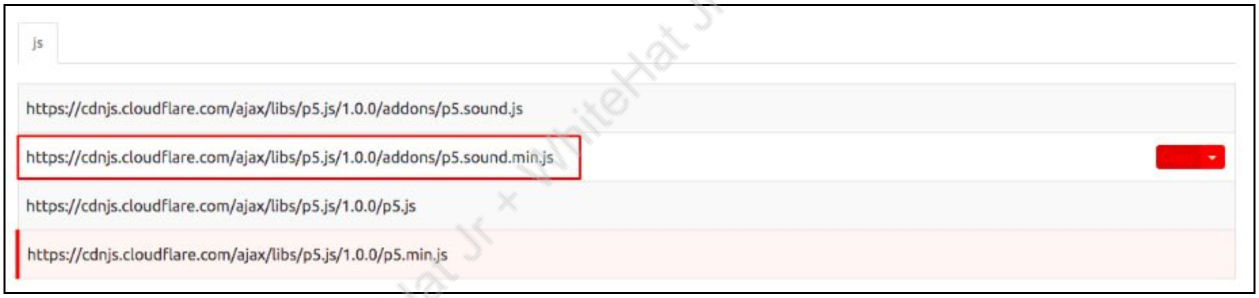
The variable which contains webcam live view

x-coordinate on which we want the webcam live view to be. We have given 0 means it will start from the top left of the canvas. This is done so that it covers the whole canvas

y-coordinate on which we want the webcam live view to be. We have given 0 means it will start from the top left of the canvas. This is done so that it covers the whole canvas

- We have given the width and height similar to the size of the canvas, because we want the webcam live view to be shown as a full width canvas.

6. Start adding sound to our web page. For using sound we need to import a sound library of p5.js. So open https://cdnjs.com/libraries/p5.js/ and copy this link:



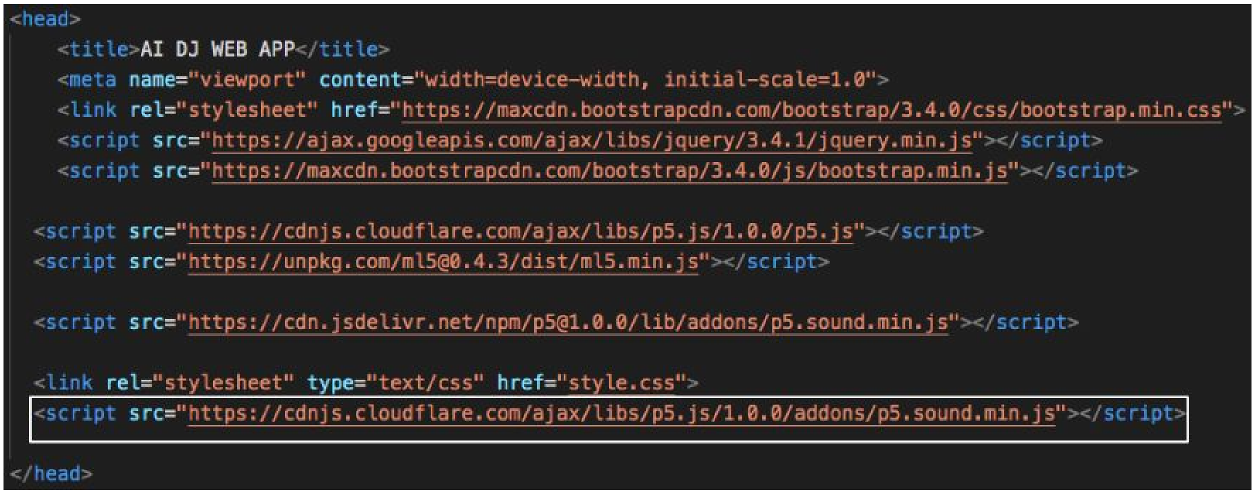
https://cdnjs.cloudflare.com/ajax/libs/p5.js/1.0.0/addons/p5.sound.js

https://cdnjs.cloudflare.com/ajax/libs/p5.js/1.0.0/addons/p5.sound.min.js

https://cdnjs.cloudflare.com/ajax/libs/p5.js/1.0.0/p5.js

https://cdnjs.cloudflare.com/ajax/libs/p5.js/1.0.0/p5.min.js

7. And create a script tag and paste the link inside the head section of **index.html** like this:

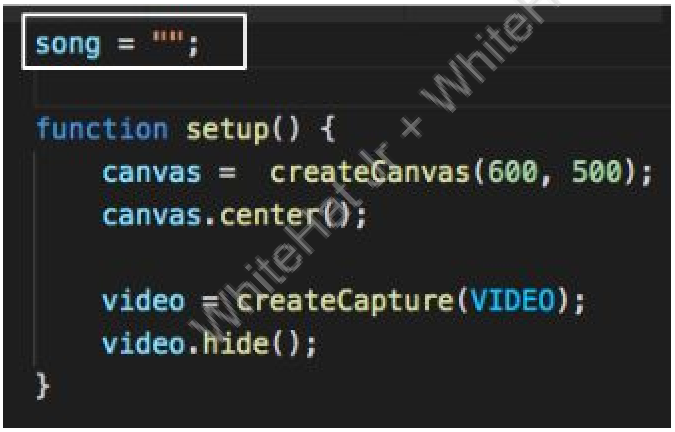


```
<head>
    <title>AI DJ WEB APP</title>
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.0/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.4.1/jquery.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.0/js/bootstrap.min.js"></script>

  <script src="https://cdnjs.cloudflare.com/ajax/libs/p5.js/1.0.0/p5.js"></script>
  <script src="https://unpkg.com/ml5@0.4.3/dist/ml5.min.js"></script>

  <script src="https://cdn.jsdelivr.net/npm/p5@1.0.0/lib/addons/p5.sound.min.js"></script>

  <link rel="stylesheet" type="text/css" href="style.css">
  <script src="https://cdnjs.cloudflare.com/ajax/libs/p5.js/1.0.0/addons/p5.sound.min.js"></script>

</head>
```

Now we are ready to use sound or music on our webpage.

So in **main.js** file:

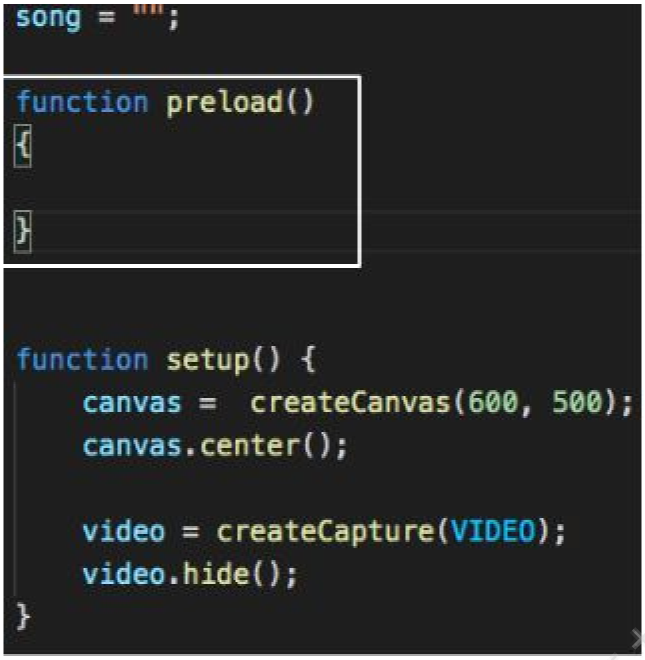
1. First, define an empty string variable at the beginning of the **main.js** file. This variable will be used to hold the music file, and use this variable along with the dot notation to play the song and to manipulate the speed and the volume of the song.



```
song = "";

function setup() {
    canvas =  createCanvas(600, 500);
    canvas.center();

    video = createCapture(VIDEO);
    video.hide();
}
```

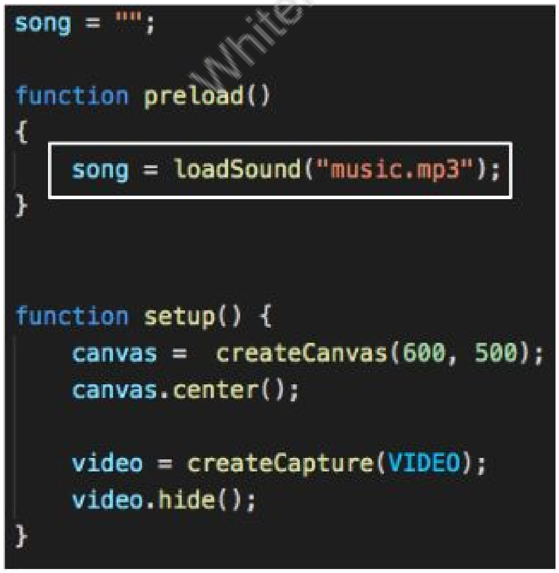
Now load the music file in our web app.

2. So define **preload()** function:



```
song = "";

function preload()
{

}


function setup() {
    canvas =  createCanvas(600, 500);
    canvas.center();

    video = createCapture(VIDEO);
    video.hide();
}
```

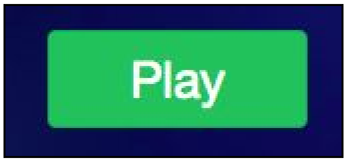
- Then inside the **preload()** function load the sound file.
- Predefined function of p5.js which is **loadSound()** is used to load the audio file.
- Syntax of - **loadSound()**
- **loadSound('audio file name');**
- So code will be:

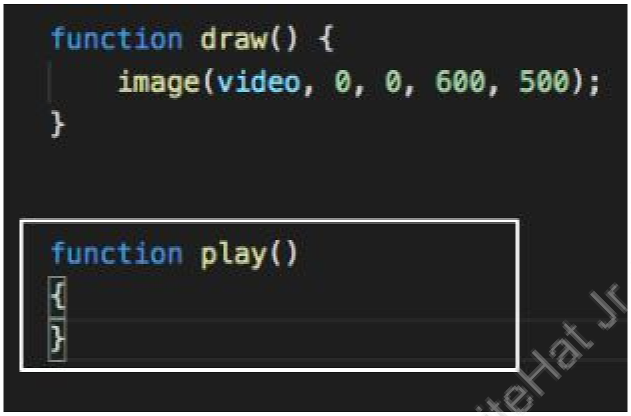


```
song = "";

function preload()
{
    song = loadSound("music.mp3");
}


function setup() {
    canvas =  createCanvas(600, 500);
    canvas.center();

    video = createCapture(VIDEO);
    video.hide();
}
```

- **Use the same music file from the AI DJ folder which is ‘music.mp3’.**
- And assign **loadSound(‘music.mp3’)** to the variable which we defined, so that later in the code we can manipulate the speed and the volume of the song using this variable.

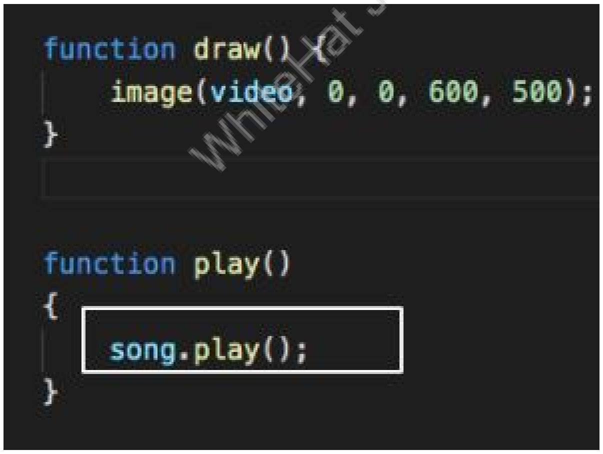
3. Now define a **play()** function which is called onclick of the play button:



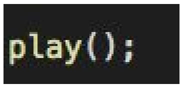


```
function draw() {
    image(video, 0, 0, 600, 500);
}


function play()
{
}
```

4. Inside **play()** function write code to start the song.

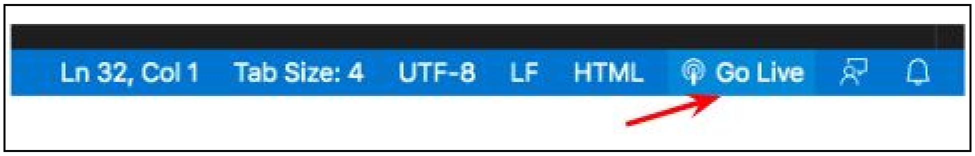


```
function draw() {
    image(video, 0, 0, 600, 500);
}


function play()
{
    song.play();
}
```

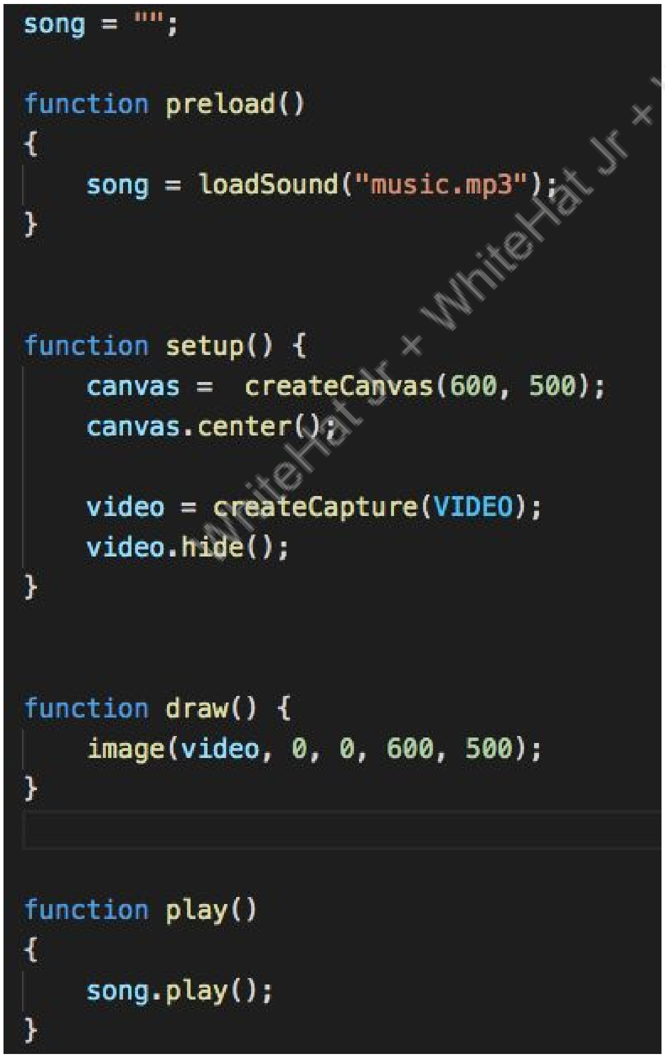
- `song.` - it is a variable that holds the music file.
-  `play();` - this is a predefined function of p5.js that starts playing the

song.

NOTE -
DO A TEST BY CLICKING ON GO LIVE BUTTON OF VISUAL STUDIO. THIS WILL RESULT IN RUNNING THE FILE ON THE LIVE SERVER OF VISUAL STUDIO.



Because we are using a sound file, and p5.js just doesn’t allow us to run any sound file if we run from a local system, it needs to be run on a server.
Complete JS code done in today's class:



```
song = "";

function preload()
{
    song = loadSound("music.mp3");
}


function setup() {
    canvas =  createCanvas(600, 500);
    canvas.center();

    video = createCapture(VIDEO);
    video.hide();
}


function draw() {
    image(video, 0, 0, 600, 500);
}


function play()
{
    song.play();
}
```

What’s NEXT?

We will continue building AI DJ web app.