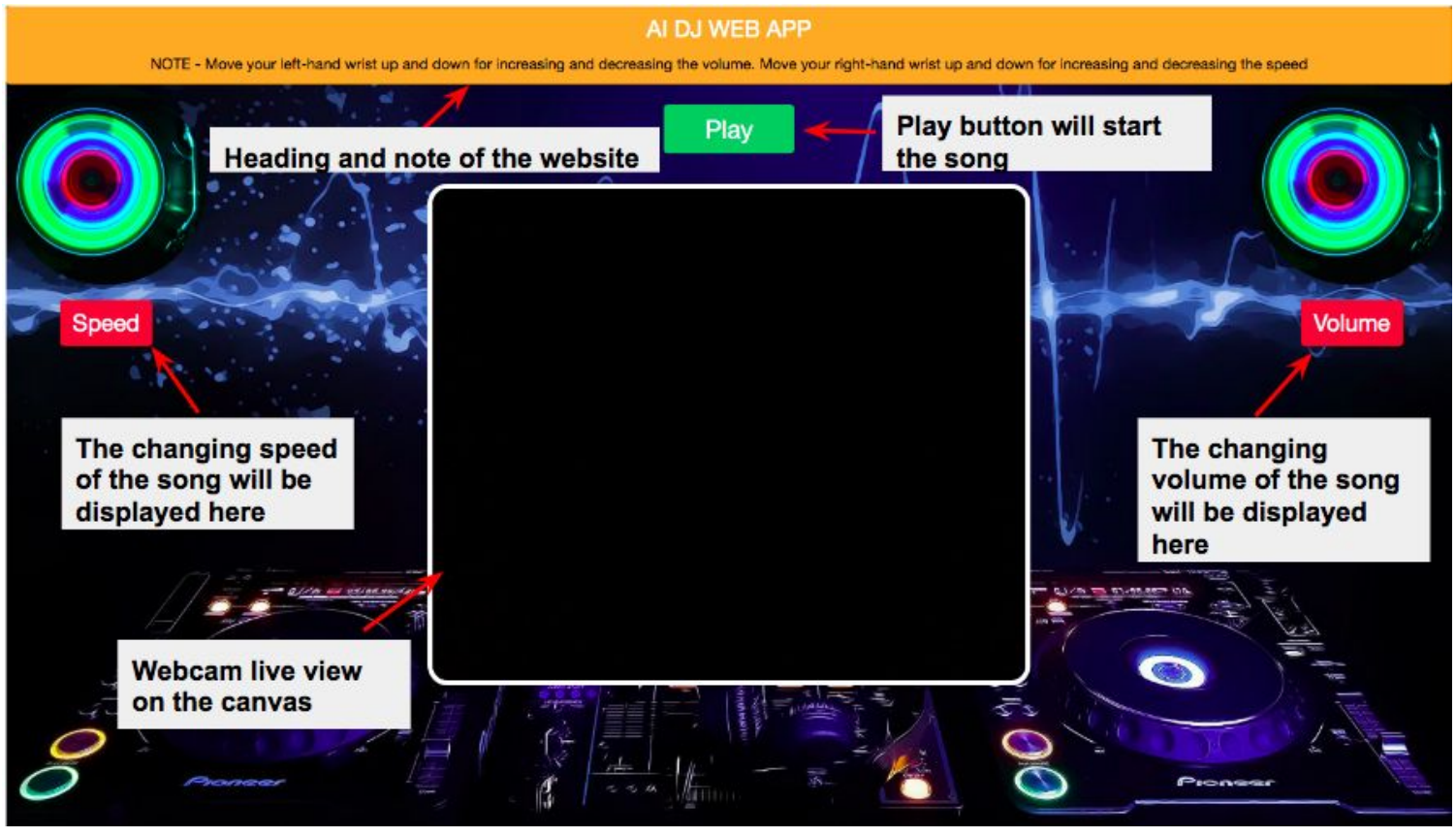
- **Code done in main.js file in previous class.**

```
song = "";

function preload()
{
    song = loadSound("music.mp3");
}
rightWristX = 0;
rightWristY = 0;

leftWristX = 0;
leftWristY = 0;

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

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

    poseNet = ml5.poseNet(video, modelLoaded);
    poseNet.on('pose', gotPoses);
}
function modelLoaded() {
  console.log('PoseNet Is Initialized');
}

function gotPoses(results)
{
  if(results.length > 0)
  {
    rightWristX = results[0].pose.rightWrist.x;
    rightWristY = results[0].pose.rightWrist.y;
    console.log("rightWristX = " + rightWristX +" rightWristY = "+ rightWristY);

    leftWristX = results[0].pose.leftWrist.x;
    leftWristY = results[0].pose.leftWrist.y;
    console.log("leftWristX = " + leftWristX +" leftWristY = "+ leftWristY);

  }
}

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

function play()
{
    song.play();
    song.setVolume(1);
    song.rate(1);
}
```

- **UI overview**

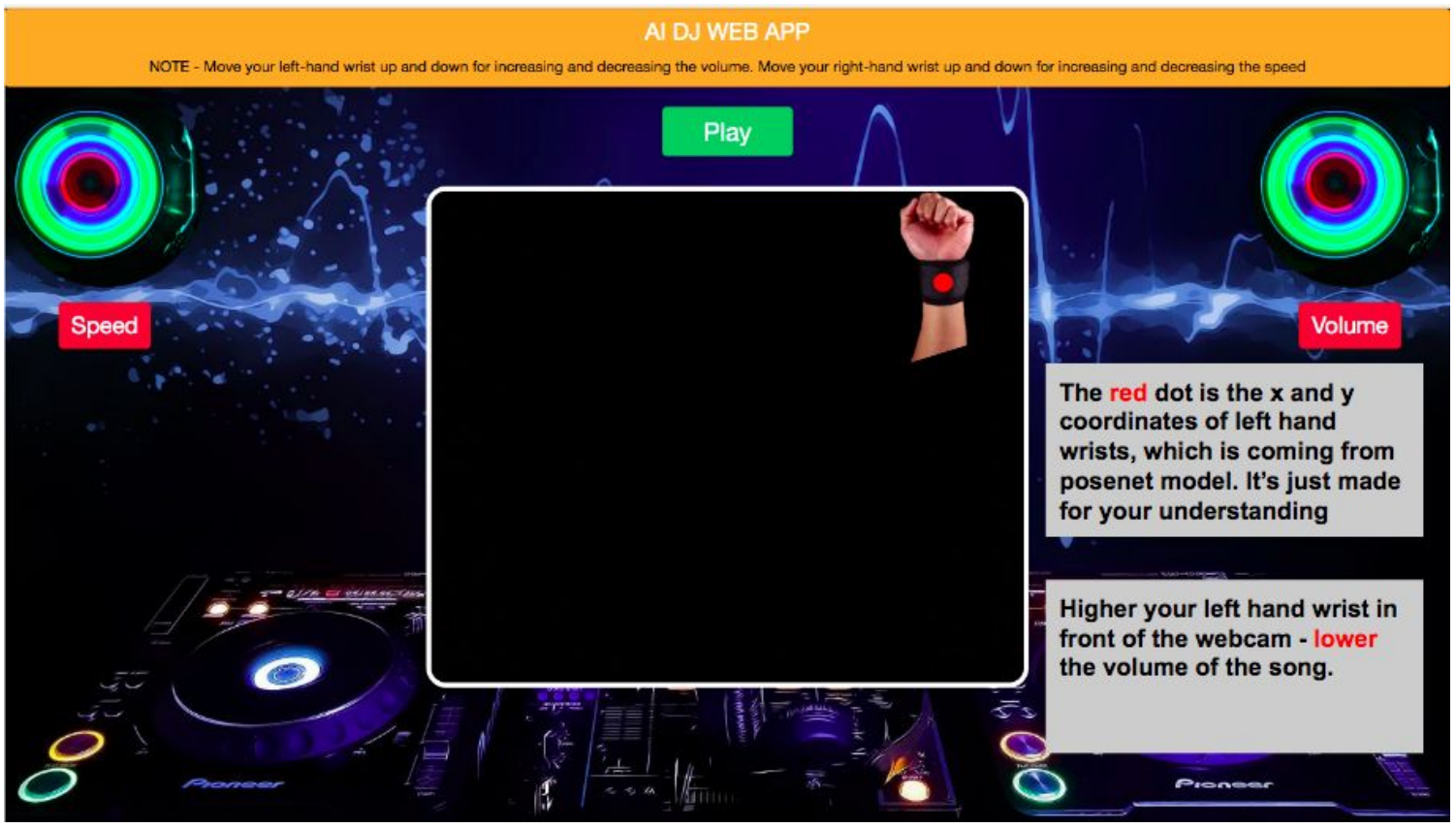


➔ Now press the play button

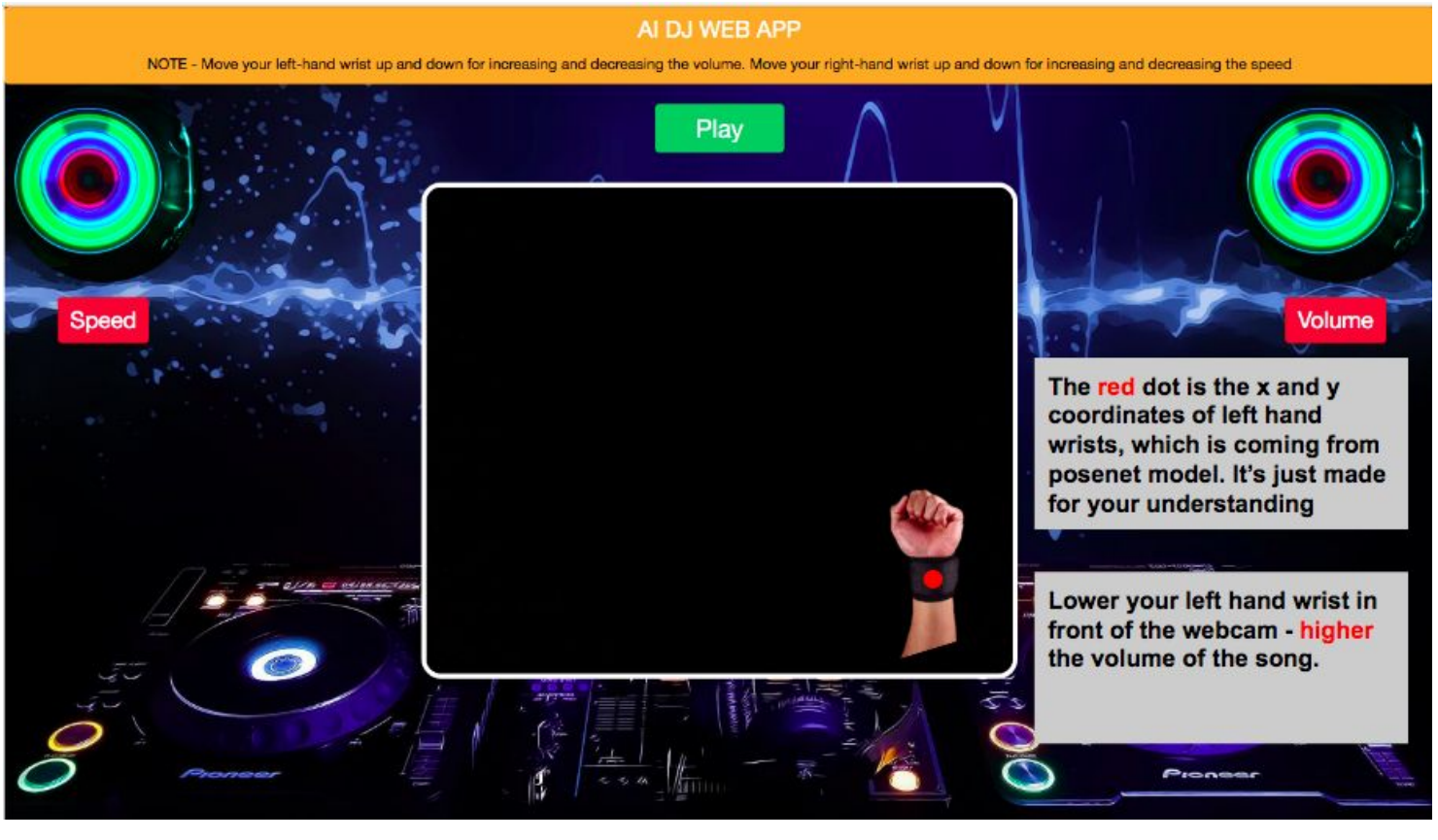
➔ Then it will start playing the song

➔ Now move your left hand wrist up and down in front of the webcam to change the volume/pace of the song.

Higher your left hand wrist in front of the webcam - lower the volume.

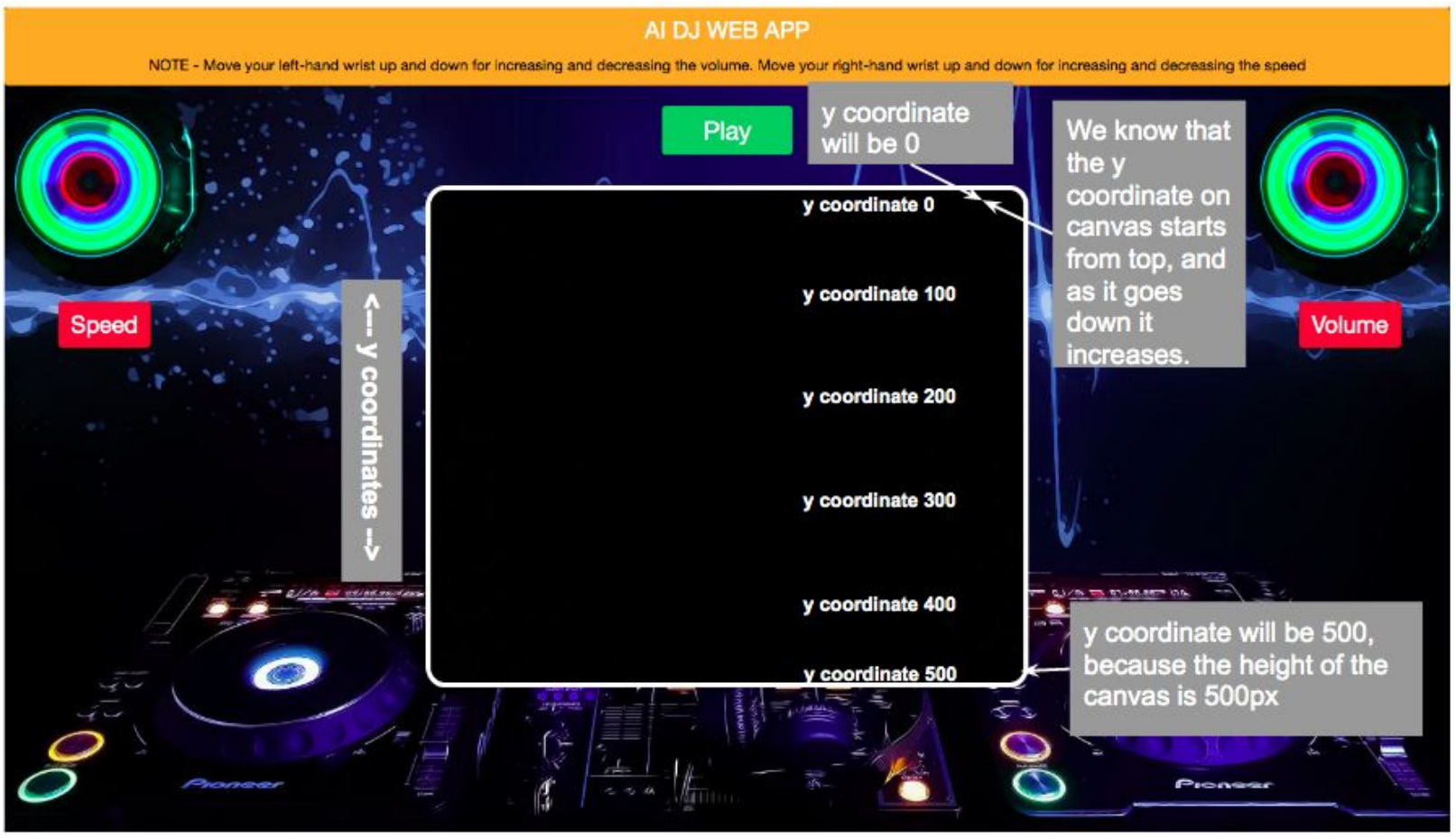


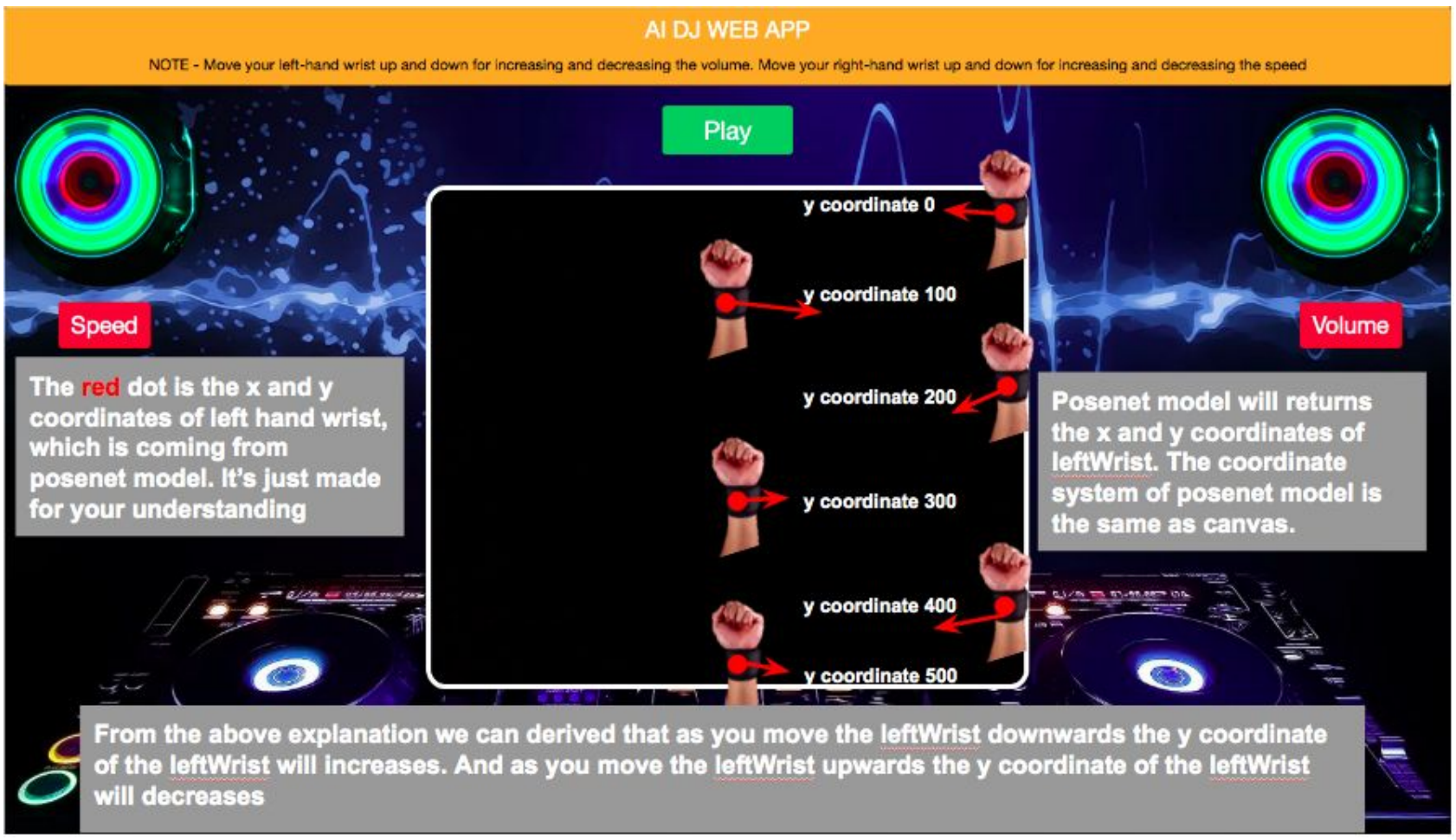
Lower your left hand wrist in front of the webcam - higher the volume.



As per the movement of your left hand wrist the volume of the song will change, meaning - as you move your left hand wrist from up to down - the volume of the song will change from lower to higher.

- **Logic for changing the volume for the song**

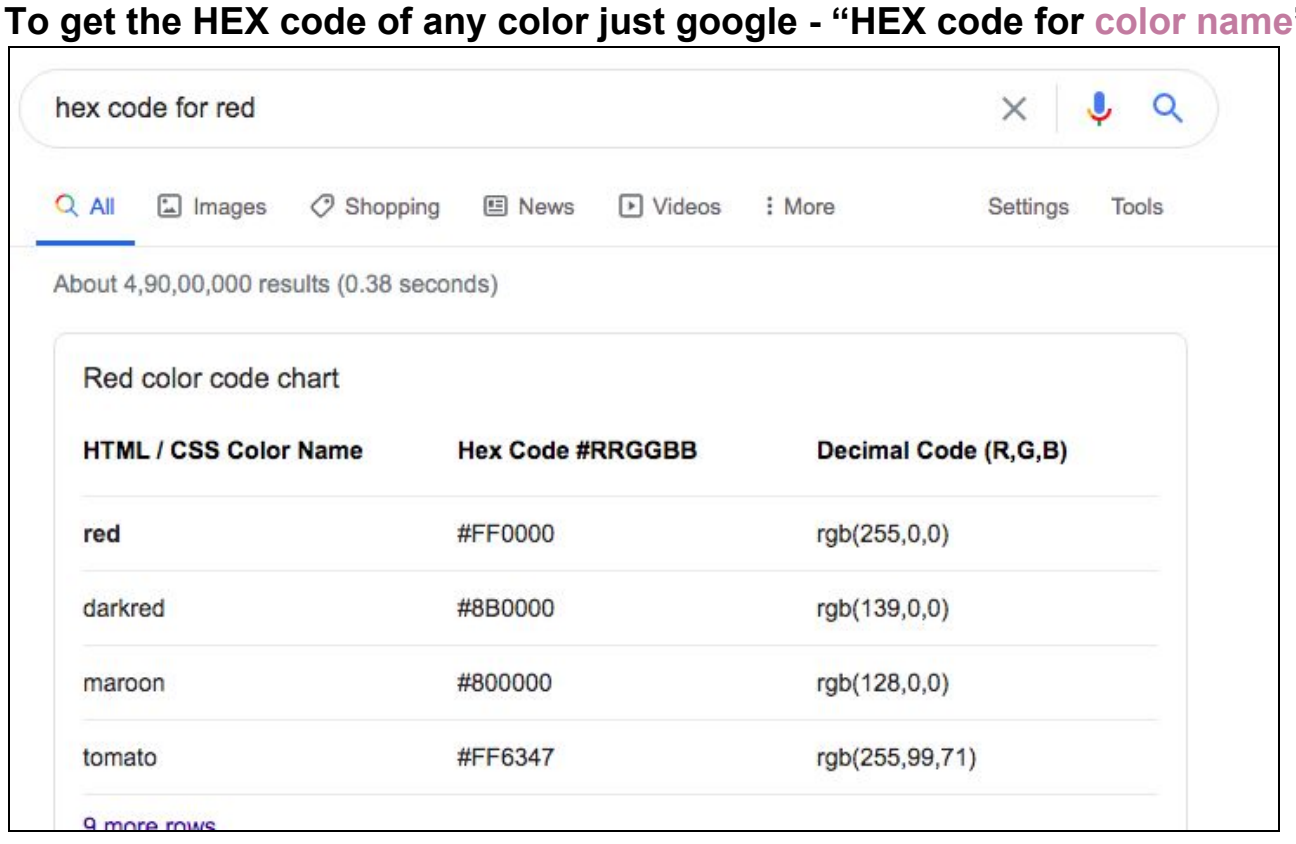




- **Adding code to set the color for the circle**

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

    fill("#FF0000");

}
```

To get the HEX code of any color just google - "HEX code for color name" for eg -



- **Adding code to set the border-color for the circle**

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

    fill("#FF0000");
    stroke("#FF0000");

}
```

- **Adding code for drawing the circle**

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

    fill("#FF0000");
    stroke("#FF0000");

    circle(leftWristX,leftWristY,20);
}
```

- **Math logic -**
-

Before we start the math part let's consider y coordinate of leftWrist as 400.345678765 and we will use this number as an example for doing the math.

➔ **First convert y coordinate of leftWrist to a number - done because if the leftWrist value is a string and if we do math using this leftWrist variable, then we won't get a proper output, so to be on a safer side we will convert this variable into a number.**

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

    fill("#FF0000");
    stroke("#FF0000");

    circle(leftWristX,leftWristY,20);
    InNumberleftWristY = Number(leftWristY);
}
```

- **As we considered to use this - 400.345678765 number as an example, so after applying the Number() function to the leftWrist variable we get a value 400.345678765 and store this value in the InNumberleftWristY variable.**

➔ **Remove decimals - done because - y coordinate of leftWrist have a lots of decimals**

```
▶ leftWrist: {x: 263.52472737518667, y: 400.345678765
```

So when we will do some calculation on y coordinate of leftWrist we will get a result which will have a lot of decimals. And we don't want it that's why removing the decimas.

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

    fill("#FF0000");
    stroke("#FF0000");

    circle(leftWristX,leftWristY,20);
    InNumberleftWristY = Number(leftWristY);
    remove_decimals = floor(InNumberleftWristY);
}
```

- **As we considered to use this - 400.345678765 number as an example, so after applying floor() to this**

number, the value will be 400, and store this value in the remover_decimals variable.

➔ Dividing by 500 done because - to get a value between 0 and 1

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

    fill("#FF0000");
    stroke("#FF0000");

    circle(leftWristX,leftWristY,20);
    InNumberleftWristY = Number(leftWristY);
    remove_decimals = floor(InNumberleftWristY);
    volume = remove_decimals/500;
}
```

- As we considered to use this - 400.345678765 number as an example.
  And after applying floor() we got a value as 400 and and we had stored this value in the remover decimals variable.
  Now we will divide remover_decimals variable with 500 and we will get a value as 0.8 and we will stored this value in volume variable

- Now update the h3 tag with this volume variable.

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

    fill("#FF0000");
    stroke("#FF0000");

    circle(leftWristX,leftWristY,20);
    InNumberleftWristY = Number(leftWristY);
    remove_decimals = floor(InNumberleftWristY);
    leftWristY_divide_1000 = remove_decimals/1000;
    volume = leftWristY_divide_1000 *2 ;
    document.getElementById("volume").innerHTML = "Volume = " + volume;
}
```

- Now pass this volume variable inside setVolume() function

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

    fill("#FF0000");
    stroke("#FF0000");

    circle(leftWristX,leftWristY,20);
    InNumberleftWristY = Number(leftWristY);
    remove_decimals = floor(InNumberleftWristY);
    leftWristY_divide_1000 = remove_decimals/1000;
    volume = leftWristY_divide_1000 *2 ;
    document.getElementById("volume").innerHTML = "Volume = " + volume;
    song.setVolume(volume);
}
```

- **Reading results to fetch the score**

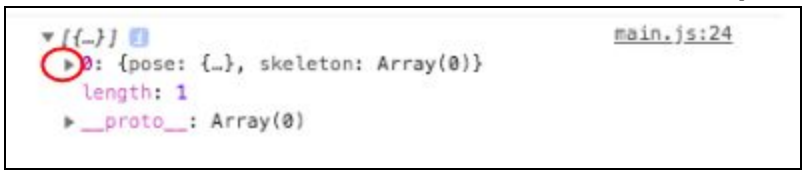
Run https://mahdihat791.github.io/Ai-DJ/ and open console screen -

We need to read this object and fetch the score of the leftWrist, while reading the object we will also write the code -

- **First click on the arrow to expand -**

We want to read the objects of results so first we will write `results`

- **Then click on the arrow next to** `0:` **to expand -**



We have clicked on 0 index which is inside the "results" object, so code will be `results[0]`

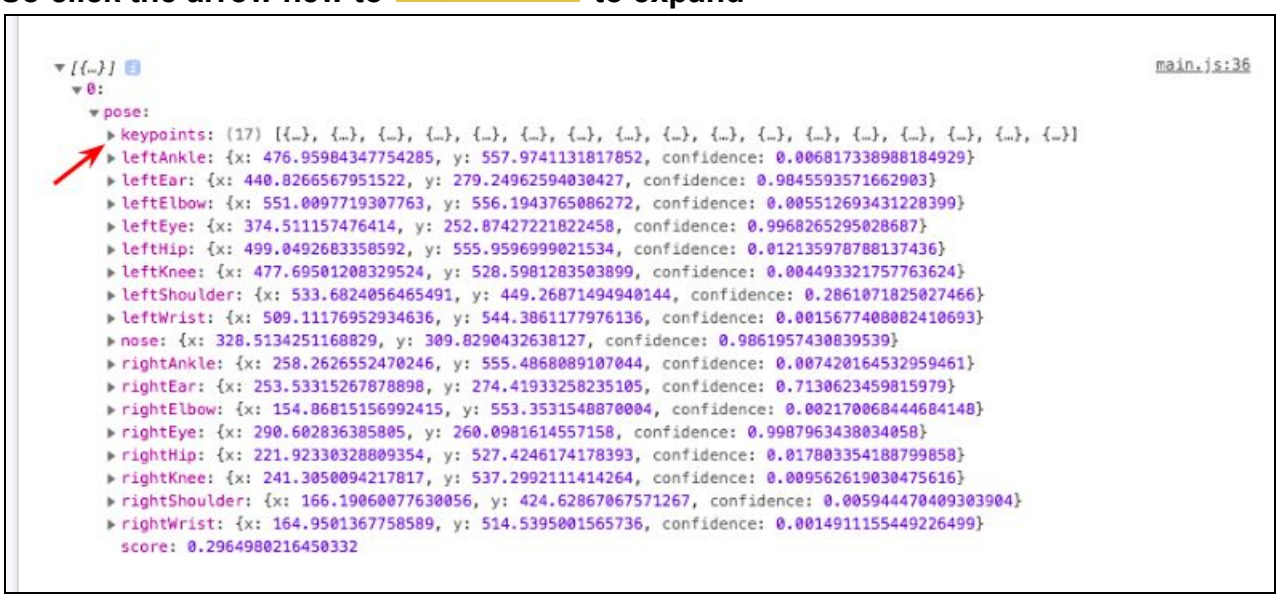
- **Then click on the arrow next to** `pose:` **to expand -**

Then inside 0 index we have clicked on pose object, so code will be - `results[0].pose`

- **Then inside the pose object there are the two important parts** `keypoints:` **and 17 body parts with x and y coordinates.**

  This time we will expand `keypoints:` **as it has the same thing which is 17 body parts with x and y coordinates. But also it contains the score for each body part.**

So click the arrow new to `keypoints:` **to expand**

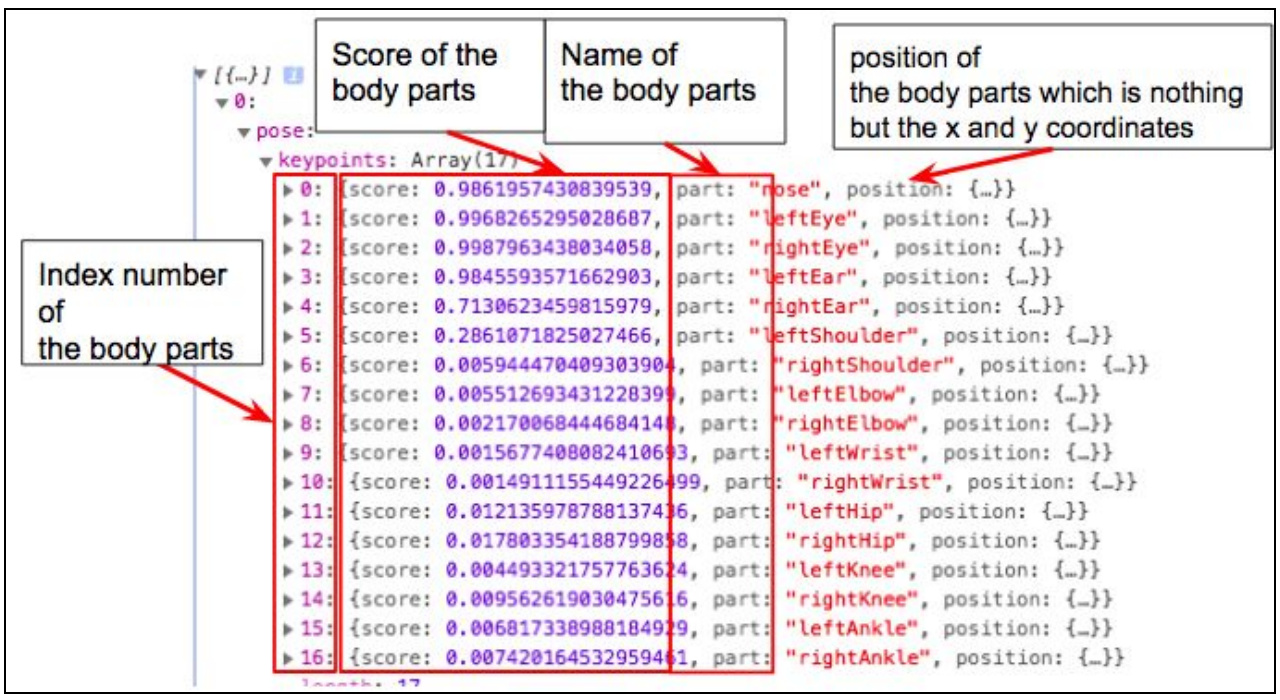


If we want to get the score of the leftWrist, so inside results -> inside 0 index -> inside pose -> inside keypoints.

So we will write - `results[0].pose.keypoints`

Inside `keypoints:`

there will -
Index numbers of the body parts
Score for the body parts
Name of the body parts
Position of the body parts - this is nothing but x and y coordinates of the body parts



Now we want to get the score of leftWrist. The index of leftWrist is 9, so inside results -> inside 0 index -> inside pose -> inside keypoints ->inside 9.

So the code will be - `results[0].pose.keypoints[9]`

Now we have the index number of leftWrist, so we can get the score inside of leftWrist, so inside results -> inside 0 index -> inside pose -> inside keypoints ->inside 9 ->there is score.

So the code will be - `results[0].pose.keypoints[9].score`

- **Now add code for fetching score of leftWrist and store it inside a variable.**

```
function gotPoses(results)
{
  if(results.length > 0)
  {
    console.log(results);
    scoreLeftWrist =  results[0].pose.keypoints[9].score;

    rightWristX = results[0].pose.rightWrist.x;
    rightWristY = results[0].pose.rightWrist.y;
    console.log("rightWristX = " + rightWristX +" rightWristY = "+ rightWristY);

    leftWristX = results[0].pose.leftWrist.x;
    leftWristY = results[0].pose.leftWrist.y;
    console.log("leftWristX = " + leftWristX +" leftWristY = "+ leftWristY);

  }
}
```

- **Code to console this variable.**

```
function gotPoses(results)
{
  if(results.length > 0)
  {
    console.log(results);
    scoreLeftWrist =  results[0].pose.keypoints[9].score;
    console.log("scoreLeftWrist = " + scoreLeftWrist);

    rightWristX = results[0].pose.rightWrist.x;
    rightWristY = results[0].pose.rightWrist.y;
    console.log("rightWristX = " + rightWristX +" rightWristY = "+ rightWristY);

    leftWristX = results[0].pose.leftWrist.x;
    leftWristY = results[0].pose.leftWrist.y;
    console.log("leftWristX = " + leftWristX +" leftWristY = "+ leftWristY);

  }
}
```

- **Add a if condition to check if scoreLeftWrist is greater than 0.2 then only draw circle and change volume of the song**

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

    fill("#FF0000");
    stroke("#FF0000");

    if(scoreLeftWrist > 0.2)
    {
        circle(leftWristX,leftWristY,20);
        InNumberleftWristY = Number(leftWristY);
        remove_decimals = floor(InNumberleftWristY);
        volume = remove_decimals/500;
        document.getElementById("volume").innerHTML = "Volume = " + volume;
        song.setVolume(volume);
    }
}
```