```
//speech emotion detection

import javax.sound.sampled.*;

import java.io.File;

import java.io.IOException;

import java.util.Arrays;


public class SpeechEmotionDetection {


    public static void main(String[] args) {

        String audioFilePath = "path/to/audio/
file.wav";

        double[] audioData =
readAudioFile(audioFilePath);

        double[] features =
extractFeatures(audioData);

        String emotion = classifyEmotion(features);

        System.out.println("Detected Emotion: " +
emotion);

    }
```

```
    private static double[] readAudioFile(String
filePath) {
        try {
            AudioInputStream audioInputStream =
AudioSystem.getAudioInputStream(new
File(filePath));
            AudioFormat format =
audioInputStream.getFormat();
            byte[] bytes = new byte[(int)
audioInputStream.getFrameLength() *
format.getFrameSize()];
            audioInputStream.read(bytes);
            return convertBytesToDoubles(bytes);
        } catch (UnsupportedAudioFileException |
IOException e) {
            e.printStackTrace();
            return new double[0];
        }
    }
```

```
    private static double[]
convertBytesToDoubles(byte[] bytes) {
        double[] doubles = new double[bytes.length /
2];
        for (int i = 0; i < doubles.length; i++) {
            doubles[i] = ((bytes[2 * i] & 0xFF) | (bytes[2
* i + 1] << 8)) / 32768.0; // Normalize to [-1, 1]
        }
        return doubles;
    }


    private static double[] extractFeatures(double[]
audioData) {
        double mean =
Arrays.stream(audioData).average().orElse(0);
        double stdDev =
Math.sqrt(Arrays.stream(audioData).map(x ->
Math.pow(x - mean, 2)).average().orElse(0));
        return new double[]{mean, stdDev};
    }
```

```
    private static String classifyEmotion(double[]
features) {
        if (features[0] > 0.1 && features[1] < 0.2) {
            return "Happiness";
        } else if (features[0] < -0.1 && features[1] >
0.2) {
            return "Sadness";
        } else if (features[0] < -0.1 && features[1] <
0.2) {
            return "Anger";
        } else {
            return "Neutral";
        }
    }
}
```

```
9    public static void main(String[] args) {
10       String audioFilePath = "/storage/emulated/0/WhatsApp/Media/WhatsApp Audio/AUD-20250214-WA0001
11       double[] audioData = readAudioFile(audioFilePath);
12       double[] features = extractFeatures(audioData);
13       String emotion = classifyEmotion(features);
14       System.out.println("Detected Emotion: " + emotion);
15   }
16
```

Terminal

```
Detected Emotion: Neutral
java.io.FileNotFoundException: /storage/emulated/0/WhatsApp/Media/WhatsApp Audio/AUD
 at java.base/java.io.FileInputStream.open0(Native Method)
 at java.base/java.io.FileInputStream.open(FileInputStream.java:219)
 at java.base/java.io.FileInputStream.<init>(FileInputStream.java:157)
 at java.desktop/com.sun.media.sound.SunFileReader.getAudioInputStream(SunFileReader
```