PRELIMINARY REPORT

Topic title	Audio-based probing of the environment		
Group ID	ID - A1 - 8		
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1. What are your project goals? Be more specific than the project description.

> 1. The app uses 'wifi direct' which resides in the form of WIfi P2P in Android 4.0 or higher API (level 14) which is the medium to connect to other Android devices directly without the need of any access point. All devices should have Wi-Fi P2P enabled in it to make the app work.
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> 2. After connecting to the network, the specific device sends a request to transmit sound to other phones. If no other device is playing the sound, then it goes ahead, else it waits for its turn.
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> 3. Other devices apart from the transmitting deivce will record the sound and will store it in the following format: receiving-device-id_sending-device-id.flac, in a specific folder made for the purpose of storing the recorded sounds. Here it should be mentioned that we will try to use .flac as the lossless format. If we can not implement it then we may look into other simplier lossless formats.

2. Which of these goals have been achieved up to now? You may also mention partial achievements.

> 1. We have used Wi-Fi P2P (in API level 14) and inside it discoverPeers() and connect() to connect to other mobile phones runing the same app.
>
> 2. In case another new phone joins in our network, this P2P clients lists needs to be changes with WIFI_P2P_PEERS_CHANGED_ACTION intent.
>
> 3. A new device after connecting to the network, requests for a time-space to play the soundtrack and if no other devices are playing, then it starts playing the sound.

3. How do you plan to achieve the rest of the goals? Please provide a biweekly/monthly schedule for each group member with a short description of their tasks.

21st Nov - 20th Dec: All members will work with android.media.AudioRecord class and analyze available methods in there to record the message from input. Member1(Dibyojoti): Will specifically analyze read(short[] audioData, int offsetInShorts, int sizeInShorts) and its shortcomings. Member2(Anirban): Will specifically analyze read(ByteBuffer audioBuffer, int sizeInBytes) and its shortcomings. Member3(Pranay): will look into the mechanism by which recording can be done at specific frequency (i.e. 44.1KHz.)work on startRecording(MediaSyncEvent syncEvent). As per the API documentation thisfunction have the capability to start recording only when the specified synchronization event occurs on the audio session. So we need to look into it.
Note: Recording time for each sound will be 5 seconds + 1 second (as buffer time).
21st Dec - 21st Jan:Provided that we complete the goal of previous month sucessfully, Member1(Dibyojoti): will look into congestion avoidance mechanisms availible for audio recording. Member2 (Anirban): will look into the complications in case two or more devices start transmitting at the same point of time. Member3(Pranay): will look into the effect of distance between two devices on the recorded audio.

4. How will you verify the aforementioned goals?

1. If the audio recording mechanism goes well and we get a lossless recorded file in receving-device-id_sending-device-id.flac format, each of 6 seconds of length, then it can be inferred that the assigned task for 21st Nov-20th Dec went well.
2. For varifying the sucessful implementation of second part, we will try to create a scenario where two phones will try to start playing their audio tracks together and if that try fails and the implemented system stops that scenario from happening, that will mean we have sucessfully implemented the 'congestion avoidance' mechanism for the audio playing & recording mechanism.

5. What are the main challenges in your project? Please include only technical, not personal challenges (e.g., "I am new to XYZ programming" is a personal challenge)

1. If the transmit request from one of the devices gets lost during transmission, and that did not get any acknowledgement, the waiting time for sending re-request might create a delay in recording in the whole network.
2. What if more than one client sends request for playing sound at the same point of time and both of them starts playing sound? The other devices would not be able to differentiate the sound coming from specific devices and resulting in nomal in recorded tracks. A specific way is to be found so that we can stop the setup from getting into this scenario.