

FM Radio for Android

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Abstract--- This projects aims to understand the fundamentals of FM radio and using the frequencies to play channels available in India. This project also helps in understanding how the android applications work and the way to develop an Android application. The user can hear songs, podcasts, news, sports news, latest updates, etc. at a less expensive medium where no extra cost are going to be charge unlike your magazines, television, etc.

I. INTRODUCTION

Radio is a widely used mass communication medium and features a great potentiality in the dissemination of data as radio signals cover the almost the entire population. Quite 177 radio stations are there across the country. 97 percent of the population is reached by the radio. Radio being a convenient sort of entertainment caters to an outsized audience. With the arrival of transistors, this medium hrs reached the commoner in urban and rural areas of India, though the use of radio is more among rural elites.

Radio broadcasting began in India in 1922. the govt owned station All India Radio has dominated broadcasting since 1936 but privatization and deregulation have allowed commercial privately owned talk and music stations to succeed in large audiences.[1]

Radio Broadcasting began in June 1923 during British Raj with programs by the Bombay Presidency Radio Club and other radio clubs. FM is brief for FM, which refers to the means of encoding the audio signal on the carrier frequency. FM full power, low power, translator, and boosters operate within the 88 – 108 MHz band. There are many classes of radio stations. the littlest provide service to areas within three or four miles of a transmitter site; the most important provide service to locations quite 60 miles from a transmitter site. Only non-commercial educational radio stations are licensed within the 88-92 MHz “reserved” band. Both commercial and non-commercial educational stations may operate within the “non-reserved” 92-108 MHz band.

The basic idea for this project was to know the fundamentals of working with the various frequencies and understanding the way to enhance the knowledge of the Java Language. FM Radio has always been one source of joy for many people all around the world for the longest of your time. the essential challenges were to understand the know-how of this project and believe Future

enhancements, Requirements, Diagrams, use case, activity diagram, Scope, and purpose Code, etc.

Proper licensing and permissions required: A License is required to launch a station app. For developing a music streaming app like Pandora, music edging licensing is required.

Radio apps UI/UX design: this is often a really crucial factor that how your apps appear as if it's important to style the app as per the user's requirement, it'll engage more users. the event of the knowledgeable app is required and there's a requirement for adding new elements to style the app rapidly.[2]

Choosing a database for music streaming: an efficient database is required to play music. Cloud-based storage and sourcing solution is employed for an enormous amount of knowledge. AWS is employed for doing advanced search and streaming tools functions.

II. WHAT'S FM (FREQUENCY MODULATION)?

Frequency Modulation (FM) is that the method of varying a carrier wave's frequency proportionally to the frequency of another signal. This compares to the opposite commonest transmission method, AM (AM). AM broadcasts vary the amplitude of the carrier consistent with an input. Standard FM broadcasts are based within the 88 - 108 MHz range; otherwise referred to as the RF or frequency range. However, they will be in any range, as long as a receiver has been tuned to demodulate them. Thus the RF carrier and therefore the input can't do much by themselves they need to be modulated.

III. IMPORTANCE OF AN FM RADIO

Radio plays a big role in informing, educating, and enlightening everyday public life.

1.) Free and objective broadcast of all matters of public interest, national or international, and presenting a good

anda balanced flow of data including contrasting views without advocating any opinion or ideology of its own.

2.) Paying special attention to the fields of agriculture, education and spread of literacy, rural development, environment, health, and family welfare also as science and technology.

3.) Adequate coverage to the numerous cultures and languages of the varied regions of the region by broadcasting appropriate programs are provided.

4.) Providing adequate coverage to sports and games so on encourage healthy competition and therefore the spirit of sportsmanship.

5.) Appropriate programs keeping in sight the special needs of the youth are provided.

6.) Specific programs for and about women, tribal, children, handicapped, aged, and vulnerable sections of society is to be made.

7.) Promoting national integration by broadcasting during a fashion that facilitates communication within the languages in India; and boosting the distribution of regional broadcasting services in every region within the languages of that State.

8.) Providing comprehensive broadcast coverage through the selection of appropriate technology and therefore the best utilization of the printed frequencies available and ensuring top-quality reception.

9.) Promoting research and development activities so as to make sure that radio and tv broadcast technology is constantly updated.

(2) Features required in an FM radio

- Streaming feature: Streaming Feature is needed in an app. The streaming should be of high quality, also because it should be 'background streamable'. It means the audio continues even if the user switches the app.
- Downloading feature: Often people want to download content and don't want to concentrate on streaming music.
- Alert and Push notifications: It notifies the users about their interesting content on the idea of users tracking behavior.

Benefits of an FM Radio

A Radio FM application is accessible to each person with an online connection. This app assists to look at the listener's trend meaning it's full control over the varied things that folks hear like: songs, news and comedy shows, concerts, etc. It is an app during which listeners get everything that they need. Users need to spend tons of cash to avail themselves of this sort of service from the other Radio application. For Radio FM, users don't get to buy new equipment or there's no need to subscribe to any satellite services.[3]

Advantages of an FM Radio

A report released by the media research and consulting company Jacobs Media Strategies found that radio again top the pile as most listened to the platform — but that TV/video and therefore the smartphone is not far behind. The results were extracted from quite 51,000 respondents who were asked about their listening habits. Jacobs organized its findings into two different pyramids within the 2017 Techsurvey 13 — a Media Pyramid and Brand Platform Pyramid. The radio sits atop that Media Pyramid. Ninety-one percent of the 51,760 respondents within the survey said that they listened to radio one hour or more per day, a figure that's almost like listener levels found in the 2016 Techsurvey 12. Radio offers a spread of features to advertisers and lots of the medium's characteristics seem to be important to advertisers. Of all the mass media, radio is believed to be the foremost personal medium and offers advantages over other media like selectivity, cost efficiency, flexibility, and imagination.[4]

1. **Selectivity:** Radio offers a high degree of selectivity through geographic coverage by an outsized number of stations and various program formats. Advertisers can focus their messages on specific section of people who speak different languages in several areas, which otherwise might not be accessible by means of other media.

2. **Cost efficiency:** Radio time costs far but TV and therefore the commercials are quite inexpensive to supply. Advertisers can use different stations to expand reach and frequency within a limited media budget.

3. **Flexibility:** Among all the media, probably radio is that the most flexible because it features a short closing period. Radio commercials can usually be produced during a relatively short time and if required, the ad message is often changed almost just before broadcast time. Same ad messages are often adjusted in several languages to suit market conditions.

4. **Mental Imagery:** Radio advertising uses sound, and a significant advantage of this instance is that it encourages public to use their imagination in creating images while processing the ad messages. According to Verne Gay, radio can reinforce images created by television commercials through image transfer. In this technique, equivalent spoken words or jingles are utilized in radio commercials as on television. Image transfer means when consumers hear an equivalent ad message or jingle on the radio, they connect it to the TV Commercial and visualize images. Thus, radio and television ads reinforce one another.[5]

Disadvantages of an FM Radio

Like any other medium, radio has certain limitations too. These include lack of a clear element, audience fragmentation, limited research data, limited listener

attention, and clutter. These are important factors and media planners must consider them because radio isn't a perfect medium for each sort of advertising objective.[6]

1.) **Lack of a visible Element:** the foremost fundamental problem related to radio is lack of a visible element. The radio advertiser cannot show or demonstrate the merchandise, or make use of the other visual appeal. As discussed earlier, in creating brand awareness package identification often is critical for several advertisers considering the increasing number of huge retail stores in cities with self-service. In rural markets, where the literacy rates are quite low, package identification plays a serious role in brand selection.

2.) **Audience Fragmentation:** Large number of radio stations create audience fragmentation. The number of audience tuned to any particular station is typically quite small. Advertisers who want to succeed in broad market areas through radio, with language differences, need to delay on variety of stations reaching specific geographic areas.

3.) **Limited Research Data:** The research data on radio is limited compared to other major advertising mediums like television, newspaper and magazines.

4.) **Limited Listener Attention:** it's difficult to draw in and retain radio

listeners attention to commercials. Programs are switched frequently among listeners and that they often miss all or a number of the commercials. Possibilities of distortion in broadcast are high and this irritates the listeners – the result commercials are missed.

5.) **Clutter:** With the increasing intensity of advertising, clutter has become a drag in advertising media, and radio is not any exception. Commercial channels carry many ad messages every hour and it's becoming increasingly difficult for ad messages to draw in and retain audiences' attention.[7]

Important Characteristics

The main characteristics of radio are

1) **A Medium of Sound:** It is an auditory medium, a medium of the sound. The 3 elements of a broadcast are the spoken words, Music and Sound effects. Sounds must be pleasant, simple, easy to know for the listeners.

2.) **A Medium of the Voice:** Radio is the medium of the voice. In this procedure, voice is mixed with music and sound effects. A radio listener features a highly developed ear then the broadcaster shouldn't sound fake or untruthful. A truthful vocal expression will commonly touch if the entire person's mind, soul, psyche, imagination and his body are beat the tune with each other.

3.) **A Link between Speaker and Listeners:** Microphone is the only instrument through which a radio broadcaster speaks to his listeners.[8]

It is a hi-fi instrument that catches the safest sigh, the best rustle of the people. It exposes all vocalist, and tells all, the reality from alive.

4.) **An Intimate Medium:** A broadcaster needs to imagine as if the listeners, are listening from the sound box or the transistor. The best subjects to broadcast are those which intimately concern the listeners. The words and therefore the manner of their expression must roll in the hay because the conditions during which broadcasts are received are very informal.

5.) **A Mass Medium:** Radio is a medium of mass communication. It's broadcast reaches hundreds and thousands in one go. The task of the performer is to seek out out rock bottom common denominator to speak well with the most important number of listeners. It is a way cheaper medium of mass communication. Thus, it's very relevant to developing countries like India.

6.) **Simple Language:** Large number of people are illiterate or semiliterate in India and other developing countries. So, the language of the radio broadcasts must be simple and will be closer to the speech that the folk use.

7.) **A Mobile Medium:** Radio may be a mobile medium, then it's a most convenient medium for anybody. It doesn't respect unites of your time, place and action.

8.) **A Cheap and Quick Medium:** It is a medium of the "here and now" as it can respect the events almost instantly. Radio is a much cheaper and quicker medium than TV for production of programmes thus it can produce a good sort of programmes.

9.) **No shared experience:** Radio listeners are sitting alone or with one or two members of the family, and not like the stage where spectators are sitting in a crowd. Thus the psychology of reception for a broadcast is far more informal.[9]

Tools & Skills Required

The following tools are required in the development of FM Radio for Android

- (1) Laptop
- (2) Knowledge of Java (or any other language)
- (3) Android SDK
- (4) Android Studio
- (5) A stable Internet Connections
- (1) Android Development

The following things were required in the Android Studio for App Development

- (1) SDLC model
- (2) Requirements
- (3) Diagrams dfd, er, use case, activity diagram
- (4) Intro
- (5) Scope and purpose
- (6) Code
- (7) Front end
- (8) Backend

(9) Future enhancements

The SDLC Model consists of planning, analysis, design and development, testing, and implementation and maintenance.

(2) Live FM Streaming Apps: Business Opportunities

Internet radio stations bring in huge advertising opportunities for the media and entertainment sector. While local advertising may be a possibility with traditional radio models, bringing targeted stations on mobile is though a priority for various media companies.

Target the Mass: Apps that are compatible with Android and iOS platforms allow advertisers to focus on a large share of the audience, which otherwise isn't an opportunity with non-portable platforms like music systems, laptops, etc. Targeting a genre: is targeting an audience from a genre or with a preference is another benefit that radio streaming apps with specific stations bring. With apps that broadcast a single station, low is that the probability of a listener switching to a different station, thereby enhancing the probability of advertisements being listened to and perceived by the consumers. Internet radio apps are certainly offering A level playing field to the marketers and consumers, with advertisements being the revenue model and infotainment as an engagement medium.[10]

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