Texas International College

Tribhuvan University

Institute of Science and Technology

Khozee Online Radio

INTERNSHIP WORK REPORT

Submitted to

Department of Computer Science and Information Technology

Texas International College

In partial fulfillment of the requirements for the Bachelor's Degree in Computer Science and Information Technology

Submitted by

Sajan Tamang (2910/070)

February 18, 2018

A Final Year Internship Project Report

on

Khozee Online Radio

at

Cool Tool Digital Media Pvt. Ltd.
[CSC - 452]

An Internship report submitted in partial fulfillment of the requirement for the degree of Bachelor of Science in Computer Science and Information Technology awarded by Tribhuvan University.

Submitted By

Sajan Tamang (T.U. Exam Roll No. 2910/070)

Submitted To:

Texas Int'l College
Department of Computer Science
Chabahil, Kathmandu, Nepal

February 18, 2018

CERTIFICATE OF APPROVAL

This is to certify that this internship report prepared by **Sajan Tamang (2910/070)** entitled "***Khozee Online Radio***" in partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Information Technology has been well studied. In our opinion it is satisfactory in the scope and quality as a project for the required degree.

.....

Mr. Rupendra Kayastha[Mentor]
Chief Technical Officer and MD,
Cool Tool Digital Media Pvt. Ltd.

.....

Shankhar Pd. Sharma
Head Of Department,
Texas International College

.....

External Examiner
Tribhuvan University

ACKNOWLEDGEMENT

The satisfaction and success of completion of this task would be incomplete without heartfelt thanks to people whose constant guidance, support and encouragement made this work successful. I would like to thanks our highly respected ***Mr. Shankhar Pd. Sharma,*** HOD of Texas International College, Kathmandu, for his invaluable encouragement, guidance and ever willingness to spare time from his otherwise busy schedule.

We would also like to express our sincere gratitude to ***Mr. Rupendra Kayastha,*** Full Stack Developer and MD of Cool Tool Digital Pvt. Ltd., for his constant motivation, assistance and guardianship. We would also like to thank ***Mr. Suyog Dhakal ,*** Content writer in Hamro Patro for his constant motivation and feedback to our system and encouraging us within this whole internship period. Also , i would like to express heartful thanks to ***Mr. Rajendra Dangol*****,** senior php developer for providing every kind of technical assistance whenever needed.

I would like to dedicate our hearty gratitude to ***Cool Tool Digital Media Pvt. Ltd,*** for providing me with an opportunity to do internship at this reputed organization with full support and cooperation.

Finally, I wish to thank my parents for their support and encouragement throughout my study.

Sajan Tamang (T.U. Exam Roll No. 2910/070)

ABSTRACT

“Khozee Radio ” is the is the web based system available on web as well as mobile platform developed to provide the user with online audio; music, songs and FMs streaming. The system brings all the available audio to single platform and deliver it to the user over internet. It collaborates FM stations from all lover Nepal and provide the user to listen to those FM broadcasts.

The system integrates following components. Firstly, the songs: the songs to be streamed are classified into various types, some of which are New Released, Trending, Featured songs and so on. Secondly, the FM stations are grouped on the basis of pradeshes(states) of Nepal. Thirdly, there is Khozee specific streaming where English, Hindi, Nepali and songs of other languages are streamed as categorized as various genres. Lastly, there is artist section where the artist profile is shown along with their albums and songs.

There are four kinds of user in the system; Super admin, station admins, artists and public users. Super admin is the one who controls all the system operations. Station admins are assigned by the super admin who adds and manages radio FM stations. Artist collaborate with the super admin for their promotional purposes and feature them whenever needed. User can freely use the app.

Keywords: Khozee Radio, FM, Super Admin, stream, pradeshes

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

SEO	Search Engine Optimization
B.Sc.CSIT	Bachelors' of Science in Computer Science and IT
API	Application Programming Interface
UML	Unified Modeling Language
DFD	Data Flow Diagram
CTO	Chief Technical Officer
DOS	Disk Operating System
MD	Managing Dorector
IDE	Integrated Development Environment
IT	Information Technology
JSON	JavaScript Object Notation
IOS	Iphone Operating System
OOP	Object Oriented Programming
FM	Frequency Modulation
JDK	Java Development Kit
RAM	Random Access Memory
AVD	Android Virtual Device
XML	Extensible Markup Language
HOD	Head of Department
UI	User Interface
App	Application
IOST	Institute of Science and Technology
UNIX	Uniplexed Information and Computing Service

CHAPTER 1

INTRODUCTION

1.1. Introduction to project

“Khozee Online Radio ” is the is the web based system available on web as well as mobile platform developed to provide the user with online audio; music, songs and FMs streaming. The system brings all the available audio to single platform and deliver it to the user over internet. It collaborates FM stations from all lover Nepal and provide the user to listen to those FM broadcasts.

The system integrates following components. Firstly, the songs: the songs to be streamed are classified into various types, some of which are New Released, Trending, Featured songs and so on. Secondly, the FM stations are grouped on the basis of pradeshes(states) of Nepal. Thirdly, there is Khozee specific streaming where English, Hindi, Nepali and songs of other languages are streamed as categorized as various genres. Lastly, there is artist section where the artist profile is shown along with their albums and songs.

There are four kinds of user in the system; Super admin, station admins, artists and public users. Super admin is the one who controls all the system operations. Station admins are assigned by the super admin who adds and manages radio FM stations. Artist collaborate with the super admin for their promotional purposes and feature them whenever needed. User can freely use the app.

1.1.1 Scope of the project

The application has a wide range of scope area. With the advancement technology and development of mobile phones,mp3s and ipods the FM listeners has decreased rapidly. So the FM stations can collect their user by providing their audio streams through the app.

Browsing the episodes of the program is another plus point to make user engaging. Artists can use the app to promote any kind of events, programs , their upcoming albums and songs and also maintain their blogs in order to notify user.

1.1.2 Limitation of the project

Various limitation of the system are:

- The system requires a fast, reliable and high bandwidth speed internet connectivity in order to stream the audio.
- The system can crash when used for long time.
- The system reserve all the device memory so the device with low RAM and memory may not be able to perform properly when using this app.

1.2. Background

An internship is a work-related learning experience for individuals who wish to develop hands on work experience in a certain occupational field. It involves working in your expected career field. It gives the students a valuable experience and a chance to get exposed to the business environment. Interns are usually college or university students, but they can also be high school students or post-graduate adults seeking skills for a new career. Student internships provide opportunities for students to gain experience in their field, determine if they have an interest in a particular career and create a network of contacts.

It helps students like us to develop our inner ability or the confidence level and the level of understanding to compete in this complex and sophisticated age. It also increases our ability to tackle the business problems, to grasp the opportunities and to face the threats. In its totality, internship program teaches us the corporate culture, develops our public relationship skills, makes us competent and provides us an

excellent working experience. Such programs aim to develop interns towards becoming competent personnel aiding them to expand them in a professional level.

This report is the compilation of my three months (November 15,2017–February 18,2018) internship experience on developing the *"Khozee Online Radio"* android application. My core responsibility was of android developer. Features to be added were assigned by the Project Manager. The Project Manager of this project was the Chief Technical Officer of the Cool Tool Digital Media Pvt. Ltd. After the successful completion of all the assigned tasks, the portion of my work was submitted to the CTO.

1.3. Objective

- To strengthen professional skills and interpersonal relationships in professional settings.
- To enhance the skills as a Android Developer for Business solution via Information and Communications Technology.
- To prepared to enter into full-time employment in their area of specialization upon graduation.
- To provide an in-depth knowledge of the formal functional activities of a participating organization.
- To gain knowledge about general work functions in real-world setting.
- To build vital career-related skills such as organizational, written and interpersonal communication skills.
- To explore and create work experiences with respect to the field of interests.
- To prepare the documentation of an actual project being implemented in the industry.

1.4. Responsibilities

Various tasks and activities were involved at the three months internship at Cool Tool Digital Media as per the requirement of the project and the organization. A project was handed as soon as the internship started. Quantified, relevant and detailed information of requirements were provided. A study must be done in sophisticated technologies that have proliferated as users demanded increased capability, more power, and greater flexibility to adapt to their specific requirements. Application installments and basic configuration were the initial tasks. The target was to deliver a fully-fledged web based system both in mobile platform and website by using java programming language based on collection framework. Android Studio IDE was used as a development tool along with java jdk and android sdk.

Hence, to meet the objective, this internship required extensive preliminary studies about the core java programming language and OOPs concept. The study was required not only to understand the subject but also to realize the solutions to the existing problems and implementing the findings from the study was another bigger challenge. Learning how to use the debugging tools to figure out what's going on with project was also a challenge.

Teamwork is important in an organization because of the scope of the work it performs on a daily basis. Effective communication with the author's team and the mentor eliminates confusion and can foster a healthy workplace. Moderate meetings and communication via email and telephone helped to stay updated with the project. Extensive study of current system, presentations of study analysis and practical implementations made the process of completing tasks and project much more smoothly.

1.5. Motivation

BScCSIT course demand students to go to the industry and work as an intern in the eighth semester. I had a little knowledge and concept about android app development. I was fascinated by the android apps that come into market that makes life way easier. So I decided to get my intern degree as an android app developer and i started applying for internship programs for android app deelopment.

As per the academic requirement of BSc. CSIT, eighth semester, I worked as an android developer at Cool Tool Digital Media Pvt. Ltd. I feel privileged to work under the mentorship of Mr. Rupendra Kayastha, MD, Cool Tool Digital Media Pvt. Ltd. The tasks are assigned to our development team by him and the project is still going on in development phase.

1.5.1. About Organization

Cool Tool Digital Media Pvt. Ltd, established in 2007, is a dynamic and spirited adventure-orientated Developing and Designing company based in Kathmandu, Nepal. Authentic and intimate in our aims, we have a profuse knowledge, experience, and expertise of all aspects of the MIS. We did our best to understand the needs of customer and provided them what they need within the specified the time frame. Cool Tool Digital Media Pvt. Ltd is very much punctual and fully functional in its work so implements the rule to its worker and developers.

With the advent of the globalization, it is necessity that the company goes global for finding the potential customers. The success of the company depends on the demand from the customers globally and not how much more it sells than the competitors; we can help the company/business expand and go global with every possible expertise we have. To make the business successful in reaching global

customers, we will provide the solutions with vary techniques and consultation by the group of our IT professionals.

1.5.2. Company Functionalities

It provides a wide range of technology services from web and applications to various IT related tasks. It delivers full–cycle technical development services using the latest technology exactly as per client requirements and business objectives. It offers extensive application and management services. The main points for the client satisfaction toward the work done are as:

- The capability of turning the innovation ideas into a business on client's promise with a unique quality.
- Focused on growing and expanding into familiar territory by serving each client's goal. Committed with their services and loyalty.

1.5.3. Organizational Structure

Cool Tool Digital Media have been cooperatively providing its services with its skilled team. It provides a managed environment for the work done with effective team coordination. There is an involvement for different member for company efficient outcomes. The president and the members are as follows:

- Rupendra Kayastha, CTO and MD.
- Suyog Dhakal, Content Writer
- Bikal Dangol, Data entry and content manager
- Sajan Tamang, Shrijana Upadhyaya, Rajan Tamang, Prajwol Dangol, Rajendra Dangol (Developers)
- Others (account, management and graphic designer members)

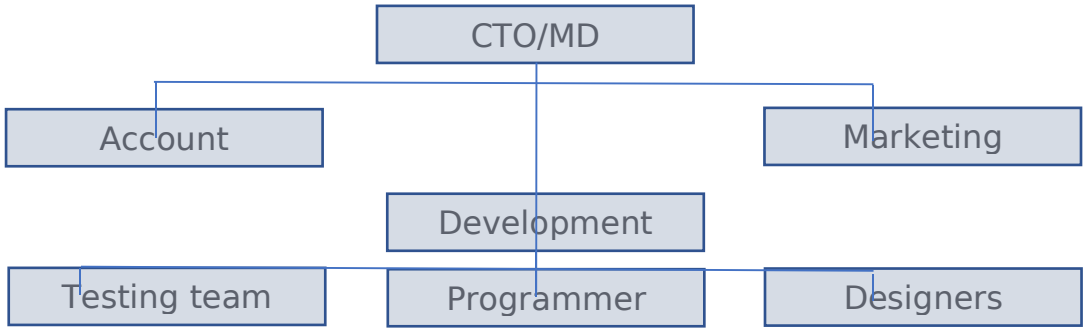

Figure 1:Organization Hierarchy Cool Tool Digital Media

1.5.4. Duration

Tribhuvan University (TU) has prescribed 6 credit hours for the internship and the intern had enrolled in the internship program for around 13 weeks. The details of the internship duration are below:

Start Date	15th Nov, 2017
End Date	15th Feb, 2018
Total Duration	3 Months
Position	Android app developer
Supervisor/Mentor	Mr.Rupendra Kayastha
Office Hour	10:00 Am – 5:00 Pm

Table 1: Internship Duration

1.5.5. Contact Details

Name of Organization:	Cool Tool Digital MediaPvt. Ltd.
Date of Establishment:	2007AD
Address:	Khusibu, Nayabazar, Kathmandu
Pan No.:	601222623

Table 2: Contact Details of the Organization

CHAPTER 2

LITERATURE REVIEW

2.1. Literature Review

‘Khozee Online Radio’ is the audio streaming web and mobile platform system using which users can browse through the songs or radio stations and FMs and listen to them. They can also get a chance to know their favorite artists better.

The system integrates following components. Firstly, the songs: the songs to be streamed are classified into various types, some of which are New Released, Trending, Featured songs and so on. Secondly, the FM stations are grouped on the basis of pradeshes (states) of Nepal. Thirdly, there is Khozee specific streaming where English, Hindi, Nepali and songs of other languages are streamed as categorized as various genres. Lastly, there is artist section where the artist profile is shown along with their albums and songs.

2.1.1. Understanding the Existing System

There are no any local system that provide all the audio streaming features from songs to FMs. There are some system like Hamro patro in local level and apps like Saavn, Gaana, TuneIn, BBC, SounCloud, etc in the international level that provide either music streaming or FM streaming. These systems has following features:

- Users can efficiently browse the songs and play it.
- Users can listen to live radio broadcasts.

Our system has an advantage over existing system by following features:

- It provide a single platform for listening both songs and radio broadcasts.
- It can be used by artists and singers as a platform for their promotions and marketing whenever needed.

2.1.2 Comparatives Analysis

2.1.2.1 Saavn

Saavn is India's #1 digital music service, transforming how people around the world access and experience music on a daily basis. The company's award-winning iOS and Android mobile products include proprietary phonetic search, dynamic bit rate streaming, global native ad-serving, unique radio algorithms, high performance infrastructure, and industry-leading design. With Saavn Pro, users can listen to music ad-free and offline. Through partnerships with Apple, Google, Facebook, Shazam, and Bollywood actor Ranbir Kapoor, Saavn reaches more music fans than any other South Asian music service.

2.1.2.2 Hamro patro

Hamro Patro is a calendar app developed by Hamro app developers in Nepal. It was released in Google Play in 2012. It is one of the first apps in the history of Nepali apps to be downloaded more than a million times. It has a section where there is FM broadcasting and audio broadcasting as well.

2.1.2.3 Gaana

Gaana.com is a commercial music streaming service providing free and licensed music. It was launched in April 2010 by Times Internetand provides both Indian and international music content. The entire Indian music catalog is available to users worldwide.

Gaana.com features music from 21 languages including the major languages such as Hindi, English, Bengali, Odia,Kannada, Marathi, Punjabi, Tamil, Telugu, Malayalam and other Indian regional languages.

Gaana.com allows users to make their playlists public so that they can be seen by other users.[1] They can view and favorite playlists. Its mobile app was launched to support almost all operating systems.

2.1.2.4 TuneIn

TuneIn Inc. is an American audio streaming service delivering live news, radio, and sports, in addition to music, and podcasts to an audience of over 60 million monthly active users worldwide. The company is based in San Francisco, California. Founded by Bill Moore in 2002 as RadioTime in Dallas, Texas, TuneIn has more than 100,000 broadcast radio stations and four million on-demand programs and podcasts from around the world. TuneIn is available on the web at TuneIn.com, for a suite of mobile apps: iOS, Android, BlackBerry, Samsung, Windows Phone, and on over 200 connected devices, including Sonos, Bose, Amazon Echo, and Google Home connected speakers. TuneIn service is also available in over 50 vehicle models, including the Tesla Model S. TuneIn raised over $47 million in venture funding from Institutional Venture Partners, Sequoia Capital, GV, General Catalyst Partners, and Icon Ventures.

2.1.2.5 Soundcloud

SoundCloud is an online audio distribution platform based in Berlin, Germany, that enables its users to upload, record, promote, and share their originally-created sounds.

SoundCloud offers two mobile apps; the main SoundCloud app is oriented towards streaming, with music discovery, playlist, and sharing features. In November 2015, a separate app known as SoundCloud Pulse was first released for Android; it is primarily oriented towards content creators, allowing users to upload and manage their uploads, reply to comments, and view statistics. Pulse's features were previously located within the main app; senior marketing manager Brendan Codey explained that the shift to separate apps was meant to allow SoundCloud to improve its user experience for content consumers, without having to worry about how these changes affect features oriented towards creators.

By the end of 2016, SoundCloud's Android app had over 100 million downloads. On 1 April 2017, Chromecast support was added to the main SoundCloud iOS app.

2.2. Management Strategy

A project is a temporary group activity designed to produce a unique product, service or result. Project management is the application of knowledge, skills and techniques to execute projects effectively and efficiently. Project management is the discipline of planning, organizing, and controlling resources to achieve specific goals. Project management has been necessary and important in this project. The constraints for this project, as for most projects, have been time, cost and quality. Project management is necessary to complete the project under these constraints and utilize the resources properly .

The goal of project management for this project was to achieve all the project goals within specified time and cost. Project management begins right from project initiation and planning up to

project completion. Project management includes project execution as well as monitoring and controlling. The project execution was done in incremental approach where smaller modules were identified on the basis of functionality, developed and then integrated to the application one by one.

Software project management is difficult because of its complexity and invisibility. So knowing exact progress can be difficult. Visualizing progress is a good way to keep track of progress. The technique used for tracking progress was the Gantt chart. It is essentially an activity bar chart indicating scheduled activity dates and durations.

2.3. Project Schedule

2.3.1. Time Schedule

Time Schedule				Duration
		Planned		
Task ID	Task Description	Start Date	Finished Date	
1.	**Introduction to company**			
1.1	Planning for the project	11/20/2017	11/25/2017	5
1.2	Analysis on the topics	11/20/2017	11/29/2017	9
1.3	Meeting with the supervisor	11/20/2017	11/20/2017	0
1.4	Background reading	12/4/2017	12/7/2017	4
1.5	Understanding the requirement	12/8/2017	12/12/2017	5
1.6	Meeting with the requirement	12/13/2017	12/20/2017	8
1.7	Preparation of Project Proposal	12/21/2017	12/27/2017	8

1.8	Preparing Gantt Chart, Project Schedule	12/28/2017	02/10/2018	45
1.9	Approval from Supervisor	11/28/2017	11/29/2017	1
1.10	Review (Milestone 1)	12/29/2017	12/30/2017	1
2	**Research Work**			
2.1	Research on system components.	11/20/2017	12/31/2017	1
2.2	Research on Application Development	1/1/2018	1/3/2018	3
2.3	Research on Service	1/7/2018	1/8/2018	2
2.4	Research to prepare the best design	1/9/2018	1/10/2018	1
2.5	Second Review (Milestone 2)	1/10/2018	1/11/2018	1
3	**Analysis**			
3.1	Feasibility Study	12/12/2017	1/1/2018	2
3.2	Requirement Discovery	1/14/2018	1/15/2018	1
3.2.1	Review of client requirement	1/15/2018	1/16/2018	1
3.2.2	Study of tools needed	1/17/2018	1/18/2018	1
3.3	Third Review (Milestone 3)	1/18/2018	1/19/2018	1
4	**Design**			
4.1	Application Design	1/20/2018	1/24/2018	5
4.1.1	Data Flow Diagram	1/25/2018	1/30/2018	5
4.1.2	Use Case Diagram	1/31/2018	2/2/2018	3
4.3	Fourth Review (Milestone 4)	2/2/2018	2/2/2018	1

5	**Implementation**			
5.1	Program coding	11/28/2017	1/28/2018	30
5.2	UI Designing and enhancing	11/25/2017	12/1//2017	25
5.3	Fifth Review (Milestone 5)	12/1/2017	2/2/2017	1
6	**Testing**			
6.1	Unit Testing	12/27/2017	12/28/2017	2
6.2	System Testing	12/29/2017	12/31/2017	3
6.3	Alpha Testing	1/1/2018	1/3/2018	3
6.4	Sixth Review (Milestone 6)	1/4/2018	1/5/2018	1
7	**Dissertation**			
7.1	Draft Report Writing	12/20/2017	12/18/2017	29
7.2	Final Report Writing	1/5/2018	2/3/2018	29
7.3	Submission of Final draft copy Report	2/3/2018	2/4/2018	2
7.4	Correction for Final draft copy Report	2/5/2018	2/6/2018	1
8	**Final Phase**			
8.1	Final Documentation Printing and Binding	2/14/2018	2/15/2018	2
8.2	Document Submission to college	2/16/2018	2/16/2018	1

Table 3: Time Schedule

2.3.2. GANTT Chart

S No.	Task	Start Date	Finish Date	Duration(days)	2017		2018	
					Nov	Dec	Jan	Feb
1	Research	11/20/2017	1/11/2018	40				
2	Analysis	12/12/2017	1/19/2018	37				
3	Design	1/20/2018	2/2/2018	13				
4	Implementation	11/28/2017	2/2/2018	63				
5	Testing	12/12/2017	1/15/2018	35				

Figure 2: Gantt Chart

CHAPTER 3

SYSTEM ANALYSIS

3.1. Introduction to System Analysis

Systems analysis is a problem-solving technique that decomposes a system into its component pieces for the purpose of the studying how well those component parts work and interact to accomplish their purpose. This field is closely related to requirements analysis or operations research. It is also "an explicit formal inquiry carried out to help someone (referred to as the decision maker) identify a better course of action and make a better decision than she might otherwise have made."

3.2. Requirement Collection

When it comes to any type of project, requirement collection plays a key role. Requirements collection is not only important for the project, but it is also important for the project management function.

For the project, understanding what the project will eventually deliver is critical for its success. Through requirements, the project management can determine the end deliveries of the project and how the end deliveries should address client's specific requirements.

Although requirements collection looks quite straightforward, surprisingly, this is one of the project phases where most of the projects start with the wrong foot. In general, majority of the failed projects have failed due to the wrong or insufficient requirements gathering.

For our project the project manager with the data collection and research team with other helping hands from professionals were responsible for data collection and viability of the project. Some of the methods were as follows:

3.2.1. Interview

"Face to face" interviews with one or more project stakeholders. These "requirements" interviews can occur as one-on-one meetings or group brainstorming sessions. Interviews are most appropriate for projects with a small number of "requirements contributors", where requirements must be gathered from a select, concentrated group.

3.2.2. Surveys

Documented questions (on paper or in electronic format) designed to collect "written" requirements feedback from one or more project stakeholders. Tip: Surveys are most appropriate for projects with a large number of "requirements contributors" where requirements must be gathered from a diverse group.

3.2.3. Observation Techniques

Direct "interaction" with project customers (i.e. end-users) to observe and identify requirements based on current workflows and practices. Tip: Observation is most appropriate for "performance or productivity improvement" projects where problems must be translated into actionable requirements.

3.2.4. Study of related systems

The study of related systems provide an ample ground and basis for the key concepts that are involved to make a system. They provide all the techniques that can be used to develop a system.

3.3 System Requirements

3.3.1. Functional Requirements

Functional requirements may be calculations, technical details, data manipulation and processing and other specific functionality that define what a system is supposed to accomplish. Behavioral

requirements describing all the cases where the system uses the functional requirements are captured in use cases. Functional requirements are supported by non-functional requirements (also known as quality requirements), which impose constraints on the design or implementation (such as performance requirements, security, or reliability). Generally, functional requirements are expressed in the form "system must do <requirement>". The plan for implementing functional requirements is detailed in the system design.

3.3.1.1 Show Different category of Songs

The system must be able to show different category of songs as ‘New Released’, ‘Trending’, ‘Featured’ and other categories if necessary.

3.3.1.2 Show radio stations according to States

Since the app is mainly focused on generating revenue by implementing radio stations and attracting the visitors, the radio module needs to be worked out seriously. So we decided to provide radio stations based on the states of Nepal. The radio stations on particular state is categorized in particular state sections of efficient browsing and searching. If the radio station has channels over many states particular channel are displayed in particular section.

3.3.1.3 Feature Artist

The artists can also benefit from this app. Whenever their promotion is needed they can contact the admin or the system manager and they can promote themselves in the artist section.

3.3.1.4 Stream every kind of audio

The audio streams are not always in mp3 format. They can be in mp3, m3u, aac, flac or other various streams. So the kind player was

needed that support wide range of audio formats for streaming and playing.

3.3.2 Non-functional Requirements

In systems engineering and requirements engineering, a non-functional requirement is a requirement that specifies criteria that can be used to judge the operation of a system, rather than specific behaviors. They are contrasted with functional requirements that define specific behavior or functions. The plan for implementing functional requirements is detailed in the system design. The plan for implementing non-functional requirements is detailed in the system architecture, because they are usually Architecturally Significant Requirements.

3.3.2.1 Better UI and UX

The system must have a good user interface and experience so that the user can know what they are trying to do and achieve without any kind of hastiness. The app must guide user in proper way and deliver what user it trying to achieve.

3.3.2.2 Application must not crash

The excessive use must not be a problem to the system. Sometimes the excessive use of application might result in crash of the system which is not a better user experience in the users' perspective.

3.4 Feasibility Study

Preliminary investigation examines project feasibility; the likelihood the system will be useful. The main objective of the feasibility study is to test the Technical, Operational and Economical feasibility of the system. All system is feasible if they are unlimited resources and infinite time [36] . Our project manager carried out various tasks and activities of research and market study along with the consultation

from various radio stations and the project was concluded feasible to carry out.

3.4.1. Technical Feasibility

The technical issue usually raised during the feasibility stage of the investigation includes the following:

- Does the necessary technology exist to do what is suggested?
- Do the proposed equipment’s have the technical capacity to handle the data in the new system ?
- Will the proposed system provide adequate response to inquiries, regardless of the size of the files?
- Are there technical guarantees of accuracy, reliability, ease of access?

The system developed is technically feasible. The system is developed using android studio IDE, java language and java core and native libraries for android. For the web development angular js, node.js and mongoDb was used. It provides the technical guarantee of accuracy, reliability and security.

3.4.2. Economic Feasibility

The main concern was will the system generate the income that matches the expense. While coming to calculation and various statistical approaches and techniques we were easily able to calculate that the overall cost was within the bound of the allocated budget for operational costs. The project was economically feasible to carry out.

3.4.3. Legal Feasibility

The legal issues related to system are none. The system could be used by any user without any kind of restrictions for use.(Note: subscriptions plans may be applied)

3.4.4. Operational Feasibility

Operational feasibility aspects of the project are to be taken as an important part of the project implementation. Some of the important issues raised are to test the operational feasibility of a project includes the following: -

- Is there sufficient support for application resources?
- Will the system be used and work properly if it is being developed and implemented?
- Will there be any resistance from the user that will undermine the possible application benefits?

This system is targeted to be in accordance with the above-mentioned issues . Using this mobile app user can easily browse through the songs and radio online and easily. The users need not maintain separate playlist and buy different radio to listen to FM broadcast.

3.4.5. Schedule Feasibility

A project will fail if it takes too long to be completed before it is useful. Typically, this means estimating how long the system will take to develop, and if it can be completed in a given time period using some methods like payback period . Schedule feasibility is a measure of how reasonable the project timetable is Given our technical expertise, are the project deadlines reasonable? Some projects are initiated with specific deadlines. It is necessary to determine whether the deadlines are mandatory or desirable .

Since this is the in house project there was no any worries regarding the time constraints. The tasks were scheduled with some specific deadline. The tasks and activities were divided into many schedules which were attainable.

3.5. Process model of the System

3.5.1 Context Diagram

A context diagram is a graphic design that clarifies the interfaces and boundaries of the project or process at hand. It not only shows the process or project in its context, it also shows the project's interactions with other systems and users .

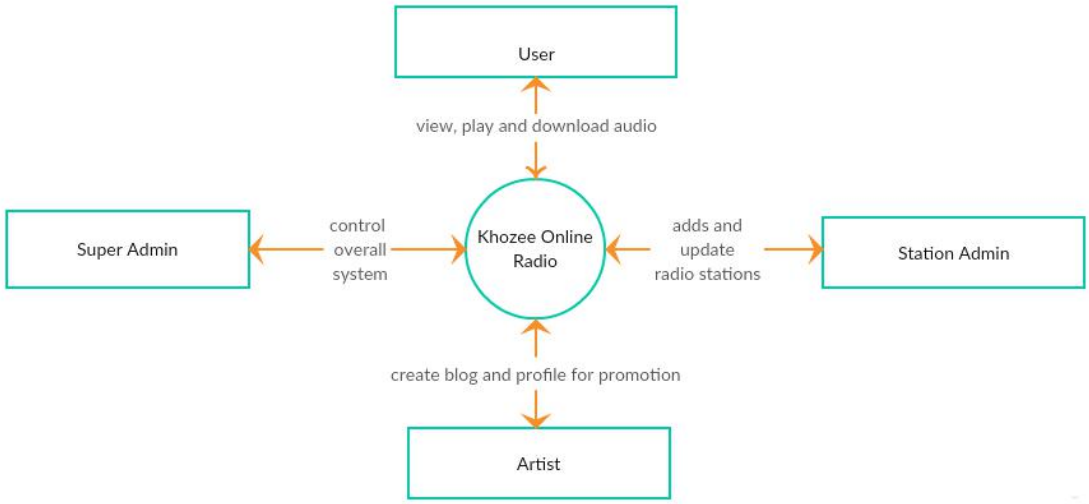

Figure 3: Context Diagram

Figure 3 displays the flow of data in the system. The context diagram defines the boundary of the system with respect to its entities and processes. Here Radio station admin adds and updates the radio stations who are appointed by the Super admin. The super admin adds the artists and feature them whenever required like at the time of new album release, new song release or any events and programmes like concerts. Users can use the app which basically include browsing, playing and downloading songs.

3.5.2 DFD

A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data inputs, outputs, storage

points and the routes between each destination. Data flowcharts can range from simple, even hand-drawn process overviews, to in-depth, multi-level DFDs that dig progressively deeper into how the data is handled. They can be used to analyze an existing system or model a new one. Like all the best diagrams and charts, a DFD can often visually “say” things that would be hard to explain in words, and they work for both technical and nontechnical audiences, from developer to CEO .

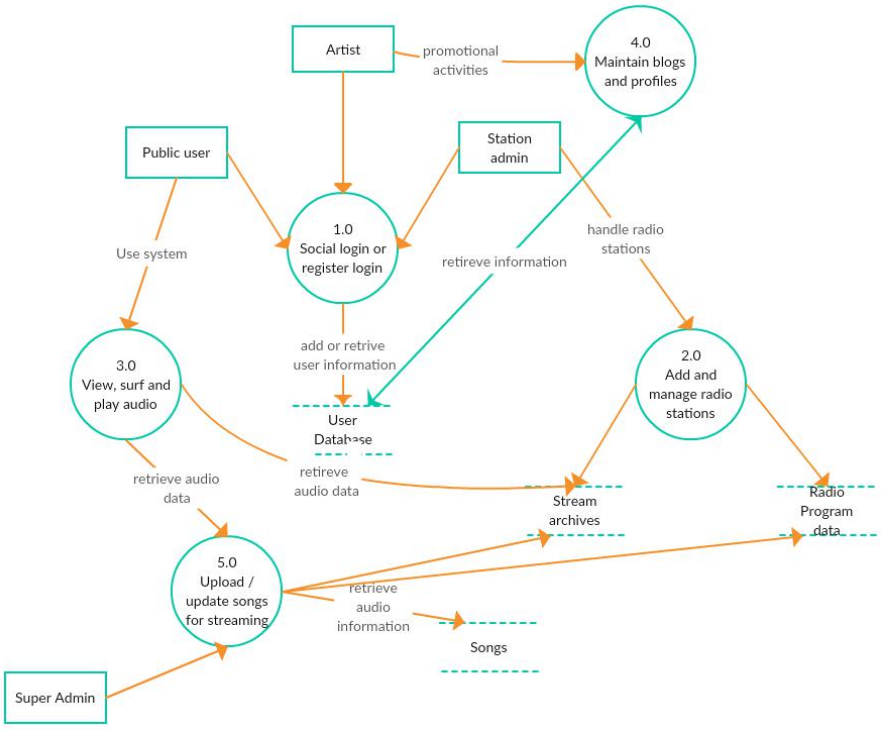

Figure 4: DFD level 1

3.5.3 Use Case Diagram

Use case diagrams are usually referred to as behavior diagrams used to describe a set of actions (use cases) that some system or systems (subject) should or can perform in collaboration with one or more external users of the system (actors). Each use case should provide some observable and valuable result to the actors or other stakeholders of the system.

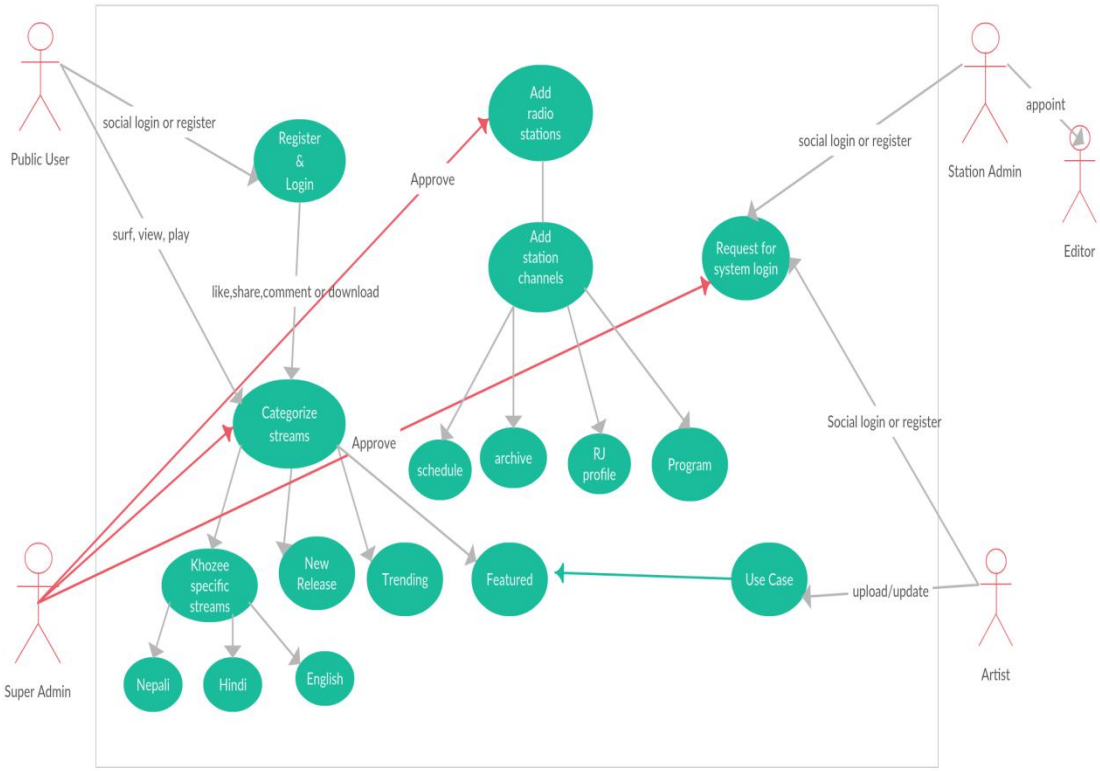

Figure 5: UML Use Case diagram of the system.

The Figure 5 represents the Use Case diagram of the system that illustrates various users interacting to the system.

CHAPTER 4

SYSTEM DESIGN

4.1 Introduction to System Design

Systems design is the process of defining the architecture, modules, interfaces, and data for a system to satisfy specified requirements. Systems design could be seen as the application of systems theory to product development. There is some overlap with the disciplines of systems analysis, systems architecture and systems engineering.

4.1.1 System Architecture

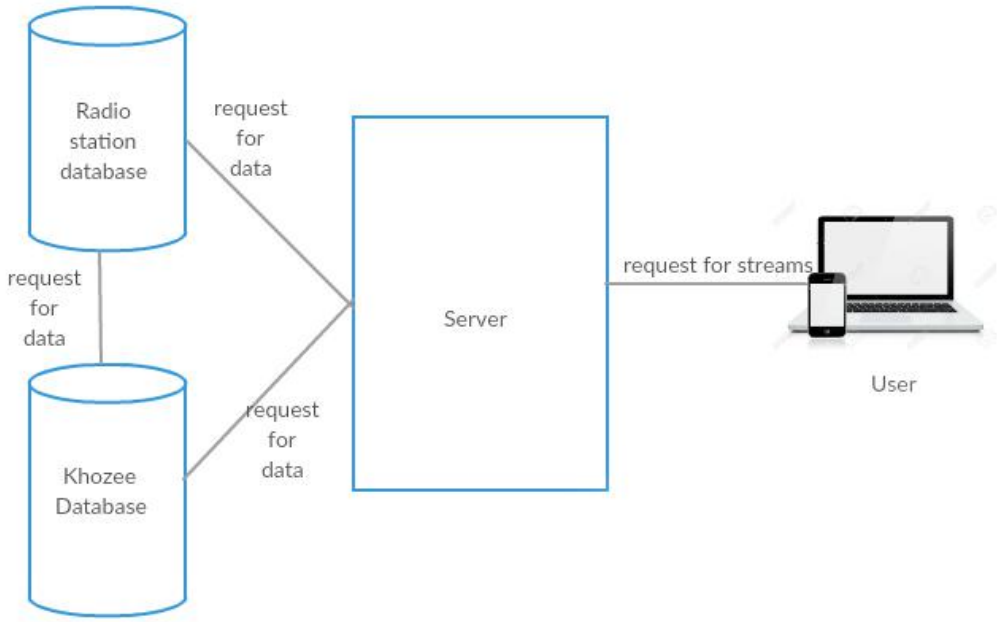

Figure 6: System Architecture For Khozee Online Radio

CHAPTER 5

IMPLEMENTATION

5.1 Technical tools and platforms used

5.1.1 Android

Android is a new, next-gen mobile operating system that runs on the Linux Kernel. Android Mobile Application Development is based on Java language codes, as it allows developers to write codes in the Java language. These codes can control mobile devices via Google-enabled Java libraries. It is an important platform to develop mobile applications using the software stack provided in the Google Android SDK. Android mobile OS provides a flexible environment for Android Mobile Application Development as the developers can not only make use of Android Java Libraries but it is also possible to use normal Java IDEs. Android Mobile Application Development can be used to create innovative and dynamic third-party applications.

5.1.2 JAVA

We developed android applications using the Java programming language. As Java is a very popular programming language developed by Sun Micro Systems developed after C and C++. Java programming languages are only as powerful as their libraries. These libraries exist to help developers to build applications.

Some of the features are:

1. Easy to learn and understand

2. Designed to be platform-independent and secure, using virtual machines

3. Object-oriented programming language Android relies heavily on these Java fundamentals. The Android SDK includes many standard

Java libraries as well as special Android libraries that will help us to develop awesome Android applications .

5.1.3 JSON

JSON(JavaScript Object Notation) is used in the project as it is easy for machines to parse and generate. JSON format is syntactically identical to the code for creating JavaScript objects.It is an independent data exchange format and is the best alternative for XML. We can parse the JSON file and extract necessary information from it. Android provides four different classes to manipulate JSON data. These classes are JSONArray, JSONObject, JSONStringerand JSON Tokenizer.

JSON is built on two structures:

1.Collection of name/value pairs. In various languages, this is realized as object, record, struct, dictionary, hash table, keyed list, or associative array.

2. An ordered list of values. In most languages this is realized as an array, vector, list or sequence.

5.1.4 Microsoft Word

Microsoft Word 2013 is a word-processing program that has been designed to help one create a professional-quality documents. It helps in organizing and writing the documents more efficiently. PCMag has rated it 4.5/5 as every imaginable formatting and convenience feature for creating a document is added and is considers as a world-wide standard for text documents. However, few features are still confusing to use. Similarly, TechRadar has also rated it 4.5/5 as it has clean design and all the necessary features .

5.1.5 Postman

Postman is used in the project to test PHP script. Postman build, test and document APIs faster. Postman creates requests and switch context quickly.

Some of the features include:

1. Robust testing framework
2. Automate collections
3. Built-in authentication helpers
4. Customize with scripts

5.1.6 Android Studio Platform

Android Studio is Google’s official IDE that has many features such as:

1. Create, delete and view Android Virtual Devices (AVDs).
2. Create and update Android projects.
3. Flexible gradle based build system.
4. Code templates to help build common app features.

5.2 Data Structure

Since the system is developed using mongodb, node.js and angular js, the data are stored in the json format. The data are actually the primary data structures like integer, strings, array and others but the data are stored, fetched, and accessed using json format. The data are stored in key value pair and the actual data are stored using key.

5.3 Development methodology

5.3.1 Agile development (Extreme programming)

We used the agile development methodology to complete our project within the deadline. Agile Software Development is an umbrella term for a set of methods and practices based on the values and principles expressed in the Agile Manifesto.

Solutions evolve through collaboration between self-organizing, cross-functional teams utilizing the appropriate practices for their context.

Extreme Programming is one of several popular Agile Processes. It has already been proven to be very successful at many companies of all different sizes and industries worldwide extreme Programming is successful because it stresses customer satisfaction. Instead of delivering everything you could possibly want on some date far in the future this process delivers the software you need as you need it. Extreme Programming empowers your developers to confidently respond to changing customer requirements, even late in the life cycle.

We chose this method because the requirement specification and the user interface were changing constantly. In order to fit into these kind of changes extreme programming was the best option.

5.4 Hardware Implementation

The developed android application was first tested in android emulator. In case any problem was found with the layout, the problem was immediately dealt with. Also, the bugs and errors were abolished from the system by carrying out various kinds of testing in local machine at different levels. Later real android phones with different API level were used. The OS of the phone ranges from 4.0 to 6.0.

5.5 Software Implementation

The coding and programming was performed using java and native xml built with java. The ‘Collection’ framework of java programming language was extensively used. The IDE used was Android Studio. The developed application was tested and implemented very well. Also, the application was checked if they would work well as per the requirement and specification.

CHAPTER 6

TESTING

6.1 Testing Strategies

Testing is an integral part of the software development process. It is performed at each stage of the software development process. It ensures that the developed parts conform to the user requirements. It helps to find out whether an input given to the system is well processed or not and output meets the specified objective of the system. It mainly ensures that the system performs well. When the components of the system were being developed, they were at the same time being tested. The unit testing was done right at the time of development. The module testing was done on components and the system testing was done at the end. Hence, each component of the system undergoes unit testing and integration testing.

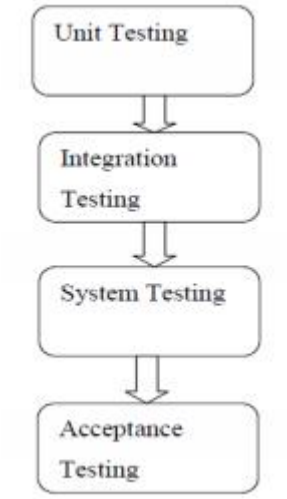

Figure 7: Stages of Testing

6.1.1 Unit Testing

Unit testing refers to the testing of every small modular components of the system, keeping them isolated from other modules. In this test phase, each unit/function developed was tested just after the implementation. The errors were corrected and modifications were made as and where required [49] . Each development units were tested on its own. Each file was built separately.

Following steps are taken in performing unit tests:

- Adding new released songs.
- Adding trending songs.
- Adding featured songs.
- Coding a sliding up panel.
- Adding a player fragment to show details on currently playing songs.
- Coding discrete scroll view to give slide to change song feature to the user.

SN	Test Objective	Test Condition	Expected Results
1	Reuesting server for list of songs with multiple or single url.	To check whether server respond with the list of songs during internet connection.	Server respond with songs list in JSON format along with song details.
2	Displaying songs according to	Check whether or not the songs are displayed according	New released, trending and featured songs are displayed

	category.	to the category.	separately in diferent sections.
3	Picking a specific songs.	To check whether or not the songs selected are played or not from different fragments.	User can pick any song fron any category for playing. The selected song is firstly sent to ther fragment.
4	Playing a selected song.	To test if the selected song is played(streamed) or not.	The selected song is played.
5.	Displaying a currently playing song in sliding up panel and player fragment.	To check if the currently playing song is displayed in sliding up panel along with the player or not.	The panel shows details of songs as expected.
6.	Using discrete scroll view library to change song when image is slid.	Check if the songs are changed when a image is slid in player.	Changing of songs when image is slid.
7.	Adding playback control to the	Check if the playback features like next, previous,	The playback features work well.

	player.	pause, play, etc are supported.	

Table 4: Unit Testing of the Theme

Figure 8 : New release song list

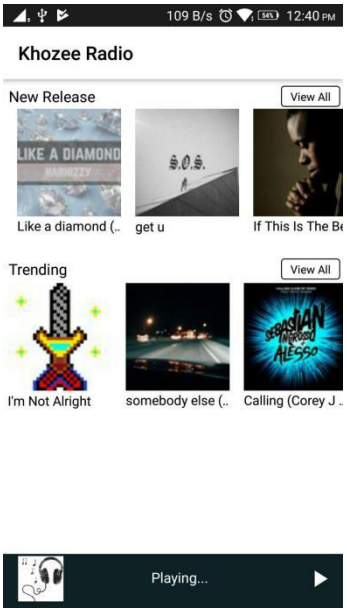

Figure 9 : Trending song list

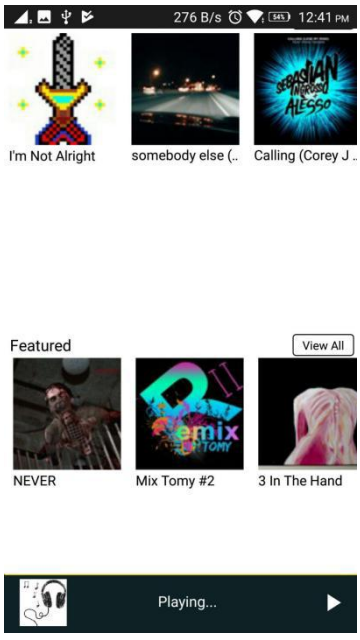

Figure 10:Featured song list

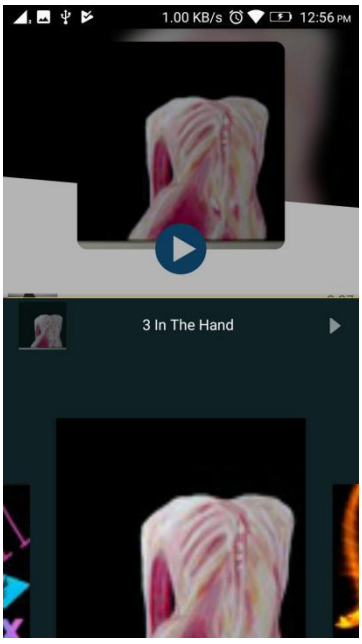

Figure 11:Sliding up panel in work

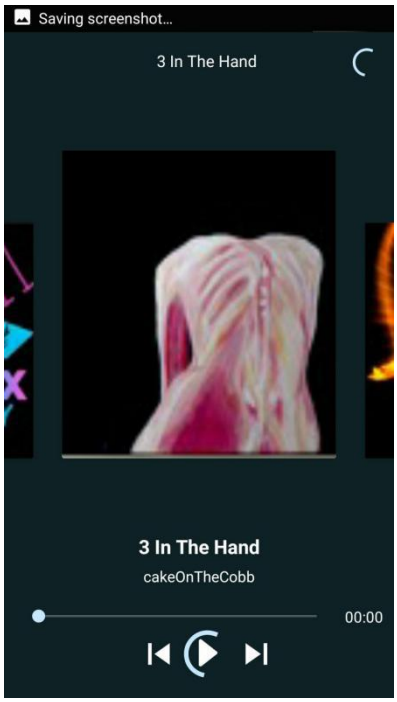

Figure 12 : Player (loading)

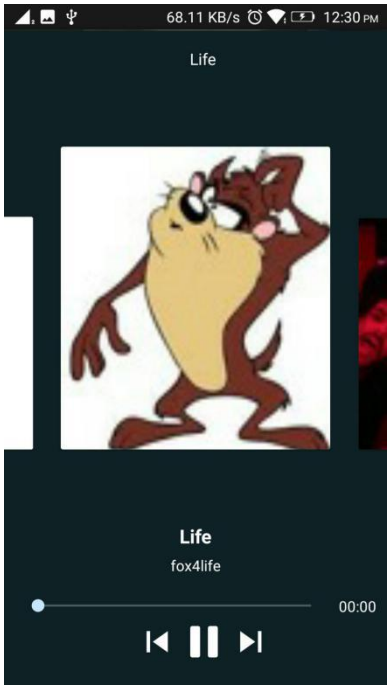

Figure 13 : Player (playing)

6.1.2. Integration Testing

This type of testing is always performed to see whether new kinds of error are introduced once two or more units are integrated. This project is divided into many modules, once each module is completed the following phase would be the integration phase where two or more modules are integrated. In this project, the integration test was done to conform the interaction between different data entry modules, view modules and report modules. The confirmation was done by running the application in a real-time scenario .

CHAPTER 7

CONCLUSION

The internship program has been done as per the partial fulfillment of requirements of Bachelor's degree in Computer Science and Information Technology under Tribhuvan University. Moreover, it was such a great learning experience. The opportunity of internship for me in Cool Tool Digital Media Pvt. Ltd. was very fruitful as I got the chance to explore my academic knowledge in the real working environment.

I was able to imply my theoretical knowledge in the real and professional IT environment. I was assigned with the android app development for "Khozee Online Radio" with my other companions. I also helped in development of various system requirements like database designs, Use-case diagram, algorithms ans flowcharts. I also came to understand the real working environment in IT sector. Beside this I got an opportunity to collaborate with the senior developers and improve my skills , coding techniques and knowledge. I was able to carry out my intern project effortlessly with the help from my mentor and other senior developers.

Since the app was developed using Android Studio IDE I was able to use the previously developed libraries ,SDKs ,APIs and platforms. Also the pool of documentation on the internet helped a lot.

To conclude , this internship was a swift bridge through which i was able to shift myself from academics to industrial side. I learned on how to face the challenges that occur during the development phase, work under pressure of time constraints, remove bugs in apps and finally develop an error free android app.Thus, the

internship program has helped me to gain professional experience enhancing my interpersonal, group working and communication skills. This in turn has boosted my confidence in handling any of the projects that include android app development.

“Khozee Online Radio” is the result of the contribution during my internship program. The app is aimed at providing an audio streaming services without actually keeping the songs in the users physical device. Listening to all the available FMs of Nepal is its other feature. This app can be used by the artists to promote their upcoming events and albums or songs. Users get benefited in all these aspects.

REFERENCES

[1] "https://github.com/yarolegovich/DiscreteScrollView",using discrete scroll view in android [Accessed 28 12 2017].

[2] "https://github.com/umano/AndroidSlidingUpPanel" , using sliding up panel for android.

[3] "https://github.com/bumptech/glide" , loading and managing images in android development.

[4] "https://developer.android.com/training/volley/index.html", using volley library for android json parsing.

[5] "https://github.com/GrenderG/Toasty", toasts with stteriods.

[6] https://stackoverflow.com/questions/5610464/stopping-starting-music-on-incoming-calls

[7] "https://www.androidauthority.com/how-to-use-recycler-views-836053/", how to user recycler views?

[8] "https://developer.android.com/training/material/lists-cards.html", using cardviews with recycler view.

[9] "https://github.com/google/ExoPlayer", exoplayer library

[10] "https://medium.com/google-exoplayer", using an exoplayer in android.

[11] "https://medium.com/google-exoplayer/exoplayer-2-6-1-whats-new-a9e54bffffc5", whats new in exoplayer update?

[12] "https://android-arsenal.com/details/1/6040", using diagonal

imageview in android.

[13] "https://android.jlelse.eu/circular-imageview-nightmare-for-beginners-822c4137e629", using circular or round image view in android.

[14] "using collapsing tool bar in android" [Online] Availbale: https://www.youtube.com/watch?v=BTYuLho5_rE

[15] "using collapsing tool bar in android" [Online] Availbale: https://antonioleiva.com/collapsing-toolbar-layout/

[16] "Custom toast in android", [Online] available:

https://stackoverflow.com/questions/11288475/custom-toast-on-android-a-simple-example

[17] "pausing exoplayer for incoming call", [Online] Availabe: https://stackoverflow.com/questions/40555405/how-to-pause-exoplayer-2-playback-and-resume-playercontrol-was-removed

[18] "Introduction to Computer Information Systems/Information Systems," [Online]. Available: https://en.wikibooks.org/wiki/Introduction_to_Computer_Information_Systems/Information_Systems. [Accessed 18 06 2017].

[19] "scroll effect for discrete scrol view in android", [Online] Availabe: http://www.tellmehow.co/androdi-discretescrollview/

[20] "recycler view animation", [online] . Availabe: https://stackoverflow.com/questions/26724964/how-to-animate-recyclerview-items-when-they-appear.

APPENDIX

Source Code

1. Setting new release and trending

```
private void setNewReleaseRecyclerView(View view) {
  newReleaseRecyclerView
=(RecyclerView)view.findViewById(R.id.new_release_recycler_view);
      newReleaseRecyclerView.setHasFixedSize(true);
      newReleaseRecyclerView.setLayoutManager (new
LinearLayoutManager(view.getContext(),LinearLayoutManager.HORI
ZONTAL,false));
      mAdapter=new TrendingRecyclerAdapter (view.getContext(),
songsList);
      newReleaseRecyclerView.setAdapter(mAdapter);
```

2. Adding next and previous feature

```
nextIv=(ImageView)view.findViewById(R.id.iv_next);
      nextIv.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View view) {
            position=position+1;
            updatePosition(position);
            playNext(trackDTOArrayList,position);
         }
      });
```