NEW HORIZON
COLLEGE OF ENGINEERING
Autonomous College Permanently Affiliated to VTU, Approved by AICTE & UGC
Accredited by NAAC with 'A' Grade, Accredited by NBA

**A MINI PROJECT REPORT**

*for*

**Mini Project in Mobile Application Development (20CSE77A)**

*on*

# COMICVERSE PROTAGONIST – BEYOND BOOKS

*Submitted by*

**J KARTHIK SURYA**

**USN: 1NH19CS236, Sem-Sec: 7-D**

*In partial fulfillment for the award of the degree of*

**BACHELOR OF ENGINEERING**

*in*

## COMPUTER SCIENCE AND ENGINEERING

**Academic Year: 2022-23**

NEW HORIZON
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# CERTIFICATE

This is to certify that the mini project work titled

## COMICVERSE PROTAGONIST – BEYOND BOOKS

submitted in partial fulfillment of the degree of Bachelor of Engineering in Computer Science and Engineering by

**J KARTHIK SURYA**
**USN:1NH19CS236**

*DURING*

*ODD SEMESTER 2022-2023*

*for*

*Course: Mini Project in Mobile Application Development-20CSE77A*

Signature of Reviewer                                        Signature of HOD

**SEMESTER END EXAMINATION**

*Name of the Examiner*                                        *Signature with date*

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ORIGINALITY REPORT

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# ABSTRACT

Comics are now one of the main sources of entertainment that appeal to people of all ages, from toddlers to adults, in today's technologically advanced and rapidly expanding world.

A comic book, sometimes known as a comic magazine or just a comic, is a book that contains consecutive panels of comic art that each portray a different scene. Comic book characters are utilized to convey concepts, ideas, and to highlight various global issues.

Comic books have grown in importance because of their inclusion in movies and television. In the modern world, these fictional characters are becoming incredibly popular. These cartoon characters stand out and have specific skills that help them solve issues. These characters are now examples of how to improve one's life. The portfolio of comic characters in this mini project, which is intended for all comic book aficionados, ranges from The Phantom, the very first comic character, to Moon Knight, the most recent.

This small project was created using XML, Java for Android, and JavaScript with database connectivity, and it runs on a mobile device. The complete piece of software was created in the ANDROID STUDIO utilising Java and XML for Android. The mini project, which is entertaining for users of all ages.

# ACKNOWLEDGEMENT

The satisfaction and euphoria that accompany the successful completion of any task would be impossible without the mention of the people who made it possible, whose constant guidance and encouragement crowned our efforts with success.

I have great pleasure in expressing gratitude to **Dr. Mohan Manghnani**, Chairman, New Horizon Educational Institutions, for providing necessary infrastructure and creating good environment.

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I also express my gratitude to **Mr. Manjunath Swamy, Senior Assistant Professor**, Department of Computer Science and Engineering, my mini project reviewer, for constantly monitoring the development of the project and setting up precise deadlines. His valuable suggestions were the motivating factors in completing the work.

**J KARTHIK SURYA**

**1NH19CS236**

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# CHAPTER 1

# INTRODUCTION

## 1.1 Android

Android is a piece of software that is open source, which permits anyone to use it. It is also built on the Linux operating system. It is used to create apps that are meant to run on mobile devices with screens of varying sizes, and the application adjusts to the various screen sizes in accordance with them. Android aids in the creation of programs, and once such applications are created, they can be submitted to the Google Play Store where anybody can use them.

### Linux Kernel

The operating system that powers everything is called Linux. It is located below all of the severable strata. There are various patch-like modifications to the Linux operating system, notably version 3.6. There are about 115 patches on it. Here, a fundamental degree of abstraction is provided, and this level of abstraction comprises abstraction within the physical device along with certain significant drivers like the keyboard, display, and photographs, among others, in addition to everything else. The kernel is excellent at handling tasks like managing networking between devices, and it also handles numerous other network management functions very effectively. It assures that enormously high numbers of arrays of device drivers also function properly and without many difficulties, and all due to this, interacting with the hardware that is mounted on the peripheral is no longer a difficult task.

### Libraries

The Linux kernel is below a number of libraries, including an open-source web browser engine called WebKit, a fairly well-known library called libc, and even support for databases, especially when the latter is enabled.The database is SQLite, and it's a really great repository that's also helpful for sharing and storing information that belongs to the program. The recording and playing of audio and video are supported by libraries. It supports SSL libraries, which are responsible for ensuring internet security, etc.

### Android Libraries

These libraries are distinct from the ones previously described since they are very specialized Java-based libraries designed exclusively for Android development, not for fundamental features like network connectivity and the Web Kit browser engine. A few of the libraries that make up this group of libraries are an addition to the current array of tools that enable users to design interfaces, produce visuals, and access databases that they may or may not have created. Following is a summary of the key java-based libraries that are available under Android and that any android developer would have access to:

- One of the foundations of Android application development is the android.app, which grants users authorization to use the application model.
- Android.content - It gives users access to content, enables publishing, and enables communication and data exchange across various application components.
- Android.database, which is made up of classes from the SQLite database management system, is used to make it easier for users to access public and provided data.

### Android Runtime

When it comes to architecture, Android Runtime comes in the third place and is only present at the last two layers. There is also a key component named Dalvik Virtual Machine available runtime for Android. Class files are converted to Dalvik executables via the Dalvik Virtual Machine.This kind of virtual machine was recently developed and optimized for Android used by Dalvik Virtual Machine, a Linux feature that combines memory management and multi-threading. It is described as being inherent in Java.

Android offers core libraries, and these core libraries make it possible for developers of Android applications to publish applications created with Java programming languages.

**Application framework**

Java classes are used to provide a large number of higher-level services. The use of these services in the Java developers' created product is authorised. The following services are included in the Android framework:

- Activity Manager: This tool controls all phases of the lifecycle of an application, including the stack of activities that are piled one on top of the other and are pushed and popped in response to demand.
- Content Providers - This provides application developers considerable latitude to publish their creation alongside other applications.
- Non-code embedded resources are made available to the public by the resource manager. There are several embedded non-code resources, including strings, colour schemes, and user interface layouts.
- Notifications Manager - This is necessary to guarantee that the user has access to options like alerts and notifications.
- View System: The interfaces that users utilise in programmes are created using a set number of views.

## 1.2 Activity lifecycle

The ideal way to define an activity is as a single screen that is a component of a bigger Android application. We can claim that it resembles a desktop window quite closely. In general, an application can and should include several activities so that when an event occurs on the first activity, it can flow to the other activities.

An activity goes through a variety of phases during the course of its lifespan, and this is referred to as the activity lifecycle. Activity stacks are responsible for managing each of these stages that the activity goes through. And it's not like the prior activities stop whenever we start a new one. The old activities continue to exist even when a new one is created. They do exist, but they are arranged as a stack, with the most current action appearing above the least recent depending on when it was last accessed.

## 1. onCreate()

The function or method is invoked each time an activity is created in order to complete all the tasks that must be completed just once during the cycle of application activities and should not be repeated. The onCreate function handles tasks like performing static work and data item binding to the widget or element where it will be shown. The onCreate method is utilised in these situations because there are occasions when restarting an application necessitates knowing its prior state in order for it to function properly.

## 2. onStart()

We can call this function once the user has observed the activity. When the activity is running for the first time, it is executed after the onCreate method is called, and when the activity is running for the second time, it is the first to be called. The onResume method, which is used when an activity has been in the background but has to be brought to the foreground, comes after this function and is used to restart the application.

## 3. onRestart()

This approach is used when the user needs to resume an activity that has been halted for a while. When the activity has moved past the first backdrop that was produced and his When the user needs it again after the activity has been stopped, it is called. Next, the onRestart() method is called, and the starting function is utilized once more.

## 4. onResume()

When the user requests the same page again and the activity is at the bottom of the stack or possibly somewhere in the middle, On Resume is called, and the page is then moved from the bottom or possibly somewhere in the middle of the stack to the top once more.

As a result, the activity is currently at the top of the stack and communicating with the user who requested the page at this time.

## 5. onPause()

When an activity is running in the background but has not yet been stopped, it is invoked. It is the opposite of onResume (). This callback will be activated on the top activity once an activity is launched before another activity (currently on screen). Heavy processing is not advised in this section since the activity under the active activity won't be formed until the active activity's onPause() returns.

## 6. onStop()

When a user is having trouble understanding what is going on in the programme, they request for assistance. OnRestart() is called when an activity is removed from the background, onDestroy() is called when an activity is finished or terminated, so that's basically when the user doesn't need to do anything else in the application that was created, and nothing is called when an activity is simply running in the background. Note that this method might never be invoked under low memory situations, when the system effectively loses the ability to handle huge volumes of data or where there is not enough memory to allow the activity's process to continue running after its onPause() function has been called.

## 7. onDestroy()

The method below is called when an activity is stopped; this action may be the result of calling the finish() function or it may also be the result of any action that has resulted in the deconstruction of the programme to free up space.

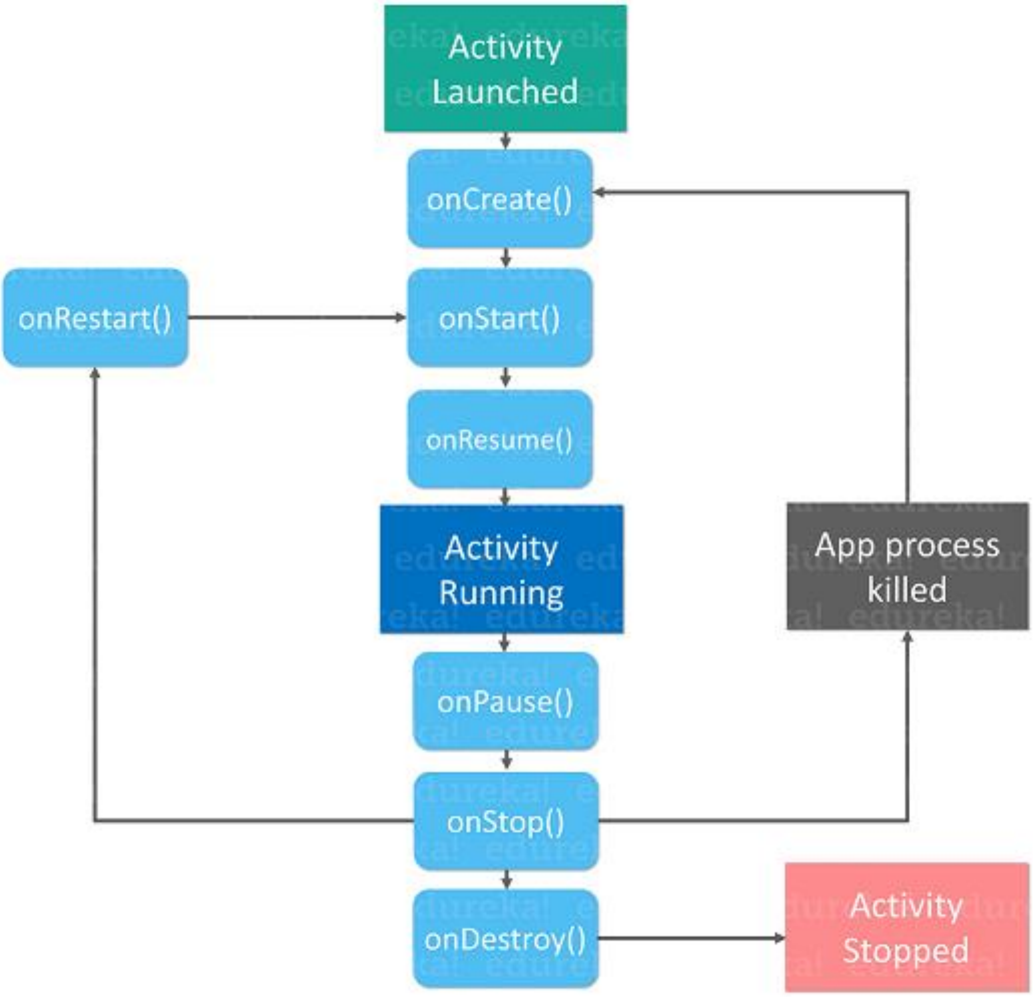


**Fig. 1.1 Android Lifecycle**

## 1.3 About Mini Project

This online resource offers explanations of several comic characters from various genres in a responsive and interactive layout. It offers a wide variety of comics from different authors, magazines, and illustrators. Additionally, users of this mobile application have the option to look out fascinating facts about numerous cartoon characters. It displays the attributes of a hilarious character, including their strengths and weaknesses. Additionally, it has an entertaining feature that enables you to select the ideal comic character based on your appearance and personality. The tools used to construct this application were xml, JavaScript, android java. Additionally, it uses a database to store login information for the app as well as details about the many comic characters.

## 1.4 Objectives

This mobile application once completed will,

- List all comic book characters that artists have developed.
- Offers entertainment and acts as a stress relief for people of all ages.
- Teaches children, students, and the public craft of comic book authoring, composition, animation, and creative screenplay writing.
- Digitizes comic characters and combines them into a single app.
- Including creations from international artists.
- To always be easily reachable from everywhere in the world.

## 1.5 Advantage

- A search field that shows the comic that was looked for along with a button to add or remove a specific comic character from the associated account.
- Character details such as name, name, and strengths and weaknesses.
- Use a filter to exclude characters based on genres, films that are frequently watched, or comic books.

- An attractive splash page which leads to the dashboard.
- The dashboard consists of a search button which can be used to search for the desired character
- Information about the comic character like strength, weakness,name etc.
- The data is being synced with cloud hosted NoSQL database i,e firebase
- It has cloud storage where in we can store large amount of data like images, video without writing server side code.

# CHAPTER 2

# REQUIREMENT

## 2.1 Mobile Specifications

- OS: Android
- Version: Lollipop and above
- RAM: Minimum 8 GB

## 2.2 Laptop Specifications

- Android Operating System
- RAM: Minimum 8 GB
- Android Studio latest version
- Java 8 and above

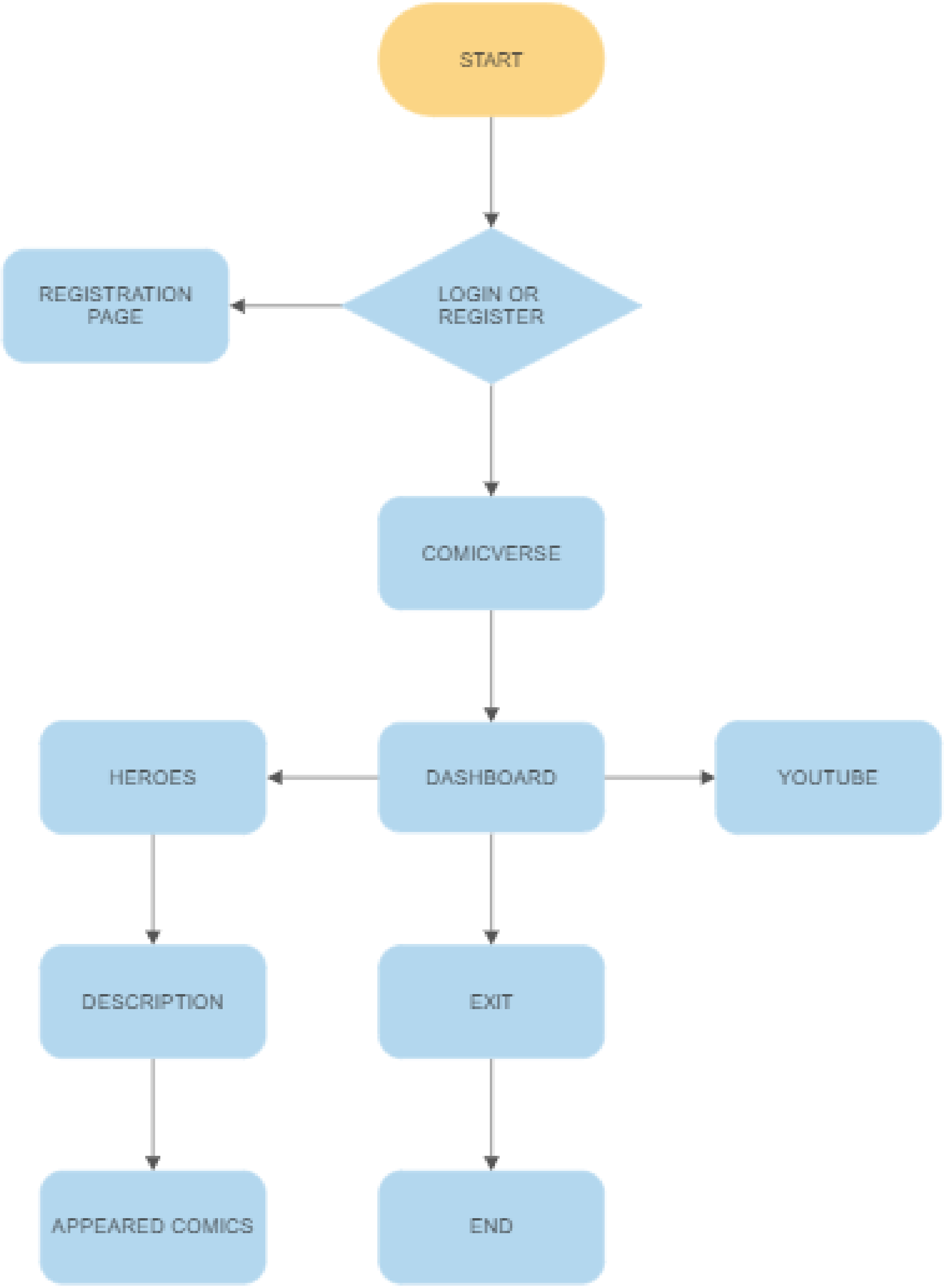
# CHAPTER 3

# ANALYSIS AND DESIGN

## 3.1 ANALYSIS

- Clicking on the app’s icon on the home screen will be directed to registration page
- User is presented with the options – Login and Register.
- Login-when the user enters the right credentials, they are directed to the about us page.
- Register- when the user enters all the fields, the user is registered.
- On successful login  an attractive splash page which leads to the dashboard.
- The dashboard consists of a search button which can be used to search for the desired character
- Information about the comic character like strength, weakness, name etc.
- The data is being synced with cloud hosted NoSQL database i,e firebase.
- The required character will be provided with their information like appearance in the comics, and overview of their life.
- The data is stored safely in the firebase so there is no theft or hacking of data

## 3.2 FLOWCHART



# CHAPTER 4

# IMPLEMENTATION

## 4.1 ANDROID CONCEPTS

### 4.1.1 Toast

It may occasionally be essential to show the user of the programme the status of an action that the application is performing in the background. This can be done by showing or displaying a toast, which is nothing more than straightforward feedback, concerning the aforementioned operation.

The toast occupies the smallest amount of space necessary, typically near the bottom middle of the screen, to avoid interfering with the visibility of the current page the user is on and distorting the user experience. The toast's message once more determines the minimum size or area required.

By doing this, it is made sure that the user's recent activity is still accessible. These messages that a toast message displays are operational feedbacks. As time passes, the feedbacks vary. The toast has a property in which the toasts are stored, preventing the user from being confused by seeing the same feedback repeatedly.

### 4.1.2 Explicit Intent

Explicit intent is used to send data from one end to the other so that the other activity may easily use the data supplied, as well as to ensure that we go from one page to another within the same application. For instance, the intent is used when we wish to send values to the next page, where the data is used to print the form and other things, such as the number of days the individual wants to take leave for. By initially declaring a print page, the intent's put extra method is utilised to transmit data from the form to the receiving printing page In order to retrieve a value, we must use a bundle and the get string method. After specifying the key, the value is retrieved and stored in a string, which is then used in the set text method of various widgets to display the result.

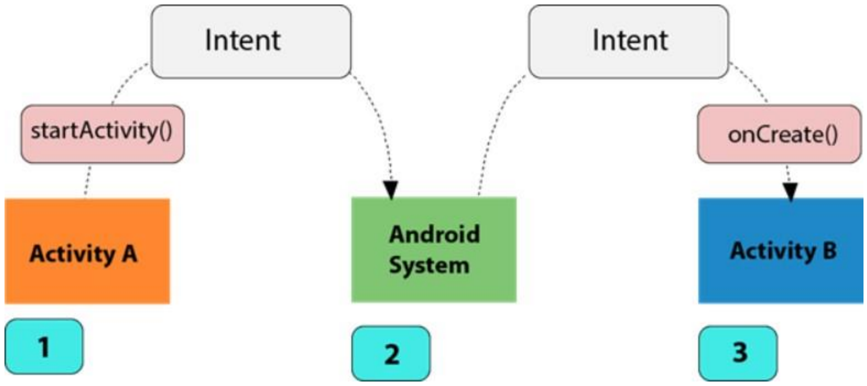


Fig. 4.1 Intents

### 4.1.3 ImageView

The programme uses the imageview class to display images. It makes sense for an android developer to include photos as much as possible to simplify the information that has to be sent to the user, and so the android developer employs imageview. The usage of images makes the programme more attractive and somewhat user pleasant. You can drag and drop an imageview widget from the pallet or add the imageview tags straight to the XML code to add an imageview widget.

The drawable folder is added, and the imageview tags specify the source of the images that must be provided for the imageview to function properly. The drawable folder is added, and the imageview tags specify the source of the images that must be provided for the imageview to function properly. Ids are utilised to refer to the imageviews in the backend and map them in the java code. Since each alteration is particular to the view, it becomes simple for us to be precise when there are several imageviews in the layout and we want to change the properties of just one or more imageviews. To ensure that the image has certain limitations and is not all over the place, we can determine its height and width. By adding onclick listeners to the java code, we can modify the properties of the image and also make it behave similarly to a button.

### 4.1.4 TextView

One of the most fundamental components of Android, the textview, is utilized practically everywhere. No matter what kind of app we create, we can't help but utilise textview to display text that we don't want the user to edit or manipulate. To effectively explain the essential information, it is simply utilised to display only hardcoded values. But because there are so many things that may go wrong and ruin the user experience, it's not always simple to use the text view correctly. The text is typically not properly visible to the user when the texview is too small.

In these situations, the developer should increase the text's size so that it is more visible to the user. They should also make sure that the colour used to display the text is one that is more readable and doesn't blend in with the background, as this could also reduce the text's ability to be read, which would again lead to a negative user experience.

Setting the alignment incorrectly when using textview is another fairly typical error that people do. No one wants to use an application if the text is not properly aligned, thus the text in the textview must be positioned in a way that not only makes it simpler to read but also improves the aesthetic value of the programme Everyone wants to use an application where the text is properly oriented, thus it should be aligned in a way that not only makes it easier to understand but also improves the aesthetic value of the programme.

The text's font can be anything because Android gives us access to a huge selection of typefaces, which makes it very simple for us to create applications that are stylish, professional, and aesthetically beautiful. As a result, more users will be persuaded to visit the website.

Additionally, the textviews contain an id that enables any developer to quickly access the textview's data and use it when creating backend code.

### 4.1.5 Buttons

In Android, a button is a clickable item that also serves as the fundamental building element of an application. Buttons come in a variety of kinds, including picture buttons. An image button differs from a regular button in that the latter simply contains text on top that describes what will happen when the user presses the button. The picture button, on the other hand, is the only one without any text; the image itself describes the button's purpose and operation. So we can have image as well as text on a button.

A button is accompanied with a number of characteristics. In the event of an image button, the image source must be supplied along with the picture's height and width to ensure that the button is within acceptable bounds and is neither excessively large nor excessively small.

For a regular button, we must describe the text that must be there in order to make sure that it clearly communicates its operation and isn't just random letters and numbers. Similar to the image button, we must impose certain height and width restrictions here. In both situations, we must provide a function that specifies precisely what action must be taken whenever there are two ways to click a button: one is to map the button to a java class, where the id is used to access the button, and then using that variable, we set the on click listener, where we must write the operation to be carried out; the other is to simply write the function in the java class and then refer to that specific function in the xml part of the layout using android:onClick.

### 4.1.6 Service

A service is a general-purpose application entry point that is not in the foreground and is used for a wide variety of purposes. Running a service has a large variety of benefits. Basically, it's something that works in the background to ensure that work runs smoothly and without mistakes, and the greatest part is that it doesn't even require the application to operate in the foreground. This is particularly helpful when we are doing a time-consuming task that will need a lot of resources.

A service does not receive a user interface because it has no interface and operates continuously in the background. A service can carry out tasks like sending an SMS message and playing music, among other things.

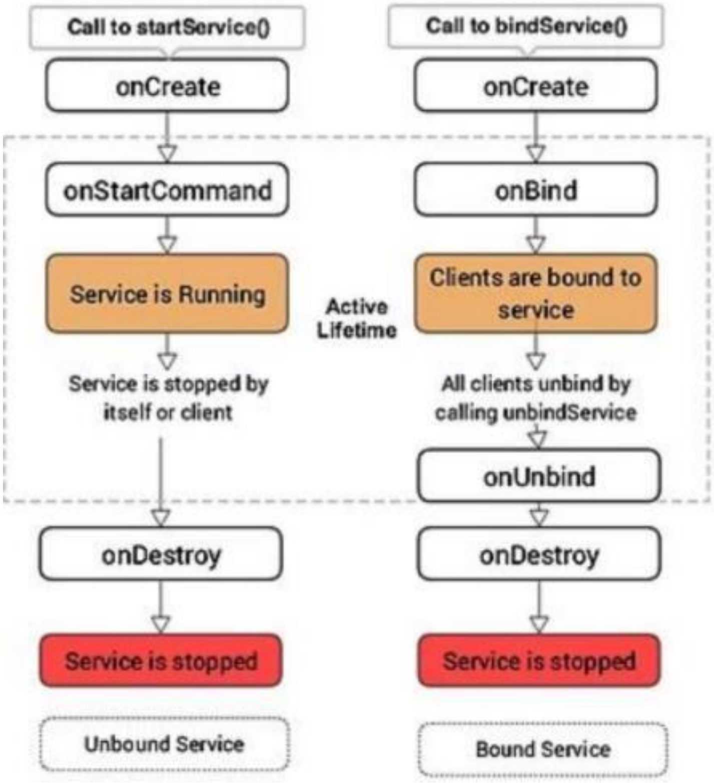


Fig. 4.2 Bounded and unbounded service

## 4.2 FUNCTIONALITY OF PROJECT

### 4.2.1 Login page

The programme has a login page with two editboxes where users can add their information. After the user enters their information and submits it, the backend checks to see whether the values are empty strings; if they are, the user is notified and asked to enter some valid values.

We also check to see if the values entered by the user are already in the database as another type of validation. The user is taken to the "comicverse" page if the value is present, where they can learn more about the purpose of the entire application before clicking "continue." Since this application also has an admin login, before searching for user information in the database, we first verify that the values submitted match the admin login credentials. If they do, the user is then forwarded to the main page.

**4.2.2 Registration Page**

If a user doesn't already have their information in the database but is willing to use the application services, the registration page of the application is used to ensure that they are not prevented from doing so.

An editbox is utilised on the registration page to receive user input, and the user enters their username and password there. To make sure the user has entered the appropriate password, they must input it twice, once in each of two separate boxes. The backend logic is executed when the user clicks the submit button, and several validations are done there.

The initial validation is a check to see if all the input boxes are completed; if not, a toast message alerting the user that filling up all the input fields is required is displayed. Once every form has been completed, we check to see if the username already exists in the database; if so, we ask the user to alter their username.

The next step is to verify that the passwords entered in both input areas are same; if they are not, toast is displayed as the error message.

The user registration is now regarded successful and the data is inserted into the database. The user is also given the success message in the form of a toast if they were able to complete everything accurately and pass all validations.

The user can then return to the login page, enter their previous login information, and continue using the service.

### 4.2.3 Dashboard

It displays a bunch of characters list where you can select your desired hero for  ore information. Once you have clicked that particular hero, it displays the character’s description. If the user wants to know the character’s appearance, he can click on the comics option, where it shows the list of comics in which that particular character appears.

The character description contains the origin and ability in detail so that the user understands more about the character. The comic lists will show the user , so that it will be easy for the user to watch that particular comic.

### 4.2.4 Firebase Connectivity

It is a software library with a relational management system that all falls under the firebase umbrella. When it comes to putting up the necessary equipment, managing the database, and providing any necessary resources, it is quite light.

The following are some of the functionalities that Firebase provides to its customers: It is entirely self-contained, does not require a server, has no configuration, and is heavily transactional.

Typically, databases like MySQL, PostgreSQL, and many more, which are actually Relational Database Management Systems, require an entirely distinct server operation in order to operate effectively.

The TCP/IP protocol is typically used to transmit and receive requests whenever we need to access anything, such a database server, and it is used whenever we need to make requests to any device. TCP and IP in this category fall under the client-server architecture.

The integration of Firebase Database with an application that may retrieve data from the database serves the aim of allowing an application to access the database. The database files are kept on a hard drive, and the values are kept momentarily in the Firebase database. The applications then communicate with the database.

The main reason firebase is referred to as self-contained is because it doesn't receive much support, and the support it does receive from the operating system or any external libraries is minimal.

Firebase can be used in any environment, which is why it is also a component of devices like game consoles and portable media players as well as smartphones like the iPhone and Android.

The need to install Firebase before integrating it into our applications is eliminated thanks to architectures without servers. There isn't any such process that revolves around the server that needs to be set up, started, or stopped.

# CHAPTER 5

## RESULT

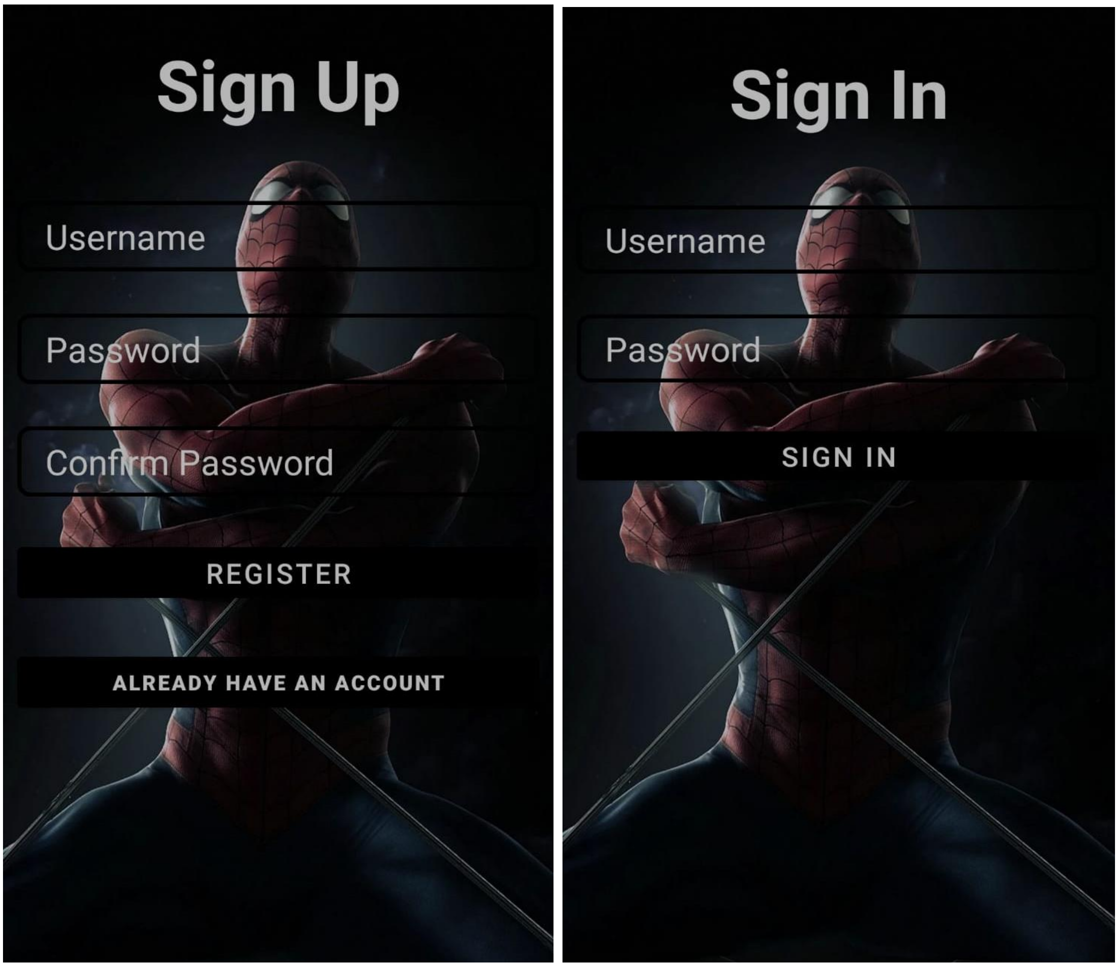


Fig. 6.1 Login and registration page

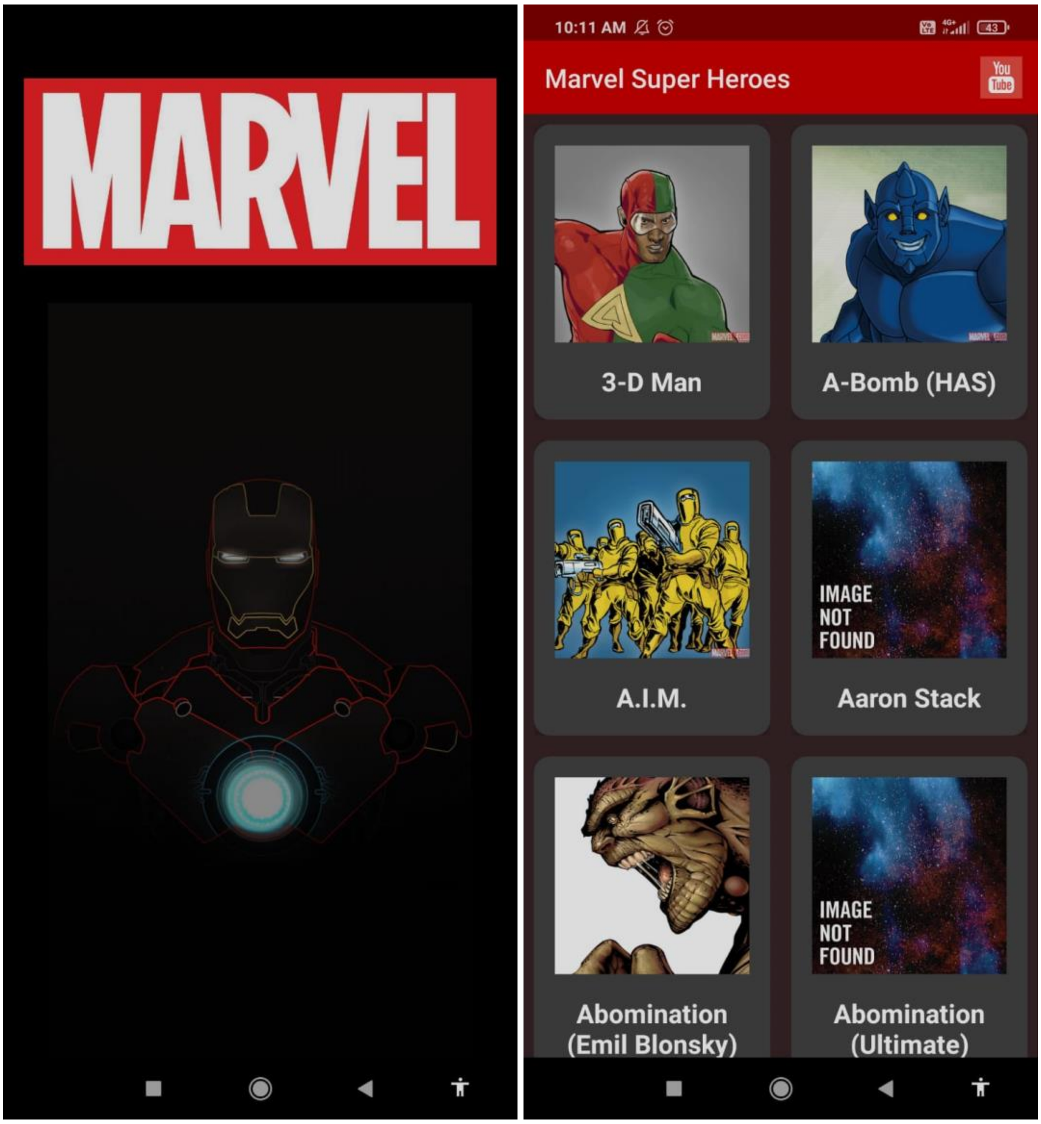
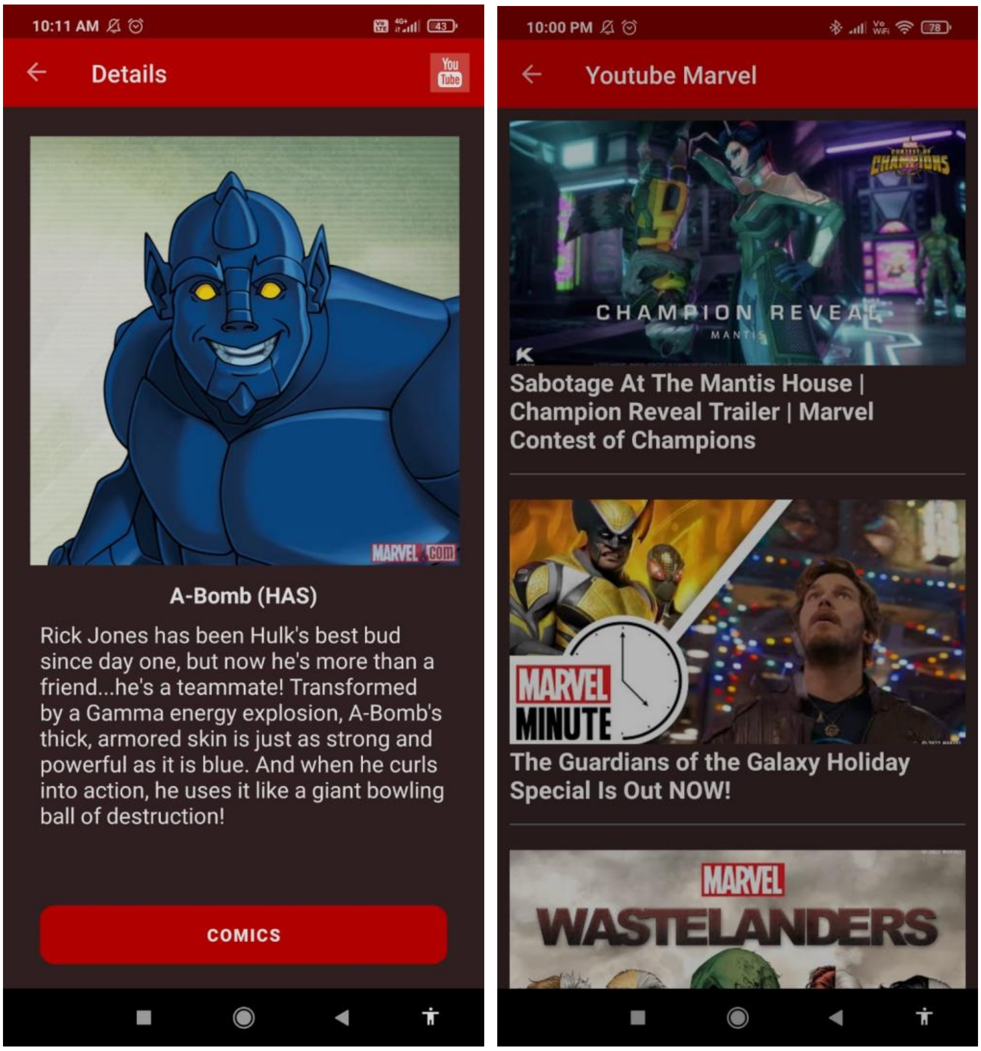


Fig. 6.2 Main Dashboard



A-Bomb (HAS)

Rick Jones has been Hulk's best bud since day one, but now he's more than a friend...he's a teammate! Transformed by a Gamma energy explosion, A-Bomb's thick, armored skin is just as strong and powerful as it is blue. And when he curls into action, he uses it like a giant bowling ball of destruction!

Sabotage At The Mantis House | Champion Reveal Trailer | Marvel Contest of Champions

The Guardians of the Galaxy Holiday Special Is Out NOW!

Fig. 6.3 Description of characters

# CHAPTER 6

## CONCLUSION

The objectives and design goals specified in the objectives and design sections of the report were met by the mini project. This project has been published online and is accessible at any time and from any place. This project was intended to be entertaining, instructive, and humorous. This project piques user's interest in potentially making their own comic by allowing them to gather all the details about various comic characters.

Additionally, it shows how machine learning can be applied to create interesting models for users all over the internet, this project also encourages users to become familiar with application, In addition to being an application for stress relief and amusement, this mini-project promotes creativity. Users are urged to learn about mobile app development and build their own unique mobile apps with supplementary style sheets as part of this project. This little craft encourages creativity while easing tension and providing enjoyment.

# REFERENCE

- www.youtube.com/paedrotech
- www.javapoint.com
- www.geeksforgeeks.com
- Android - Studio (tutorialspoint.com)
- www.coursera.org