

NEWSAPP

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MOBILE APPLICATION DEVELOPMENT 15026424

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Project Overview

This part of the report will explain the background, problem and devised solution. We will also elaborate the functional and nonfunctional requirement along with the project planning and methodology followed.

Background

Getting oneself aware of the fact lead the people of the past to print media and when the information wasn't suiting the paper it evolved to broadcast media. Broadcast media broadcasted the programs onto the specific time and those who can't cope up with the routine of that program surely miss that information. In that crucial time, electronic media came to rescue and saved the man from being the prisoner of time and routine of the broadcast media. People come online at their ease, and search for what they feel they want to read and make themselves aware of the world around them. With the advent of modern technology, people have access to all the information from the touch of their finger, but they can't decide what to read and where to read. Many news channels are providing readers with access to their content via mobile application and web interfaces, but there are so many of them that readers easily get distracted and miss the important news which might be very important to him/her.

Problem Statement

With so many sources available to make oneself aware of the facts and information people usually get distracted and follow something that is not worth of their time. And some time they require information from multiple sources, which make them so much irritated because to follow multiple platform they need to download multiple apps of different news channels and login to each of them make them frustrated, not interested to information anymore. That is the reason why social media apps are so popular because they provide diverse information although most of the information is junk, but diversity attracts the user and make them come again and again, every time in the quest of discovering something new and compulsive. With limited computing resources available in the mobile phone, downloading all the news application is impossible for some who is an ardent reader and news follower.

Proposed Solution

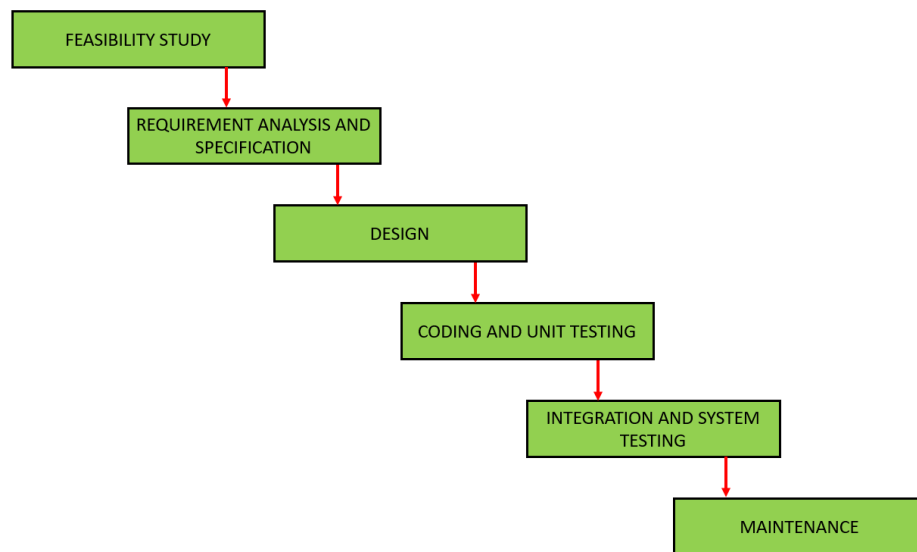
Every problem has a solution, it just only needs to be discovered. My aim is to provide users and passionate readers with a platform where they have access to all the articles from their favorite news sites. So, they cannot miss the useful information which everybody is getting. For this purpose, I'm using an API named as 'NEWSAPI'. It is use for news analysis and article discovery, but we can intelligently use it for displaying popular article from more than 30,000 sources, for our ease, only on a single screen.

'NewsApi' indexes every recent news and blog article from all our favorite sites, and with our proposed application we can get access to it easily through a single interface.

NewAPI only needs an HTTP request through which it'll parse the request and answers in the form of json objects to the user who requested. This will then just be a problem of parsing and displaying json objects and related images for user attraction. So, the development side would be purely about following client server architecture.

Development Methodology

The methodology followed to develop this software application is waterfall model. These phases are software development life cycle.



In the development of software this life cycle makes the development and post development part very easy.

Application Architecture

The architecture upon which, this application is based on is MODEL VIEW CONTROLLER (MVC). This is one of the mostly used famous architecture pattern, that splits the development into three parts which are model, view and controller. Mostly OOP applications use this design pattern to develop applications. Model are the objects that store the data from any of the relation and non-relational database. View is the Graphical User Interface (GUI) piece of the puzzle through which user will get access of the model. To access model a controller is used for this purpose, this portion is where all the logic is implemented.

Model View Controlled is a kind of circular model in which user uses the control to manipulate data in model and after getting disturbed the model in result allow the view to update as the data was changed. The update is viewed by the user which in response interact with the app once again that leads to the continuation of this never-ending cycle.

In our NEWS APP the views are xml files explaining the views and are only loaded when a controlled asked for it by the user. Controller here in android are JAVA objects or more subtly we can say them as ACTIVITIES. These control uses data from a the NewsApi that index these article on their server, where there are several response set and against every response there are java object models. Controller can easily demand data for the view by just sending HTTP GET request to the NEWS API server. The response from the NEWSAPI would always be in the form of JSON objects that are formulated based on the query given to the NEWSAPI. On successfully receiving Json objects from the API all the model objects then inflated. Sending of HTTP request and handling its responses are all being handled by a singleton class named as ApiInterface, where as rest of the classes fetch this functionality through the class APIClient's getApiInterface method. Controller on the other hand add value to the inflated objects using model objects.

Requirement Analysis

Usability of any software is determined by the functional and nonfunctional requirement it fulfills. Following are the list of all the functional and nonfunctional requirement.

Functional requirement

Anything that is expected from this system to be performed for the intended audience is deemed as functional requirements. Functionality of the system is explained below.

USER

- ✓ User can generate a request to see the top-headlines from all over the indexed news database.
- ✓ User can also be able to query specific keyword according to his/desire and application should generate a response based on that keyword.
- ✓ User can be able to read the description of the article before even reading it in full view.
- ✓ User should be able to read the article in full webview.
- ✓ User should have the option to view the article in its browser.
- ✓ User have the option to share the article via its messaging applications.
- ✓ User can read article in other language.
- ✓ User can save the article and view it offline.

Non-functional Requirements

Nonfunctional requirements are subjected to application performance, its ability to scale, Availability, Maintainability and Usability. Following description evaluate the nonfunctional requirement

Performance

This application's performance is proportional to the internet speed. If the internet speed is sufficient then the application won't need any time to display the data as it works asynchronously independent on the other tasks.

Scalability

Application is robust and doesn't affected by the amount of users. As API is subjected to handle all the queries, so we first need to notify the API about the amount of users. Initially the API we are using is for development purposes and allow us to query the API 1000 times a day. If the amount of users for our application increases we can buy the paid package with more number of requests. Other then this reason, application can handle any number of clients.

Availability

Our application demands internet as the basic entity for displaying data on the go. As our application query to our database/api on the run so its functionality is subjected to the internet of the user and the response from the NEWSAPI. If any of the above explained service is down the application would not respond and instead should show appropriate error messages.

Maintainability

Application follows most of the android's design pattern and more importantly MVC model. That is the reason our application can easily get changed, maintained and upgraded.

Usability

The ability of the user to freely and easily use the application or we can say the ease for the users to use this application measures the usability. As android material design principals are applied so the usability of this app is pretty straight.

User Interface

User has only the application to interact with the data the api generate, so there must be an adequate user interface that fulfills all the basic needs of an android application and make the application interactive and robust.

Prototyping

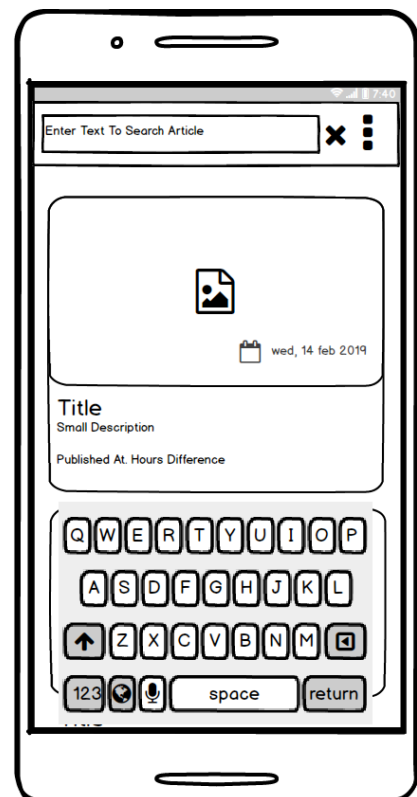
Following prototypes are formulated to decide the workflow of the application before its development in android studio. Each screen has been designed using balsamiq wireframing software.



This Will be the first window of my news app. This app will show the trending news of all time and the news related to specific key word given in the search bar that will be displayed when clicked.

The articles are being populated by an api known as NEWS API, which give results using json objects. These json objects will be parsed into image, tile, author, date, published website, description, time in to the models prepared. These models will be shown in to recycler views. This number of cards will be dependent upon the amount of result gathered from the news api.

This screen will be shown in response to the user click of the icon search. Here user will query a keyword that will in return generate a query to the news api including that keyword and news api will do the rest.

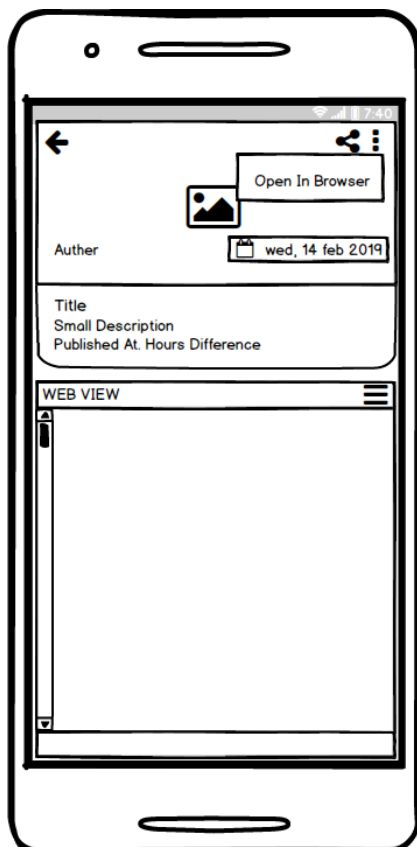
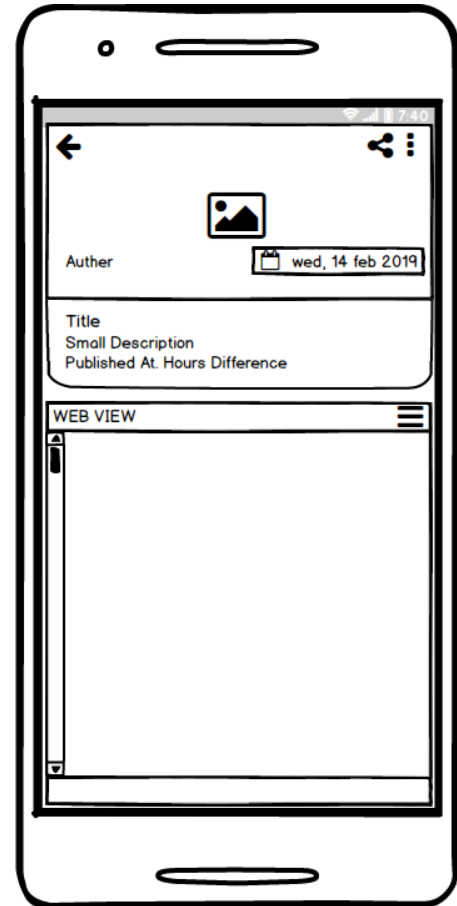


When any of the news being clicked by the user, no matter which portion of the card, a new activity will be opened, where on the top will be the same card to make the user aware of the news, he clicked along with a new window which would be a web view.

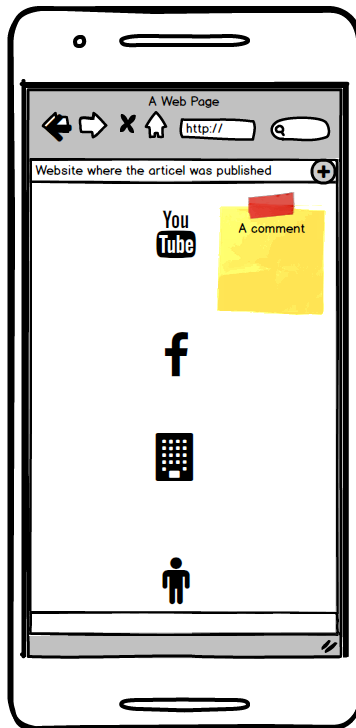
The task of the webview would be of generating a web page based on the URL given to it. this web view would not be editable, but user could scroll according to his or her desire.

The user can view the same article on the web via browser by just clicking on the three horizontal dots above which opens a menu in which there would be an option to view on the web.

User would also be able to share the news via already installed application (capable of sending things) in the mobile phone.

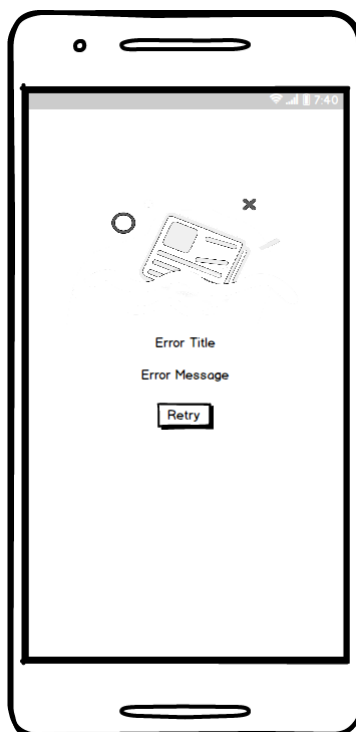
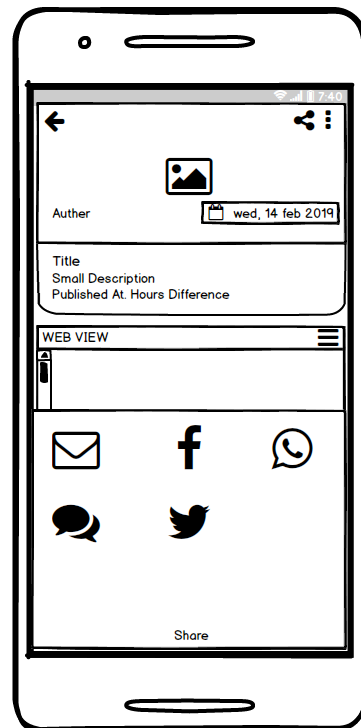


This would be the next window when the user clicks on the option button. Here open in browser is the option he/she requires.



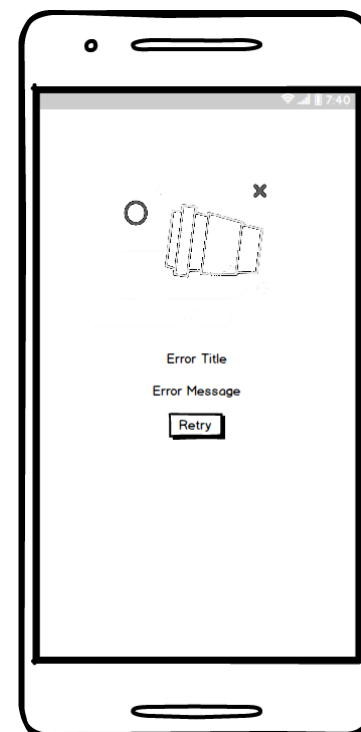
Already installed browser will be opened and then the URL will be loaded.

This window will be shown when the user clicks on share button. It has option to share with the application already installed in its phone.



This dead screen would be use for showing every kind of error. Most likely web integrated apps get error 404 not found and error 500 server broken.

If the internet is not connected or other issue with could be occurred before the connection with the api. If any of that kind error occur then the user will be shown with different screen with and error title, description and a retry button that will be redoing the requests.



Implemented Interface

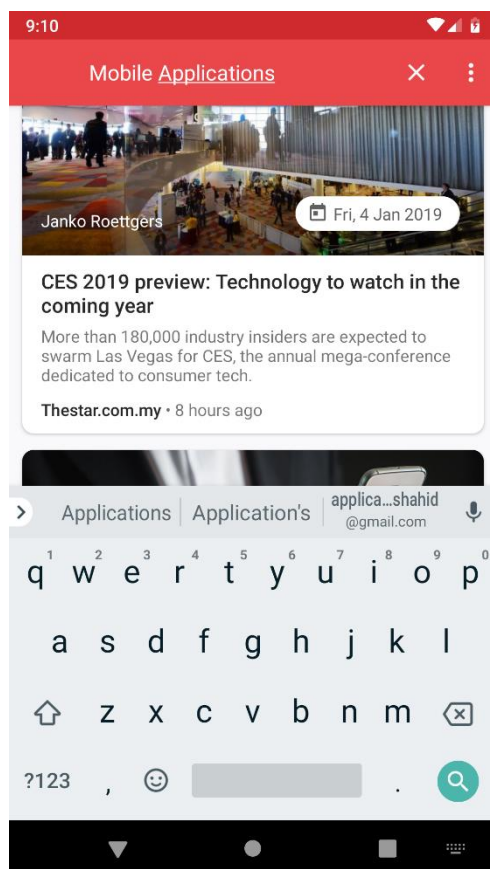
This part of the report will cover the practical approach adopted to make the prototype possible.

Newsfeed Screen

As the application is intended for the general audience and there is nothing to be stored and protected, so the first screen would be of the news feed in which top articles that are trending on the web and gaining views world wide would get displayed here. It is a scrollable view on which user can infinitely scroll the screen and make aware of more news until it reaches the end. There is no min or max results as recycler view is implemented here so this doesn't matter. Every news here has an image, title, author, date, short description and time. Clicking each of the news would change activity and transfer the user to the new one where user can read the whole news.

Search Option

This screen has a small icon on top of the header bar that signifies the search capabilities it has. People usually wants to

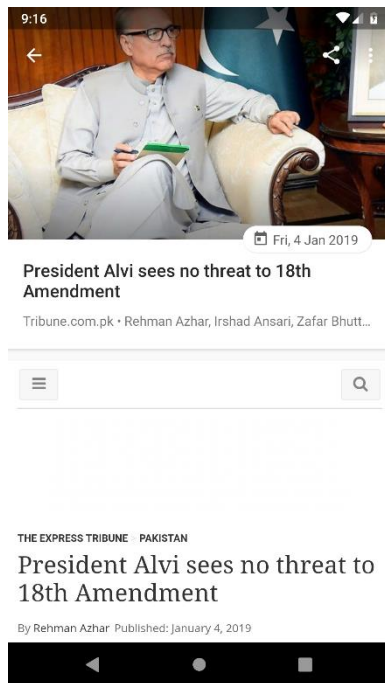


read articles of specific type for example as there is

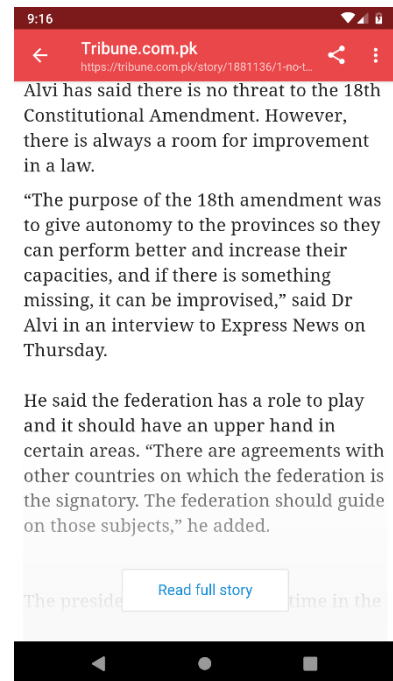
season of football world cup people will be going to search for it and wants to read about it. To cure the thirst of the reader as he doesn't need to search the web or scroll all the way down to find the topic, he wants to read we have introduced this feature in our application that get the keyword from the user and search it in the indexed articles gathered from more than 30,000 sources and display the related articles in return on the same screen. So, user can get the vast variety of news, information, facts from all over the internet at the ease of its hand.



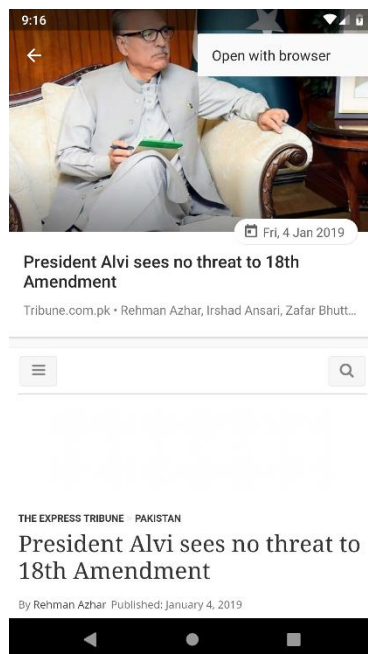
Detail News



Every news displayed here has a full back story of its own. A single click on the card will make you travel to another activity named as news details, where user can see the same news card along with the details of the news in a new web view underneath it. The web view would get all the information from the website where the article was published and show it in the window of the detail news. The screen is very interactive and material design friendly as it also applies animation and annotations to make the feel as if he knows about the application from the beginning.

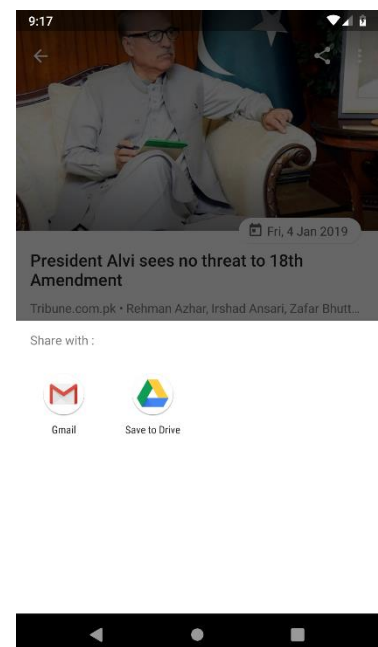


As the user scrolls down, it can see the article in full view. Full view is where the upper card gets hidden and only the link of the article is visible along with the options. Upper right corner has an option button and a share button. Upper left corner has a back button.

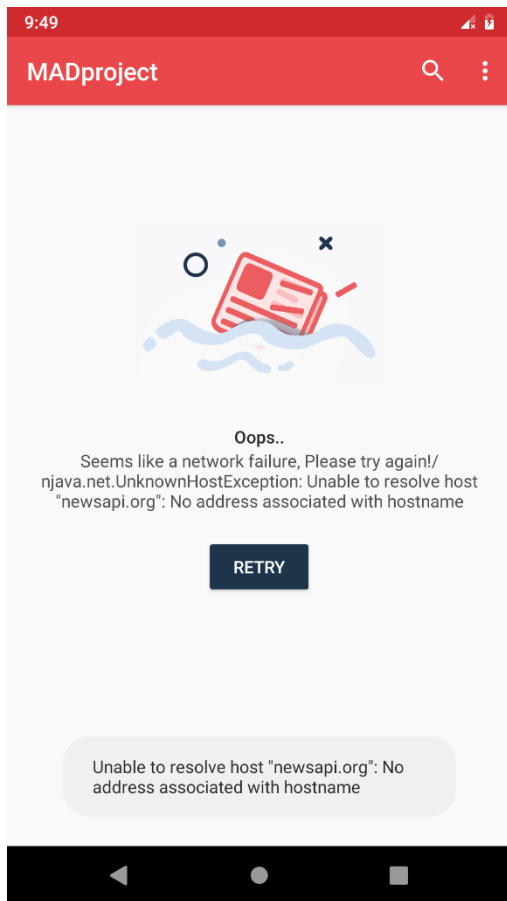


Option button displays option for the user to open this news in the browser of his choice where he can avail the functionality of the browser and can read the article at ease. Along with the option button, there is a button indicating share option that displays an option for the user to share the link of the desired article with his friends, family, acquaintance, people from work through the same apps he/she uses like WhatsApp, Gmail, Facebook, Skype, Imo, message, Twitter, and many more.

Clicking any of the option from the share menu will copy the URL from the current page and along with a special message of our choice sends to the user of our choice from the application of our choice.



Error Handling



As the application has all the functionality it needs it must be bug and error friendly. Anytime when the internet is not connected, or the user is being sent with a 404-error message or somehow a misshaping occurs and send the user with internal server error -00 we can handle these errors in more user-friendly way. Displaying the user with a creatively adopted message that helps him/her understand the problem.

It displays a self-explaining icon showing that the news api is unaccusable along with a guessed problem that could happen in this error message. With user friendly message a typical error message is also being displayed here, so anyone with a little or no technical information can search the error and resolve it in no time as the support of generic errors are available over the web and can be accessible in minimum clicks.

Different Screens

This application is for vast variety of users and thus adjust itself on each of the device it installed on. It uses small to large icons and fluent design which make it more attractive and appealing.

Android Design Principal

Delight me in surprising way

Who doesn't like surprises? Users gets board with same lame things they see every now and then and with the same app that tells the same boring things then who is going to get that? Our app surprises the user every time he/she opens the app with some interesting news for him.

If looks the same, acts the same

Users have the reason to think that certain icons should behave in a certain way. We in this app apply this same psychology and use minimal text to give user what he/she needs

Real objects are fun

Make user give the feel that things are as the same he/she is use to in this same app. Make use of the real world objects instead of boring buttons and stuff

Images are faster than word

We genuinely use images from the articles as they attract the readers attention and make them stick with the application for as long as there is no time constrain.

Its not users' fault

Prompt the user with friendly messages and icons.

Keep it brief and simple

Make things brief for user. As in our app only minimal functionality but quality work is implemented.

Advanced Feature

Application uses android's built-in light theme provided by android support library. Whereas, different colors combination from material.io are also implemented in here.

Recycler view is also implemented to make the content available on the go. Content loaded asynchronously in to the app and then user can scroll infinitely.

For every screen density multiple imagery is used, so that in different screen pixels don't get distorted.

Small amount of animations are also introduced to make user feel an interactive environment.

Functionality

This section will elaborate the functionality of the app.

Activities

This application has two activities for the users. Each activity with a base class as `baseActivity`. Each activity has different views and layout just make things look interactive and robust.

News Feed

A news feed screen displaying content in recycler view is being shown at first screen and then most of the action are available to operate here. User can use our feature to search for more content and to find extensive articles over the web which might not be visible using simple scrolling view and all. Option button available on top can be used to change theme, language and country of the app.

Detail News

This part of the application will be viewed after the news card being clicked. This screen animate itself to the next page where user can see what is being said in detail with the help of the webview. User have the ease to view content without leaving the premises of the application.

Options

Open in Browser

User have also the ease to open the current article into the web browser.

Share

User can share new with other app via this option.

Use of Web Service and data handling

To generate data for our application we are using newsapi that give the results in json format. To p

NewsApi

News api is the building block of our application as it is the database, it is our server and it is our content provider. It uses REST methodology to work with. We generate a rest call with the help of our rest api and then we get a response in Json format that is then being parsed into the models created.

Retrofit

It is the rest client for android. It is very famous and recommended by google. It is a high level rest abstraction build on top of another pure http client for java that is `OkHttp2`

OkHttp2

`okHttp` is a prerequisite of retrofit as it has all the functionality retrofit library uses.

Location aware

Our application is location aware and show content depend upon the country of stay.

Testing

Test is basic need of the development. If you discover any bug at production stage the cost of its removal would be very high.

Espresso test

We have done espresso testing on our application. It is an android testing framework to test the UI component of the application.