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# Flutter-Modern and Easy Technology to Build Applications

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***Abstract:** As the today's world is concerned with speed and ease of the people , the need and growth of this aspects is also required in the application of the mobile development . This paper focuses on the android development technologies used in development of applications .In the growing world of technologies. During advancement of modern world applications have became a major part of everyone's daily life . In todays life how complexity can be reduced is given more importance . There are various platforms which can be used for development of applications for windows , MAC , IOS, android ,etc. One of the popular one is Android Studio .Flutter is a framework like used for development of applications . It is open source SDK tool used for developing mobile applications for iOS and Android operating systems . The following paper describes the advantages of flutter tool over other development tools .*

***Keywords:** Android, Flutter , Development, Operating System, Mobile Applications , DART.*

## I. INTRODUCTION

As the technology is growing fast the use of mobile phones is also growing rapidly . The use of mobile phones has become an essential for human beings and it's usage will also increase in future . Mobile phones have reached everywhere from trade to insurance , daily needs to medicines or healthcare, social media , streaming platforms , etc . Nowadays each small scale industry also has a developed application which can be operated on mobiles be it a company or institute . Nowadays even to enter the some housing society guard verifies the OTP using mobile phone applications . These mobile applications have increased the ease and comfort of many people by reducing their paper work and has been proved beneficial for the day to day life of humans . As the demand of mobile increase the scope of applications also grows . Mobile needs various applications to carry out various tasks using operating systems . The applications with least complexity is preferred by users as the performing of tasks takes place easily .

As the complexity is the issue of user so as it is to developer . Developer has to develop the application for various platforms so that the application can reach to maximum number of people . There are various operating systems present in the market . So developer has to choose which operating system to select . As the developer can code the application for a single operating system as the single time . The developer has to perform the development of other code for the development of application for other platforms . If same application is to be made for different number of platforms it is very hectic task . Developers have to use various tools , learn different programming languages , develop other cases as per the respective operating systems . This may lead to loss of time as well as money also .

So to solve this problem of cross platform there is a platform developed by Google called as Flutter which is an open source framework in the year 2017 . Main advantage of flutter is that it allow developer to develop the code for different platform from just single code . For example Flutter only requires one codebase and one programming language to develop application for Android and iOS . Means while using the one codebase e flutter creates two different applications one for Android and other for iOS . And for implementing it flutter uses only 1 programming language which reduces the effort of the programmer . The programming language used by flutter is dart . It is the language used for front-end as well as for back-end to provide the user friendliness to the developer . There are various other advantages also of flutter .

## II. WHY TO CHOOSE FLUTTER?

Flutter is Google's portable user interface SDK (software development kit). Flutter can be used to develop applications which can be used on web , desktops and mobiles. It is easy to use as compared to other SDK's like react native . It interacts with camera , storage , network which is used in enhancing the use of mobile phone . Combining all the factors the applications can be created quickly for other operating systems as well.

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Flutter is the future and very easy to implement as compared to other frameworks use for developing the applications . It has gained the popularity in the very short period of time . Dart programming language is also one of the most fastest growing language nowadays . Big companies applications are currently working on flutter like Alibaba , Dream 11 , Beike , Google Pay , ByteDance , Crowdsource , eBay , Hamilton , Sua Musica , etc .

## III. FEATURES OF FLUTTER

FLUTTER FRAMEWORK PROVIDES FOLLOWING FEATURES TO THE DEVELOPERS

*1)* Flutter is modern and reactive framework . So it is easily adapted by developers while developing the applications .
*2)* Flutter uses DART programming language which is easy to learn and one of the fastest growing language.
*3)* The pace of development of applications is fast in flutter as compared to other SDK's.
*4)* Flutter contains huge widgets catalog which can be directly used by developers while developing the applications . Using this widgets developer do not need to code that particular features and it saves time as well as cost .
*5)* Flutter has user friendly interface which proves to be a good point for the developer .
*6)* Main feature of flutter is it runs same UI for multiple platforms.
*7)* The cross platform feature helps the developer to develop the applications for the various operating systems at the same time . This reduces developers cost , effort .

## IV. DART PROGRAMMING LANGUAGE

DART is programming language used in flutter . Flutter is not a programming language . Flutter is a SDK's with the prewritten code which consists of widgets which can be directly used by developers while the development of application . To develop an application in flutter developer need to code the particular application in the DART programming language .

DART is a programming language used which also developed by google . DART programming language is easy to learn .The core goal of DART language is to provide developer with a set of tools and programming language that makes most effect and evolves as user requirement grows .

DART is made in such a way that it is familiar with developers of background of other language like javascript , typescript , or any other type of object-oriented language .

DART also contains various built-in libraries which can be used by developers while development of applications . Due to this all features and functions of DART it is one of the best choice of developers .

## V. FEATUERS OF DART PROGRAMMING LANGUAGE

-DART language is made for especially making the user interfaces . The optimization of DART programming language can be high while developing the user interfaces .

-DART also has the feature of hot reload . This feature is very useful feature for the developer point of view . Using this feature the developer can see the instant changes done in the application after its development in small iterations . This feature is somewhat same as feature of live server in the Microsoft VS Code .

-DART is object oriented language . Means in dart each thing is an object. So developers who have background of any other standard object oriented language like Java , C++ , etc. can learn the DART language easily and effectively .

-DART also supports multiple operating systems like windows , Linux , etc . It has it's own virtual box which allows us to code and run in that particular environment of any operating system .

## VI. ADVANTAGES OF FLUTTER

### *A. Widgets*

Flutter has the huge set of ready-to-use widgets which can be directly used by developer while developing the application . This becomes easy for the developer to directly use rather than developing and put effort in it .

### *B. Faster Code Development*

The code in the flutter gets developed faster and effortlessly as compared to other platforms . It also has major advantage of cross platform development which makes the developer's task as simple as possible .

*C. Performance Is Close To Native App*

The application developed in the Flutter also performs well as compared to the application developed in the native . The UX of flutter is good . It is not bad to say that in most cases a user cannot differentiate between the native application and the flutter developed application . Shape , colour , shadow , transitions , clipping , transformations , etc all these factors and pretty much good to use in flutter without adding the workload to the developer .

*D. Can Go Beyond Mobile Appliactions*

The flutter has ability to go beyond the mobile applications . It has ability of developing the web based applications in future also . Recently google has stated that the applications developed by flutter can go for web based hosting without altering the code , So that is magic of Flutter .

Its other advantages include that it has separate engine , no dependence on any other platform for UI specific components , minimizes the risk , losses, and time taken for developing the application , etc.

*E. Widgets In Flutter*

Widgets are the building blocks of flutter based application . This are the most basic units when it comes to development of applications using the flutter . Widgets are of various types when it comes to developing of application like text , row , container , column , etc. comprises of widgets .

Each element of the flutter application is a widget . The view that a user experiences on the screen of the mobile is completely made of widgets . The structure of the code is the tree of widgets . There are manly 14 types of widgets present in the application developed by flutter . And these 14 are mainly categorized into 2 which are

1) *Stateless Widgets:* This are the type of widgets whose state cannot be changed once they are built . These are immutable once they are built . Example of these are TEXT , ICON BUTTONS , etc.
2) *Stateful Widgets:* This are the type of widgets whose sate can be changed when developed . They are mutable . The variables, data , input , etc of the widgets can be changed after the development of the particular widgets . Examples of these are Radio button , Form , Text Field Input , etc.

THESE ARE TYPES OF WIDGETS ARE:-

a) *Accessibility:* These are the widgets that make a flutter app more easily accessible to user and developer
b) *Animation and Motion:* These widgets add animation to other widgets present in the flutter application
c) *Assets, Images, and Icons:* These widgets take charge of assets such as display images and show icons which make the application more interactive and friendly to use .
d) *Basics:* These are the bundle of widgets that are absolutely necessary for the development of any flutter application. They are most basic widgets required .
e) *Cupertino:* These are the iOS designed widgets used in application developed using flutter
f) *Input:* They provide the function of input to the flutter application .
g) *Interaction Models:* These widgets are here to manage touch events and route users to different views in the application. These are widgets which state how the application works when developed using flutter .
h) *Layout:* This bundle of widgets helps in placing the other widgets on the screen as needed. The display of widgets in enhanced by using it .
i) *Painting and effects:* This is the set of widgets that apply visual changes to their child widgets without changing their layout or shape.
j) *Styling:* This deals with the theme, responsiveness, and sizing of the app . These make the application as stylish as possible to improve it's responsiveness and acceptability by the maximum number of users possible .

## VII. CONCLUSION

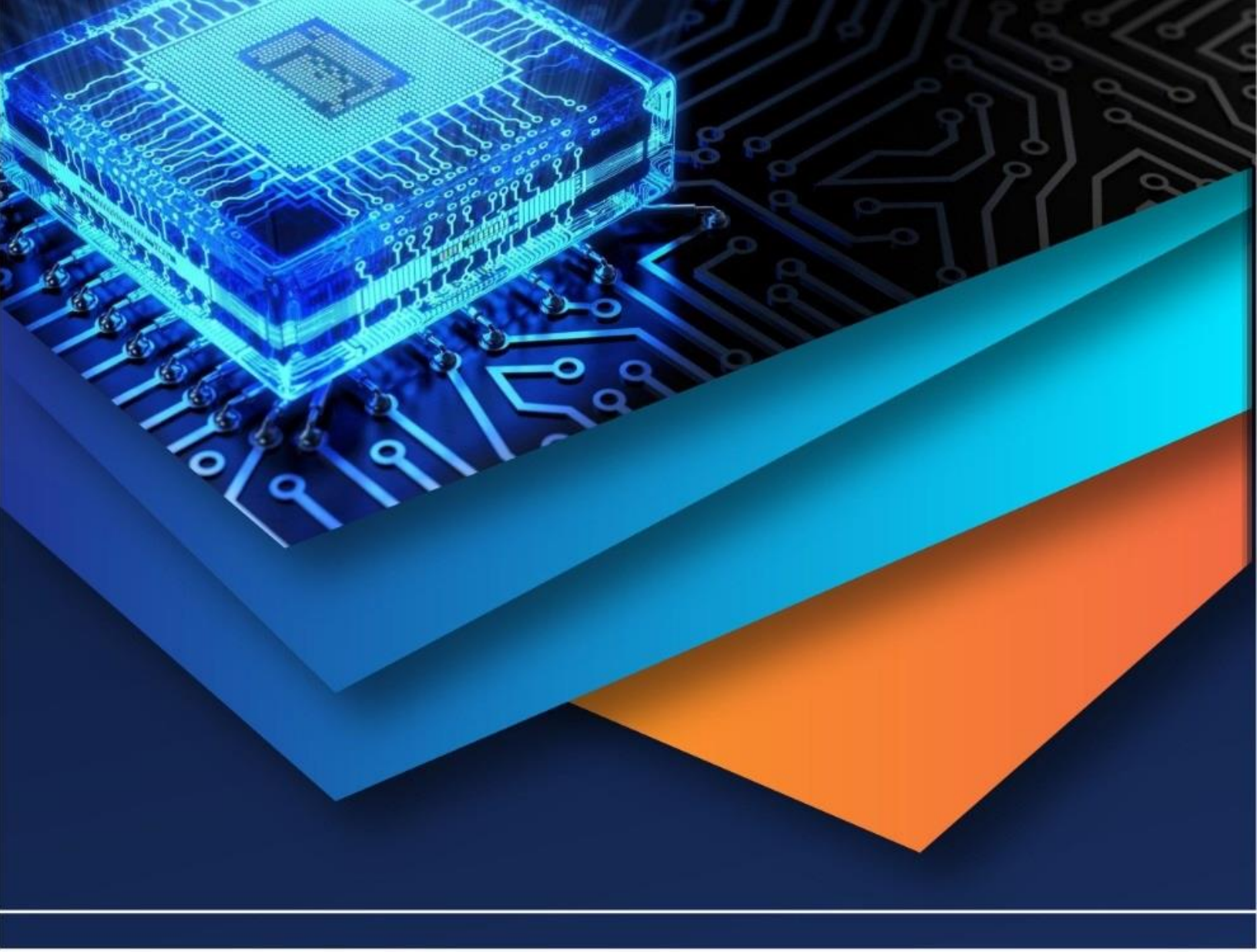
With all the advantages and features of the flutter it has proven to be the on of the most innovative and beneficial technology for the application development industry . This is future based and it proves to be a great opportunity for the developers . In short span of time it has proven its benefits which are truly unexpected and can't be ignored. It has it's own powerful engine and framework which is also a good point in this huge competition market . Using flutter it open the ways for the developers to develop the application in the easiest way possible.

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Showing it capabilities it proves to be promising framework and can be used by any developer and be future ready . Flutter proves to be a good tool to a developer to be efficient in many ways . So in our opinion one must learn implementation of flutter if he wants to become a future developer .

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