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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.

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.

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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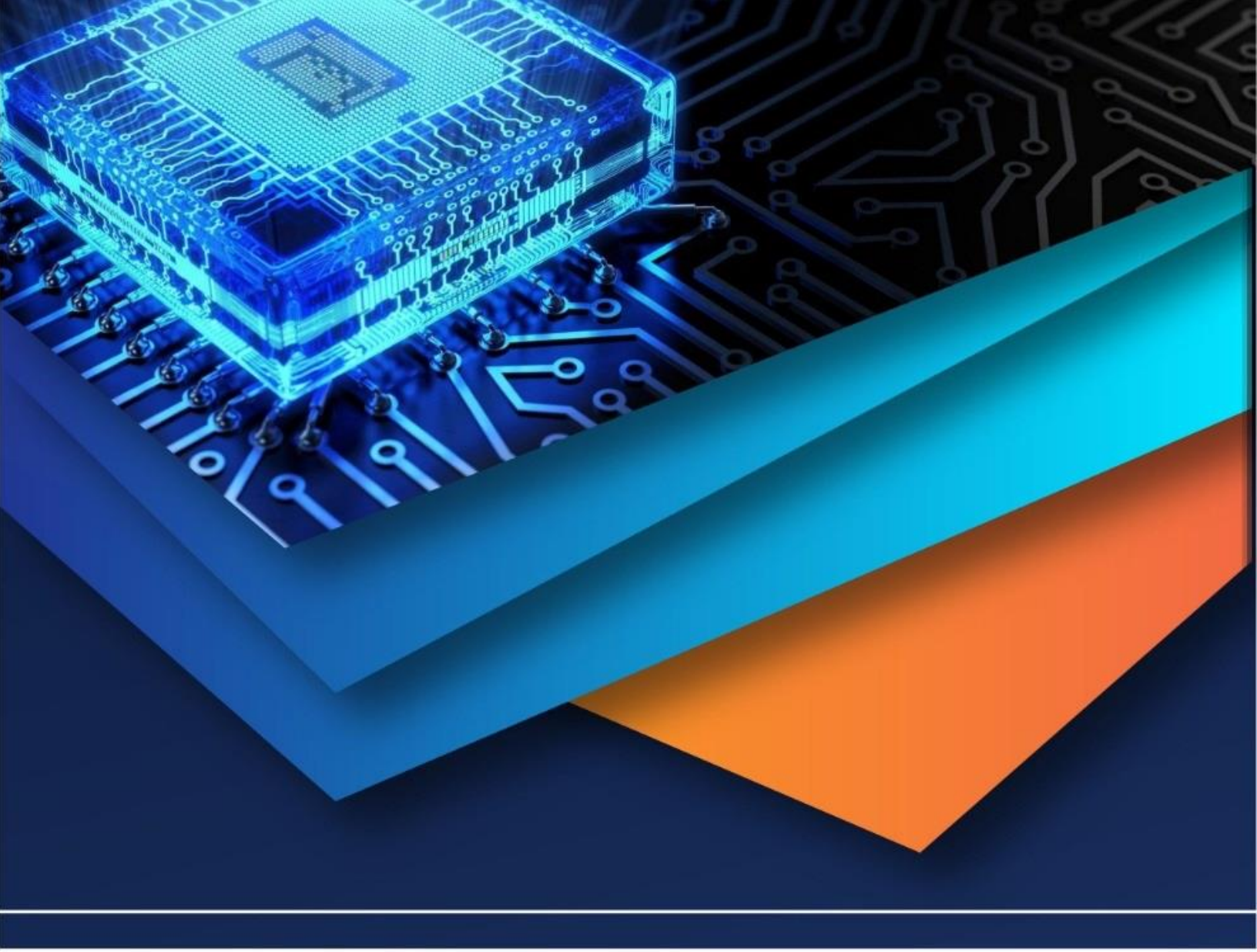

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