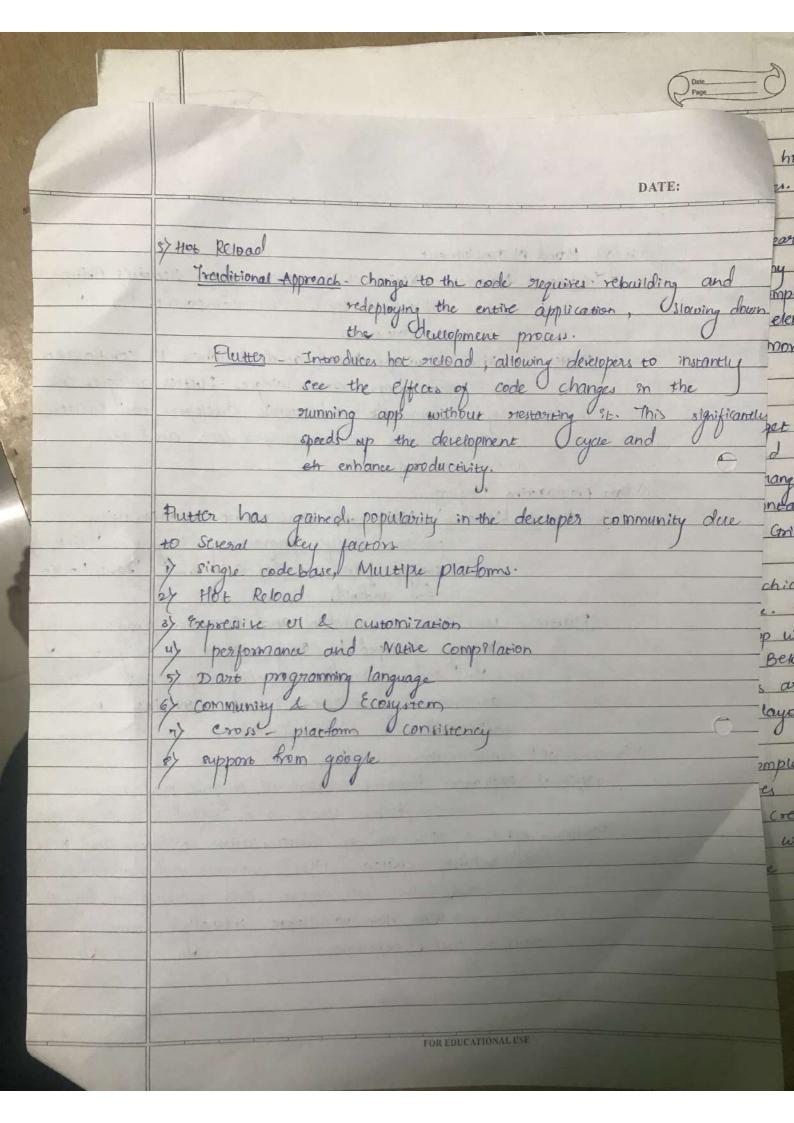
DATE: Nome - Tabreja Roshni as Explain the key features and advantages of using flutter for · development Plusser: an open-source of software development toolkid used for creating compiled applications for mobiles web and desktop On single code base Flutter is descripted by Google Mere are the tey features and advantages mobiled app development: single codebase. Plutter allows developers to write code and deploy it once across multiple platforms, tlih including 205, Android and leven web and desktop), neducing development time 2) Hot Reload - one of the flutters most praised hot reload, which enables developers to Instantly see the effects of app during development without nestarting the appli Ocation. This feature significantly of speeds "up the development productivity. Expressive and Flexible U1- Flutter offers a highly expressive and the create complex animations and designs. The framework supports wide gange of customizations, allowing developers to achieve the desired look. FOR EDUCATIONAL USE

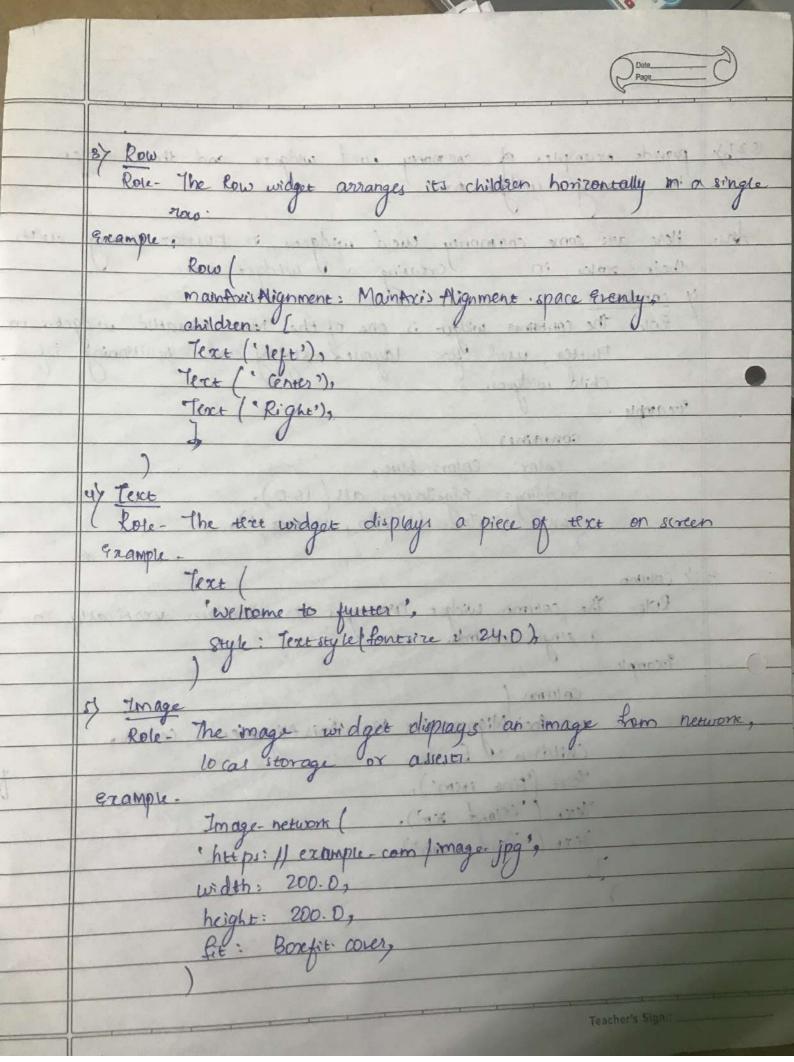
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	13 Fast Development cycli- John combination of hot reload and	±1
vane 1	nich set of pre-designed widgets enables	be
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(10)	can quickly iterate V on features and or	-
	elements; leading to a move efficient	
	development Oprocess.	14
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· (0) . b)	Discus how the flutter framework differs from traditional approaches	h
* 1	and why ? has gained popularity in the deceper community.	-
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AM	Flutter as a framework for mobile app development, differs from	
91	traditional approaches in several fundamental terre ways.	PI
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100000000000000000000000000000000000000	Traditional Approach Native app desempment typically envolves	1
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ALCOHOLD STREET	(is & Android)	+
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	hoth in I + Anghold platforms. Developer	1
130	exite code once and deproy it wines different	No.
- Denselle	pratforms, reducing development time and effort.	
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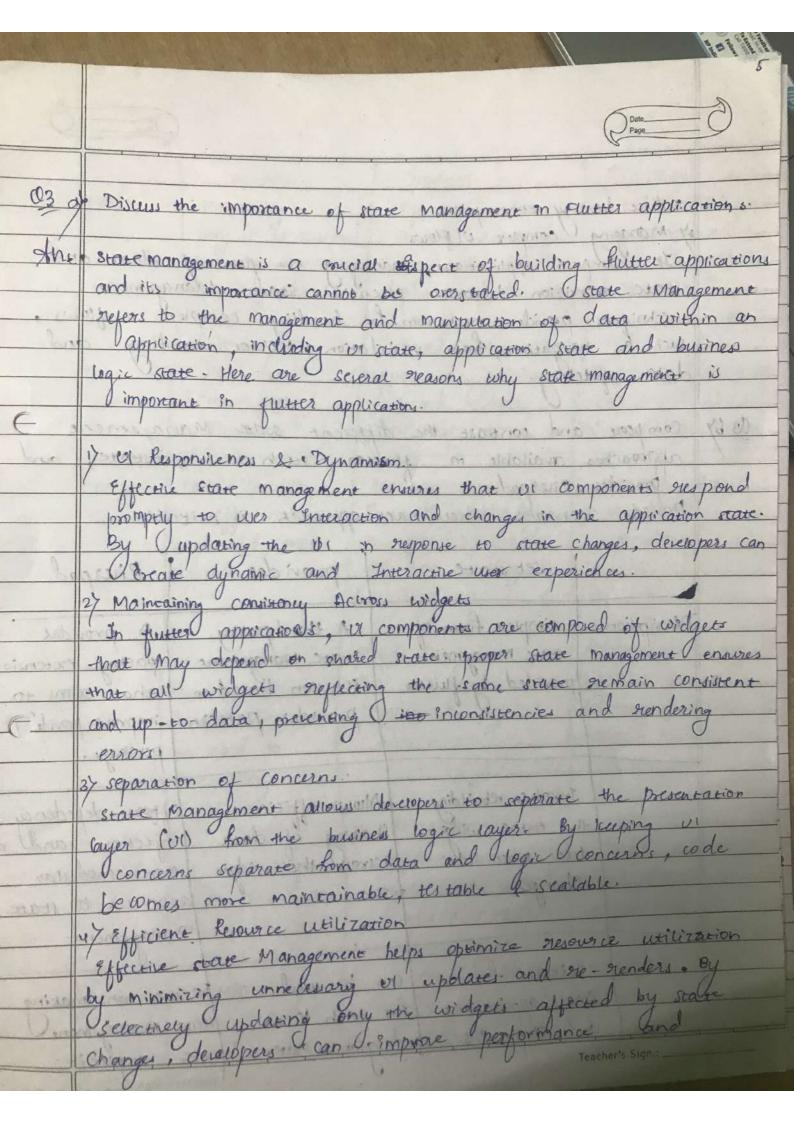
DATE: 2) widget Based Ul Development Traditional Approach - Native of development often requires using frame works. Hutter - utilizes a widget-based approach where ul components are composed of nested widgets thetter widgets are highly customizable and enable developers to create O Ocomprex Us with a cinified look and feel a across pratforms. 3) Don't programming language Fractifical Japproach - Native app Development involves using pratform - specific programming languages like swift objective - c for ix and Jara/ koelin for android. Flutter - Uses Dart as mordern and expressive programming language developed by Google Dart is easy to learn and offers features like type safety and asynchronous I programming and compiles to native code for high performance. 4) Expressive UI & Cumpnization Traditional Approach- Achieving custom ul designs may require significant effort and platform - specific cade Flutter - offers a alch set of customization widgets and took for building expressive Us & complex animations Developers I have full control over every pixel on the screen, anabling them to create virtually sturning 4 unique cua O experience.



1 orples 4) Immutable and stateless / stateful widget - widgets in flutter are immutable, meaning they cannot be modified once created. However, widgets can Upe nebuilt to reflect changes in us or application state. Widgets can be caregorized as stateless or stateful. starcles - There urdgers are immurable and do not have internal state - They represent vi elements whose apperance is Odetermined solely by their Constructor arguments. Stateful - These widgets maintain internal state that can change over time. They are nes possible for managing dynamic of I elements user O Interfaces. sy widget lifecycle - widgets in Author have a lifecycle that defines various states of their existence, including creation, initialization, updating and disposal. understanding the widget of likewile is coucid for managing state Onesources & perform optimi Taxion in flutter applications The widget tree and widget composition are fundamental concepts in futier that enables developers such, suponsize and dynamic us.

		Date_Page	0
8 Mete	Here are some commonly used widgets in Flutto their plotes in creating a widget tree.  Y container  Role - The container widget is one of the most vers  Flutter, used for layouts styling and  Child widgets.  Example.  Gontainer ( Glor: Colon: blue.	cr along	with ets in
	2) Column Role- The column widget arranges its children a single column.  Example- Column (  Column (  Main Aeis Alignment)	vertically	vn b
	Teach	cher's Sign.:	





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- 12 (40) 21	reduce barrery consumptions and a service of most of
Thousand a	In complex applications, managing the flow of values and
4.00000	state transition becomes essential state Management
45.1	such as navigation, from validation, versor handling and
	data getching.
Q3 67	Compare and contrast the different state Management
-/	approaches available in such as getstate, and
· DEST: 4	Provide scenarios where each approach is suitable
-E   1500	By Charles the this is suppose to their charges there
	set state provider Riverpod
	Description simplest form of A third parcy A provider
7 38 - FEB. 1	provided by further solution based on that aims to
	provider partern improve provide #t 1
	package s
	Involves rebuilding Allows efficient offers depedency
	the entire widget showing of data injection and a tree when state across the widget more modular
	change free approach to state
	management
	suitable for can be used focus on maxing
	small applications for both local store management
	and simple Uls: good global state. More explicit

Date\_\_\_\_\_ Riverpod movides Setstate in modularity. Efficient updates. simplicity. modular organized approach. enables updates of Scoping . Stoped Instances Built-in Allow for scoping of supports the tate providers, additional packages scoped instances leaging Curie limited scalability learning corre cons pimilar to Requires understanding less efficient in provider. the provider partors large and complex and have learning curve Oppuications nua block to for biginners " OA LAA! Additional package Global Management Global Rebuilds This can become Rebuilding the additional package entire widget tree complex for large compared to built in applications. can kad to updares. - larger application medium sized - Small Mojects Scenarios more scalable 4 applications with or prototypes. organized Starc moderate complexity simple lis management syst - projects where with minimal - sprojects where the the provides parter Interactivity Alexibility of State align with desired a side scoping it beneficial architecture.

Courter Circus 200.032 Gray gaptain the process of Integrating firebase with flutter application. Discuss the benefits of using firebase as backend solution. in beginning acted on down complete Ans, Integrating Firebase with a flutter application involves several steps, and using the Flatterfire plugins to interact with firebase services: Heres oversion of integration process. y execute a firebase projection in the second - Go to the Crise base console ] Chetys of console fixebase google com · Click on " Add project" and allow "the server intoruction 2) Add Fisebase to your Fines App In your probase project, click on "Add App" and select the appropriate platforms: C'os & Android] - Register your app by providing a package name (ios Bundle 102 android package Name]. By Download 4 Add Configuration files. Download he configuration Utiles (google-service json for Android
Google services - Enfo. puite for (gs) provided by probase · place the configuration files en respective directores of de your Auter project. - de services uy Add Fruner fre plugn open your publiples yam file and add the necessary dependencies for the flutter fire plugins. Teacher's Sign : \_\_ 2 the live of

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cey by	flightight the fivebage services commonly used in flutter deserge
	and promote a brief overview of how data synchronize
Am:	To the same to a series of the same of the
711 21	In flutter development several firebase services are commonly
	there series add bactered functionally to application.
	These services provides features such as great time data
E. Auen	notifications and analytics.
	Here are some of the most commonly used firebase
	Services in flutter dercopment.
	y Firebase Authentication
	Firebose Author tication provides easy to we Apis and soks
	for simplementing user authentication in fluiter apps. It
40000111	supports various Authentication methods including email
	passwords, phone number 4 more.
	ay Cloud Firebase
et (v)	Cloud Firebase ?s a flexible, scalable database for storing
	and syncing dara in neal time across clients. It
	offers powerful overging capabilities, offline support and
61 40	automatic scaling, smaking it well suited for building
	neactive and collaborative flutter apps.
	Tirebase storage provides secure and scalable cloud storage
the follow	for storing wer generated content such as images, videos &
	files. It offers simple Apis for uploading downloading
	and managing files, making it easy to O entegrate
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