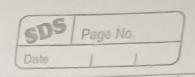
			0/205/				
Naikwadi Yash Shivdas/DISB/39 Page No MPL Assignment 02 Define Progressive Web App (PWA) & explain							
1	significance in modern web development. Discuss the						
	key characteristics that differentiate PNAS from						
	Define Progressive Web App (PINIA) & explain its significance in modern web development. Discuss the key characteristics that differentiate PINIAS from traditional mobile apps.						
		1					
	A Progressiv	e Web App (PWA) is	a type of web application but runs in a brow- ice, works offline for experience.				
_	tion that wox	ks like a mobile app	but runs in a brow-				
4	Sex. It can	be installed on a devi	ice, works of fline &				
	provides a f	ast & smooth usex e	xperience.				
+	Significance o	F PILIA in Modern W	eb Development:				
+	, –	•	,				
	12 Cross Plati	oom Compatibility:	klooks on both e codebase without the internet				
	mobile &	desktop with a singl	e codebase				
-	2) Offline	suppost can function	without the internet				
	using cach	ed data.					
-	3/ Fast Pest	ormance: loads quickl	y, even on slow net-				
	$\perp$ $(1)000000000000000000000000000000000000$						
	4) No App Store Required: Users can install it directly						
	5 Lairex Devalopment Cast & O = DIIn						
	5 Lower Development Cost: One PINA can replace Separate Android & iOS apps.						
_	The apps.						
_	Key Differences Between Plata & Traditional						
_	Key Differences Between PINA & Traditional Mobile Apps:						
_							
	Teatuxe	PWA	Traditional Mobile				
1			APP				
_	Tred 11 1:						
-	Installation	Direct from browser	Download from App				
	,	<u> </u>	Store				

SDS	Page No.
Date	

	Internet Required	klooks offline with caching	Usually requires internet			
	Per formance	Fast with service	Faster but need installation			
	Updates	Automatic no app store	Manual update needed			
	Development Cost	lower (one codebase	Higher (separate opps for each p			
Plats combine the best of web & mobil them efficient & user-friendly.			mobile apps, ma			
92 Define responsive web design & explain it ance in the context of Progressive Web A Contrast responsive, fluid & adaptive design approaches						
Soln.	oln. Definition of Responsive Web Design:					
	is a technique the tically to differences a good use desktops without website.					

Impostance of Responsive Design in Plats: Better User Experience: Philas work smoothly any device.



Screen size

Faster Load Time: Optimized design improves

3)880 Benefits: Google vanks responsive sites higher

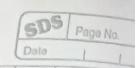
4) Cost-effective: No need to build multiple versions for different screens.

Comparison for of Web Design Approaches:-

+	Approach	How it klooks	Pros	Cons
1	1	C		
-	Responsive	Uses flexible goids & CSS media ques-	Works on all	Can be complex
	100	& CSS madia allax-	devices improves	to design
		ies to adjust layout	SEO	re are 31
		res to define lagour		1
	Fluid	Uses percent-based	Works well on	less control over
		widths instead of fixed pixels, so	different screen	layout on lorge
-		fixed pixels so	sizes , easy to	Screens
5		elements resize	implement	
		smoothly		
-	Adaptive	Uses fixed layouts	Optimized for	More effort
-		that change at	known screen	required to
-		that change at specific breakpoints	Sizes	design for each

Key Differences:

- Responsive adopts dynamically to all screens - Fluid resizes smoothly but may not be fully optimized

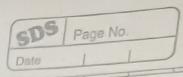


-Adaptive loads different layouts based on Responsive design is best for PILIAs because it a seamless experience on all devices. Q3 Describe the lifecycle of Service Morkers, inc registration, installation, & activation phases Soln. Lifecycle of Service Workers A Service Workers is a script that runs in the background & helps a web app work offline; I foster & send push notifications. Its lifecyce has three main phases &-Registration Phase: The browser registers
Service Workers using JavaScript. Code Example :if ('sexvice Llox/ex' in navigator) {

novigator. sexvice Llox/ex. register ('/sw.js')

then () > console.log ('sexvice worker register

catch (exxor => console.log ('failed: exxor)); - This tells the browser to install & activate Service klorker



SDS Page No. Installation Phase

- The Service Worker downloads necessary files

(HTML, CSS, JS) & stores them in cache

- If successful, it moves to the activation phase Code Example 8self.addEventlistener ('install', event => {
event.waitUntil( caches.open ('app-cache'). then (cache => {

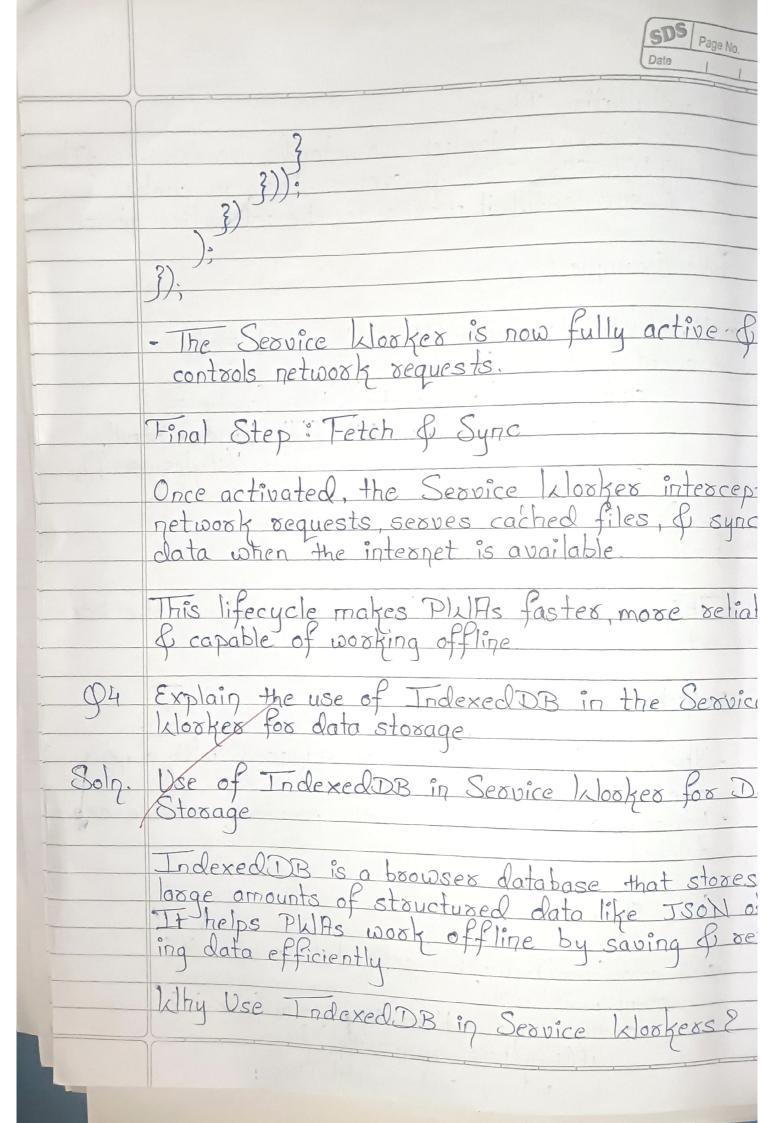
veturn cache.addAII (['/', '/index.html',

'/styles.css']); -This ensures the app loads even without the inter-3) Activation Phase - The old Service Worker is replaced with a new.

- Unused cache files from the previous version are deleted.

Code Example: self.addEventlistener ('activate', event >) {
 event.waitUntil( caches. keys (). then (keys. map (key => } if (key! == 'app-cache') }

return caches. delete (key).

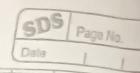


SDS Paga No. Syncs it later. Stores data when offline & Sefficient Storage: Saves stor structured data like user settings cart items, or form inputs 3) Faster Access: Retrieves data quickly with-out needing a network request. 4) Persistent Data: Data remains saved even after the browser is closed. the browser is closed How Service Workers Use Indexed DB? Opening the Database let db; let request = indexed DB. open ('My Database', 1); request on success = function (event) ?

db = event target result;
}; Creating a Store & Adding Data
request.onupgradeneeded = function (event)?

Let db = event.target.result;

let store = db.createObjectStore ('Users', ?keyPath: store add (?id: 1, name: John Doe', age: 25); Fetching Data in Service Worker let transaction = db. transaction ('Users', 'readonly'); let store = transaction.object Store ('Users');



let get User = store.get (1);

get User. on success = function () {
 console. log (get User. result);
}