Experiment: 07

Aim: To apply navigation, routing and gestures in Flutter App.

Theory:

Progressive web apps

A progressive web app (PWA) is an app that's built using web platform technologies, but that provides a user experience like that of a platform-specific app.

Like a website, a PWA can run on multiple platforms and devices from a single codebase. Like a platform-specific app, it can be installed on the device, can operate while offline and in the background, and can integrate with the device and with other installed apps.

Platform-specific apps

Platform-specific apps are developed for a specific operating system (OS) and/or class of device, like an iOS or Android device, generally using an SDK provided by the platform vendor. They are usually distributed using the vendor's app store, where the user can find and install them, and they subsequently seem to the user like a permanent extra feature of their device, expanding its capabilities in some way.

The benefits of platform-specific apps include:

1. **Easy for users to access**: They get their own icon on the device, making it easy for users to find and open them.
2. **Offline and background operation**: They are able to operate when the user is not interacting with them and when the device is offline. This, for example, enables a chat app to receive messages when it is not open, and display a notification to the user. It also enables a news app to update in the background so it can show fresh content even if the device is offline.
3. **Dedicated UI**: They can implement their own distinctive, immersive UI.
4. **OS integration:** They can be integrated into the host OS: for example, a messaging app can register as a share target, enabling users to select an image in the photo app and send it using the messaging app. They can also access device features such as the camera, GPS or accelerometer.
5. **App store integration**: They are distributed using the app store, giving users a single place to find them and a consistent way to decide whether they want to install them.

Traditional websites

Traditionally, websites are less like "something the user has" and more like "somewhere the user visits". Typically, a website: does not have a presence on the user's device when the user is not accessing it, can only be accessed by the user opening the browser and navigating to the site, and is highly dependent on network connectivity.

However, websites have some benefits over platform-specific apps, including:

1. **Single codebase**: Because the web is inherently cross-platform, a website can run on different operating systems and device classes from a single codebase.
2. **Distribution via the web**: The web is a great distribution platform. Websites are indexed by search engines, and can be shared and accessed just using URLs. A website can be distributed with no need to sign up to any vendor's app store.

Progressive web apps

Progressive web apps combine the best features of traditional websites and platform-specific apps.

PWAs have the benefits of websites, including:

1. PWAs are developed using standard web platform technologies, so they can run on multiple operating systems and device classes from a single codebase.
2. PWAs can be accessed directly from the web.

PWAs also have many of the benefits of platform-specific apps, including:

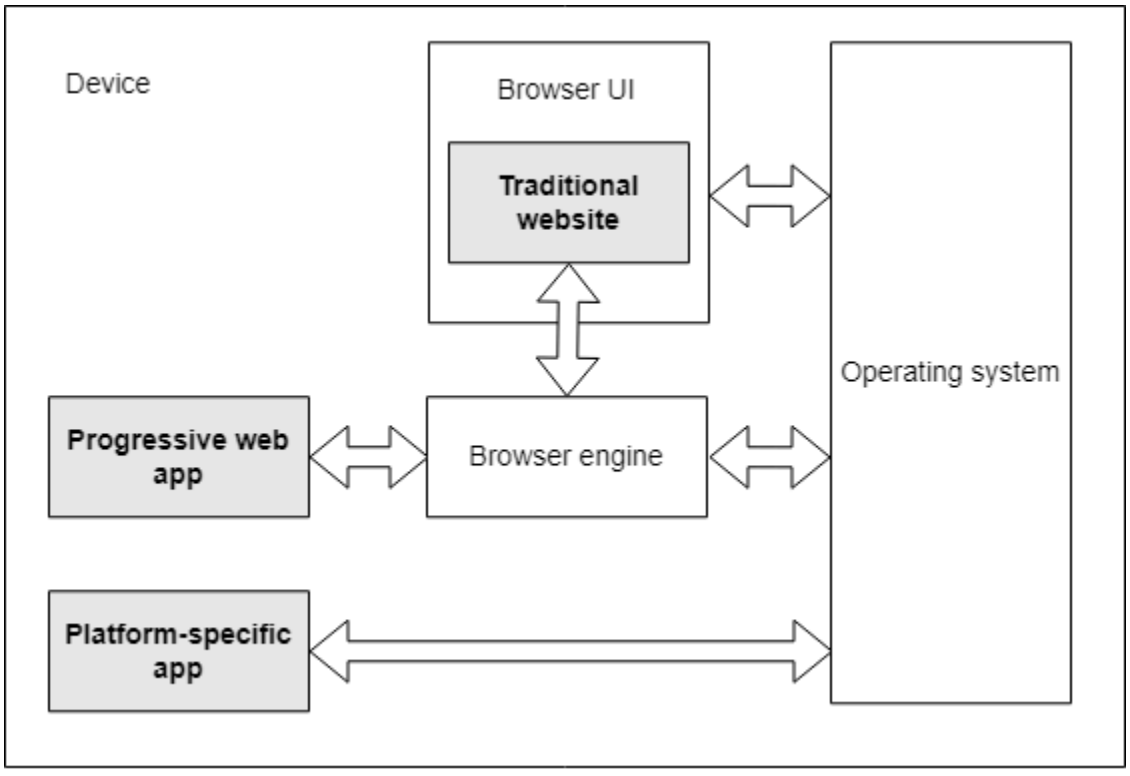
- PWAs can be installed on the device. This means:
    - The PWA can be installed from platform's app store or installed directly from the web.
    - The PWA can be installed like a platform-specific app, and can customize the install process.
    - Once installed, the PWA gets an app icon on the device, alongside platform-specific apps.
    - Once installed, the PWA can be launched as a standalone app, rather than a website in a browser.
- PWAs can operate in the background and offline: a typical website is only active while the page is loaded in the browser. A PWA can:
    - Work while the device does not have network connectivity.
    - Update content in the background.
    - Respond to push messages from the server.

    - Display notifications using the OS notifications system.
- PWAs can use the whole screen, rather than running in the browser UI.
- PWAs can be integrated into the device, registering as share targets and sources, and accessing device features.
- PWAs can be distributed in app stores, as well as openly via the web.

PWAs and the browser

When you visit a website in the browser, it's visually apparent that the website is "running in the browser". The browser UI provides a visible frame around the website, including UI features like back/forward buttons and a title for the page. The Web APIs your website calls are implemented by the browser engine.

PWAs typically look like platform-specific apps — they are usually displayed without the browser UI around them — but they are, as a matter of technology, still websites. This means they need a browser engine, like the ones in Chrome or Firefox, to manage and run them. With a platform-specific app, the platform OS manages the app, providing the environment in which it runs. With a PWA, a browser engine performs this background role, just like it does for normal websites.



Code Implementation:

Manifest.json:

```
{
  "name": "Your E-commerce App",
  "short_name": "E-commerce",
  "description": "Shop for all your needs with ease on our e-commerce platform.",
  "icons": [
    {
      "src": "floater.png",
      "type": "image/png",
      "sizes": "512x512"
    }
  ],
  "start_url": "./index.html",
  "display": "standalone",
  "theme_color": "#000000",
  "background_color": "#ffffff"
}
```

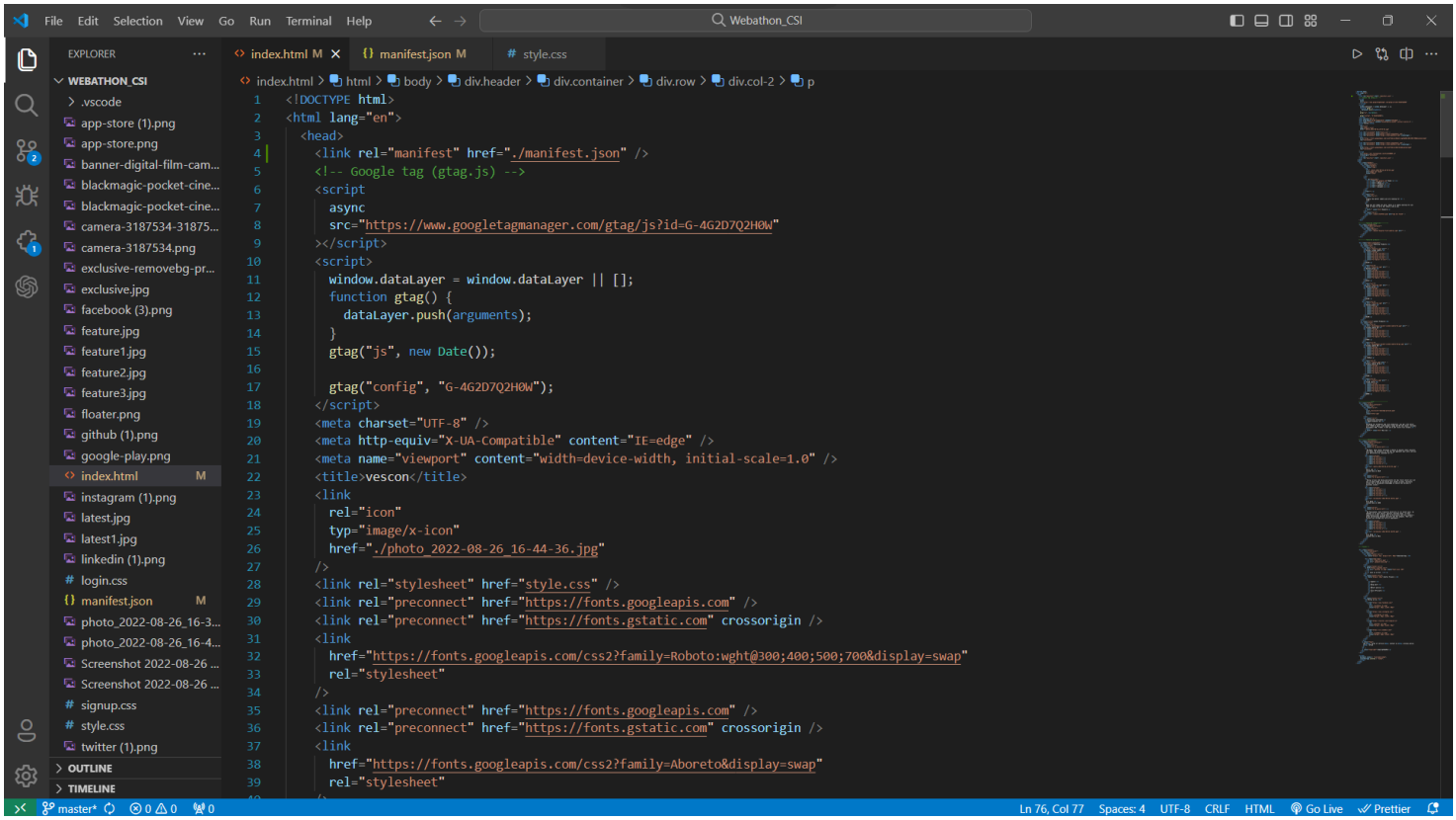
Index.html:

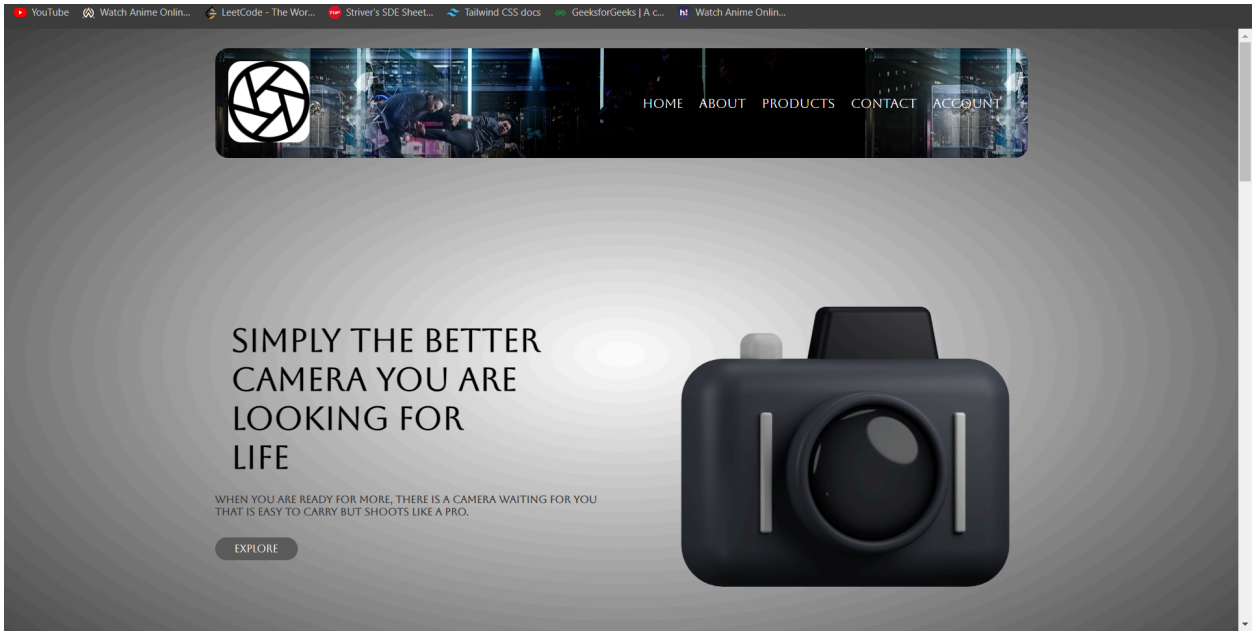
```
<!DOCTYPE html>
<html lang="en">
  <head>
    <link rel="manifest" href="./manifest.json" />
    <!-- Google tag (gtag.js) -->
    <script
      async
      src="https://www.googletagmanager.com/gtag/js?id=G-4G2D7Q2H0W"
    ></script>
    <script>
      window.dataLayer = window.dataLayer || [];
      function gtag() {
        dataLayer.push(arguments);
      }
      gtag("js", new Date());

      gtag("config", "G-4G2D7Q2H0W");
```

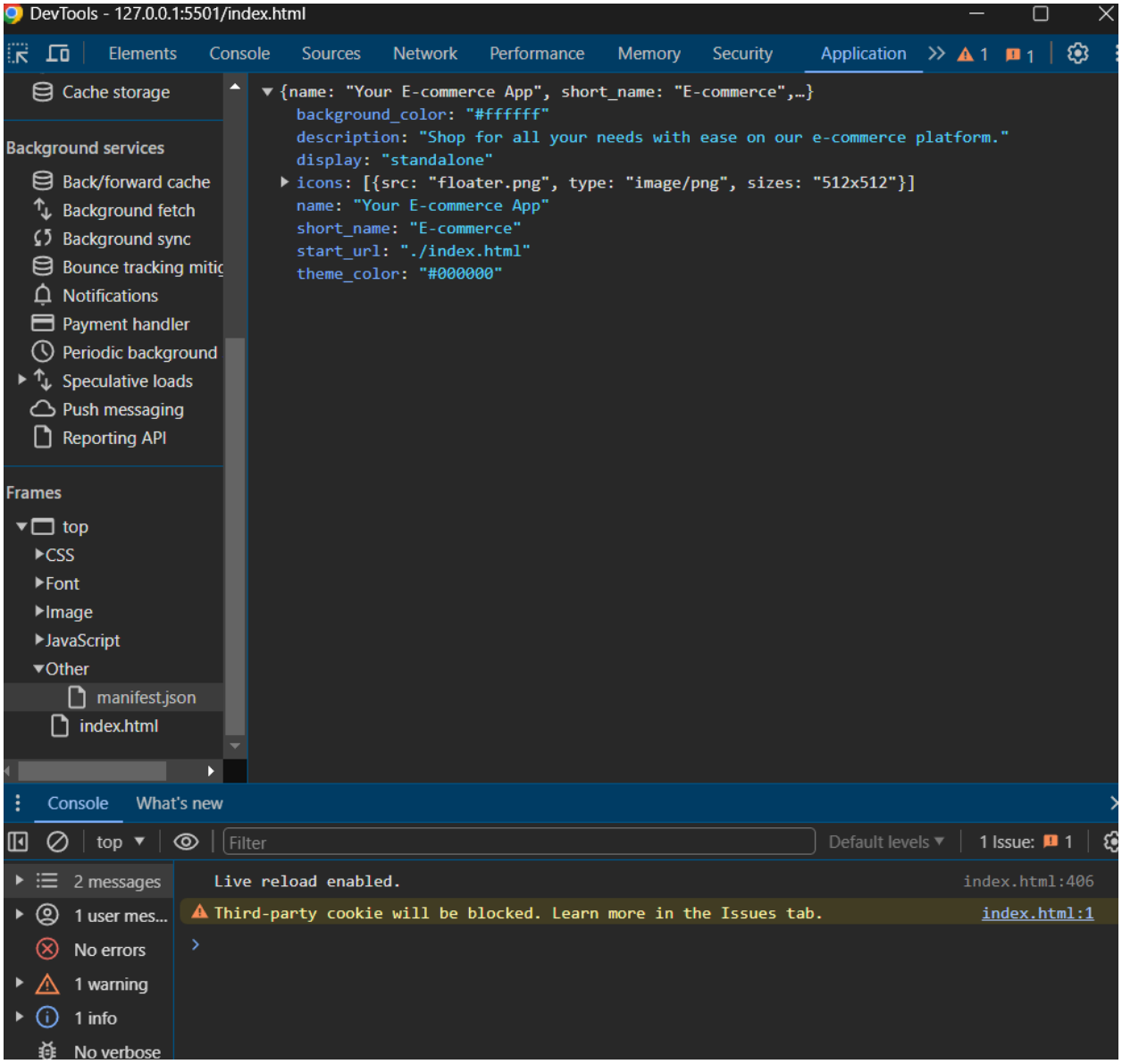
```
    </script>
    <meta charset="UTF-8" />
    <meta http-equiv="X-UA-Compatible" content="IE=edge" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0"
/>
    <title>vescon</title>
    <link
      rel="icon"
      typ="image/x-icon"
      href="./photo_2022-08-26_16-44-36.jpg"
    />
    <link rel="stylesheet" href="style.css" />
    <link rel="preconnect" href="https://fonts.googleapis.com" />
    <link rel="preconnect" href="https://fonts.gstatic.com" crossorigin />
    <link

href="https://fonts.googleapis.com/css2?family=Roboto:wght@300;400;500;700
&display=swap"
      rel="stylesheet"
    />
    <link rel="preconnect" href="https://fonts.googleapis.com" />
    <link rel="preconnect" href="https://fonts.gstatic.com" crossorigin />
    <link
      href="https://fonts.googleapis.com/css2?family=Aboreto&display=swap"
      rel="stylesheet"
    />
    <script
      src="https://kit.fontawesome.com/5c214e0069.js"
      crossorigin="anonymous"
    ></script>
    <link rel="manifest" href="./manifest.json" />
  </head>
  <body>
    <div class="header">
      <div class="container">
        <div class="navbar">
          <div class="logo">
            <img
              src="./photo_2022-08-26_16-44-36.jpg"
              alt="image not found"
```

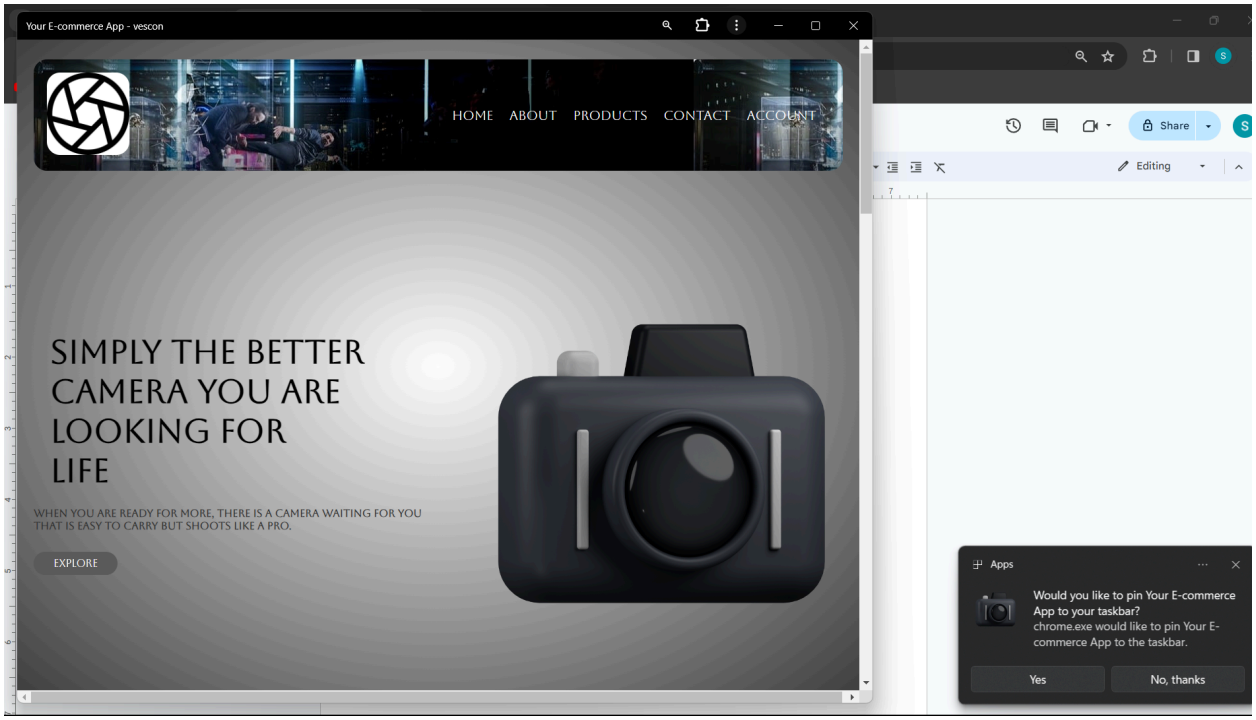
```
            width="125px"
          />
        </div>
        <nav>
          <ul id="menuitems">
            <li><a href="www.google.com">Home</a></li>
            <li><a href="">About</a></li>
            <li><a href="">Products</a></li>
            <li><a href="">Contact</a></li>
            <li><a href="">Account</a></li>
          </ul>
        </nav>
        <a href=""></a>
      </div>
      <div class="row">
        <div class="col-2">
          <h1>
            Simply the better camera you are looking for <br />
            life
          </h1>
          <p>
            When you are ready for more, there is a camera waiting for
you
            that is easy to carry but shoots like a pro.
          </p>
          <a href="" class="btn">Explore</a>
        </div>
        <div class="col-2">
          <img src="./camera-3187534.png" alt="img not found" />
        </div>
      </div>
    </div>
  </div>
```

Name: Soham Nimbalkar EXP: 07 Roll no: 49






DevTools - 127.0.0.1:5501/index.html
Elements
Console
Sources
Network
Performance
Memory
Security
Application
Cache storage
Background services
Back/forward cache
Background fetch
Background sync
Bounce tracking mitic
Notifications
Payment handler
Periodic background
Speculative loads
Push messaging
Reporting API
Frames
top
CSS
Font
Image
JavaScript
Other
manifest.json
index.html
{name: "Your E-commerce App", short_name: "E-commerce",…}
background_color: "#ffffff"
description: "Shop for all your needs with ease on our e-commerce platform."
display: "standalone"
icons: [{src: "floater.png", type: "image/png", sizes: "512x512"}]
name: "Your E-commerce App"
short_name: "E-commerce"
start_url: "./index.html"
theme_color: "#000000"
Console
What's new
top
Filter
Default levels
1 Issue: 1
2 messages
1 user mes...
No errors
1 warning
1 info
No verbose
Live reload enabled.
index.html:406
Third-party cookie will be blocked. Learn more in the Issues tab.
index.html:1


Your E-commerce App - vescon
HOME ABOUT PRODUCTS CONTACT ACCOUNT
SIMPLY THE BETTER CAMERA YOU ARE LOOKING FOR LIFE
WHEN YOU ARE READY FOR MORE, THERE IS A CAMERA WAITING FOR YOU THAT IS EASY TO CARRY BUT SHOOTS LIKE A PRO.
EXPLORE
Share
Editing
Apps
Would you like to pin Your E-commerce App to your taskbar?
chrome.exe would like to pin Your E-commerce App to the taskbar.
Yes
No, thanks