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Roll No.:-67
Div:-D15A
Batch:-C

Experiment-1

Aim:- To install and configure the Flutter Environment

Theory:-

Flutter:

Flutter is an open-source UI software development toolkit created by Google for building natively compiled applications for mobile, web, and desktop from a single codebase.

Key Features of Flutter:

Single Codebase: Flutter allows developers to write code once and deploy it on multiple platforms like Android, iOS, web, and desktop. Hot Reload: One of the most significant features of Flutter is its hot reload capability. Changes to the code can be instantly reflected in the running app, making the development process faster and more interactive.

Widget-Based Framework:

Flutter is based on a reactive widget framework. Widgets are the basic building blocks of the user interface, and they are used to create complex UIs. Rich Set of Widgets: Flutter provides a comprehensive set of customizable widgets, including material design and Cupertino-style widgets, to create visually appealing and platform-specific user interfaces.

Native Performance:

Flutter compiles to native code, resulting in high performance and smooth animations. It does not rely on a bridge to communicate with the native modules, enhancing the app's speed.

Dart Programming Language:

Flutter uses Dart as its programming language. Dart is an object-oriented, garbage-collected language that is easy to learn and provides a good developer experience.

Community and Ecosystem:

Flutter has a growing and active community that contributes to its ecosystem. There is a wide range of packages and plugins available on pub.dev, Flutter's package repository.

Flutter is a cutting-edge open-source framework developed by Google for crafting high-quality native interfaces on various platforms using a single codebase. It empowers developers to build visually appealing and responsive applications with ease. The framework is known for its expressive and flexible UI, enabling seamless development

across iOS, Android, and web platforms. Flutter's hot-reload feature allows developers to instantly view changes, streamlining the development process. Its robust widget-based architecture facilitates the creation of beautiful and performant apps, making it a preferred choice for modern app development.

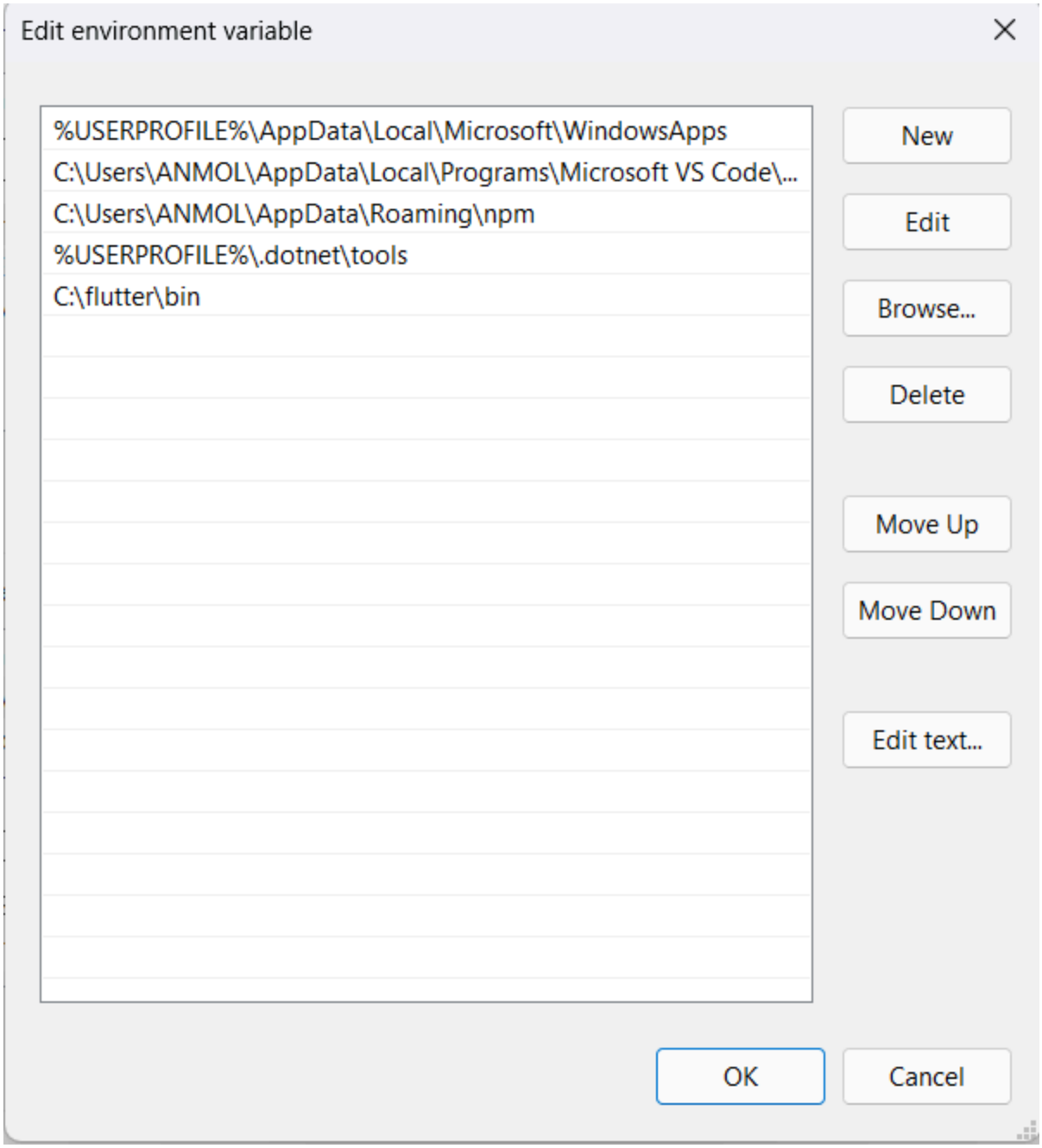
Android Studio, an advanced integrated development environment (IDE) created by Google, stands as the primary choice for Android app development. Boasting a user-friendly interface, powerful coding tools, and seamless integration with the Android platform, it provides developers with a robust environment for crafting high-performance applications. With features like intelligent code completion, real-time error checking, and an intuitive layout editor, Android Studio enhances productivity and accelerates the app development lifecycle. Its support for various Android devices, extensive testing capabilities, and built-in emulators contribute to creating reliable and efficient Android applications.

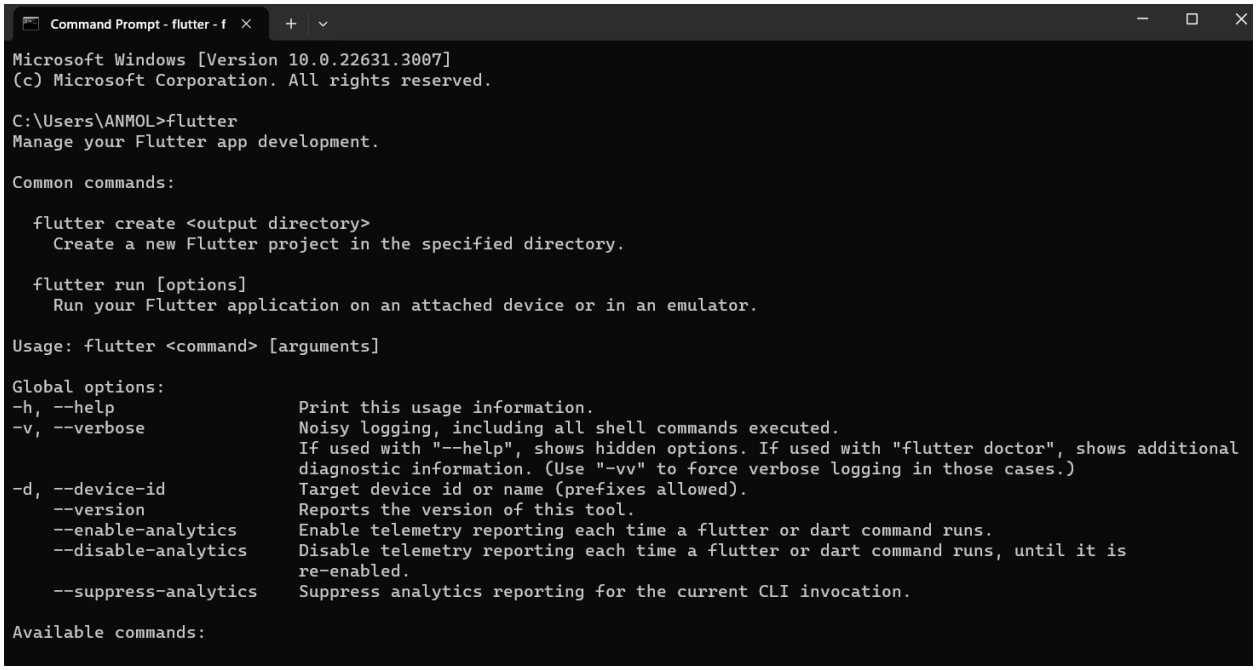
Flutter installed successfully:-

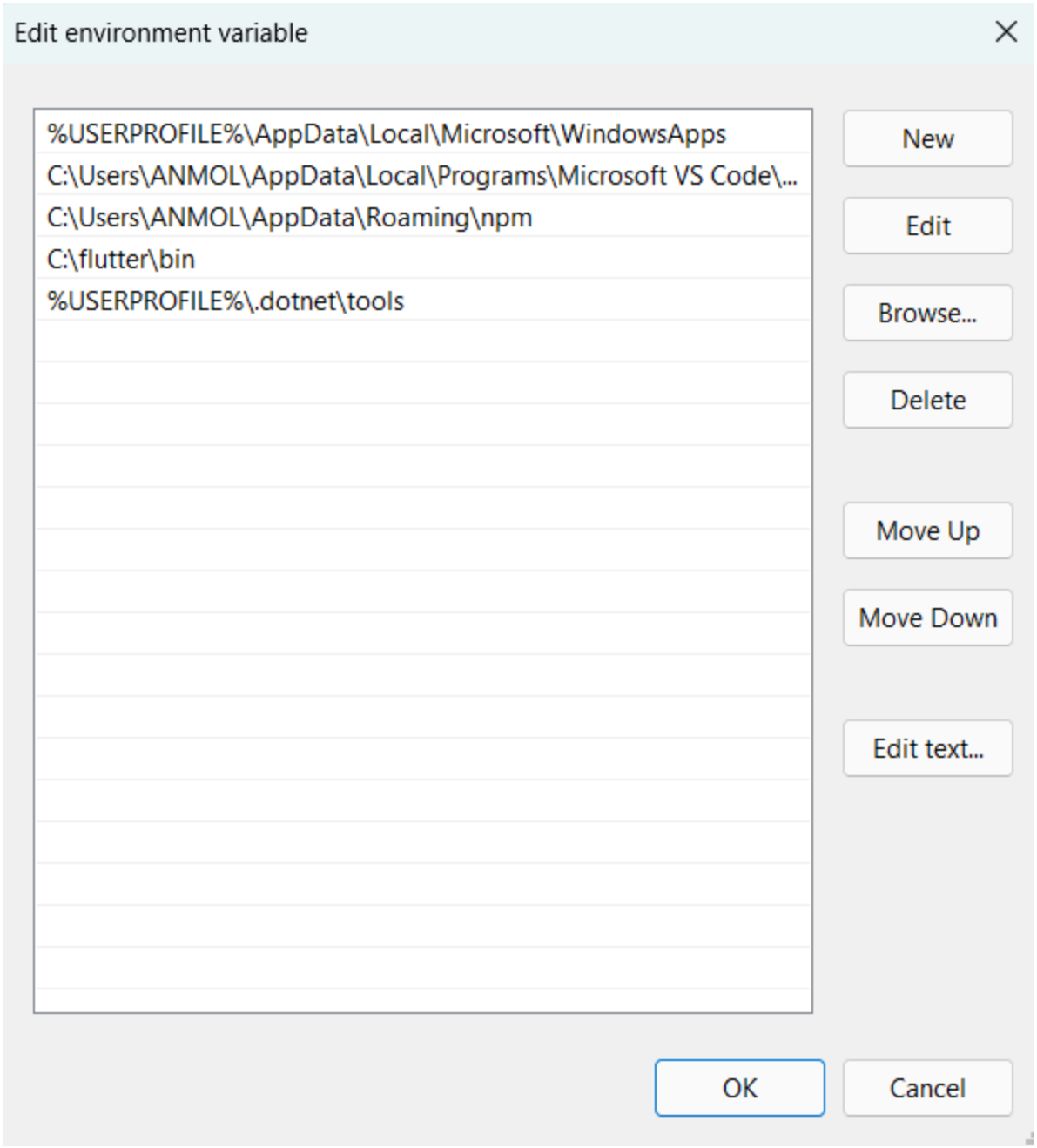
```
PS C:\Users\Student> flutter
Manage your Flutter app development.

Common commands:

  flutter create <output directory>
    Create a new Flutter project in the specified directory.

  flutter run [options]
    Run your Flutter application on an attached device or in an emulator.

Usage: flutter <command> [arguments]

Global options:
-h, --help                  Print this usage information.
-v, --verbose               Noisy logging, including all shell commands executed.
                            If used with "--help", shows hidden options. If used with "flutter doctor", shows additional
                            diagnostic information. (Use "-vv" to force verbose logging in those cases.)
-d, --device-id             Target device id or name (prefixes allowed).
    --version               Reports the version of this tool.
    --enable-analytics      Enable telemetry reporting each time a flutter or dart command runs.
    --disable-analytics     Disable telemetry reporting each time a flutter or dart command runs, until it is
                            re-enabled.
    --suppress-analytics    Suppress analytics reporting for the current CLI invocation.

Available commands:

Flutter SDK
```

Flutter doctor

```
Microsoft Windows [Version 10.0.22000.2652]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Student>flutter doctor
Doctor summary (to see all details, run flutter doctor -v):
[√] Flutter (Channel stable, 3.16.7, on Microsoft Windows [Version 10.0.22000.2652], locale en-IN)
[√] Windows Version (Installed version of Windows is version 10 or higher)
[!] Android toolchain - develop for Android devices (Android SDK version 34.0.0)
    X cmdline-tools component is missing
      Run `path/to/sdkmanager --install "cmdline-tools;latest"`
      See https://developer.android.com/studio/command-line for more details.
    X Android license status unknown.
      Run `flutter doctor --android-licenses` to accept the SDK licenses.
      See https://flutter.dev/docs/get-started/install/windows#android-setup for more details.
[√] Chrome - develop for the web
[X] Visual Studio - develop Windows apps
    X Visual Studio not installed; this is necessary to develop Windows apps.
      Download at https://visualstudio.microsoft.com/downloads/.
      Please install the "Desktop development with C++" workload, including all of its default components
[√] Android Studio (version 2023.1)
[√] VS Code (version 1.85.1)
[√] Connected device (3 available)
[!] Network resources
    X A cryptographic error occurred while checking "https://pub.dev/": Connection terminated during handshake
      You may be experiencing a man-in-the-middle attack, your network may be compromised, or you may have malware
      installed on your computer.
    X A cryptographic error occurred while checking "https://maven.google.com/": Connection terminated during handshake
      You may be experiencing a man-in-the-middle attack, your network may be compromised, or you may have malware
      installed on your computer.

! Doctor found issues in 3 categories.
```


Edit environment variable
%USERPROFILE%\AppData\Local\Microsoft\WindowsApps
C:\Users\ANMOL\AppData\Local\Programs\Microsoft VS Code\...
C:\Users\ANMOL\AppData\Roaming\npm
%USERPROFILE%\.dotnet\tools
C:\flutter\bin
New
Edit
Browse...
Delete
Move Up
Move Down
Edit text...
OK
Cancel

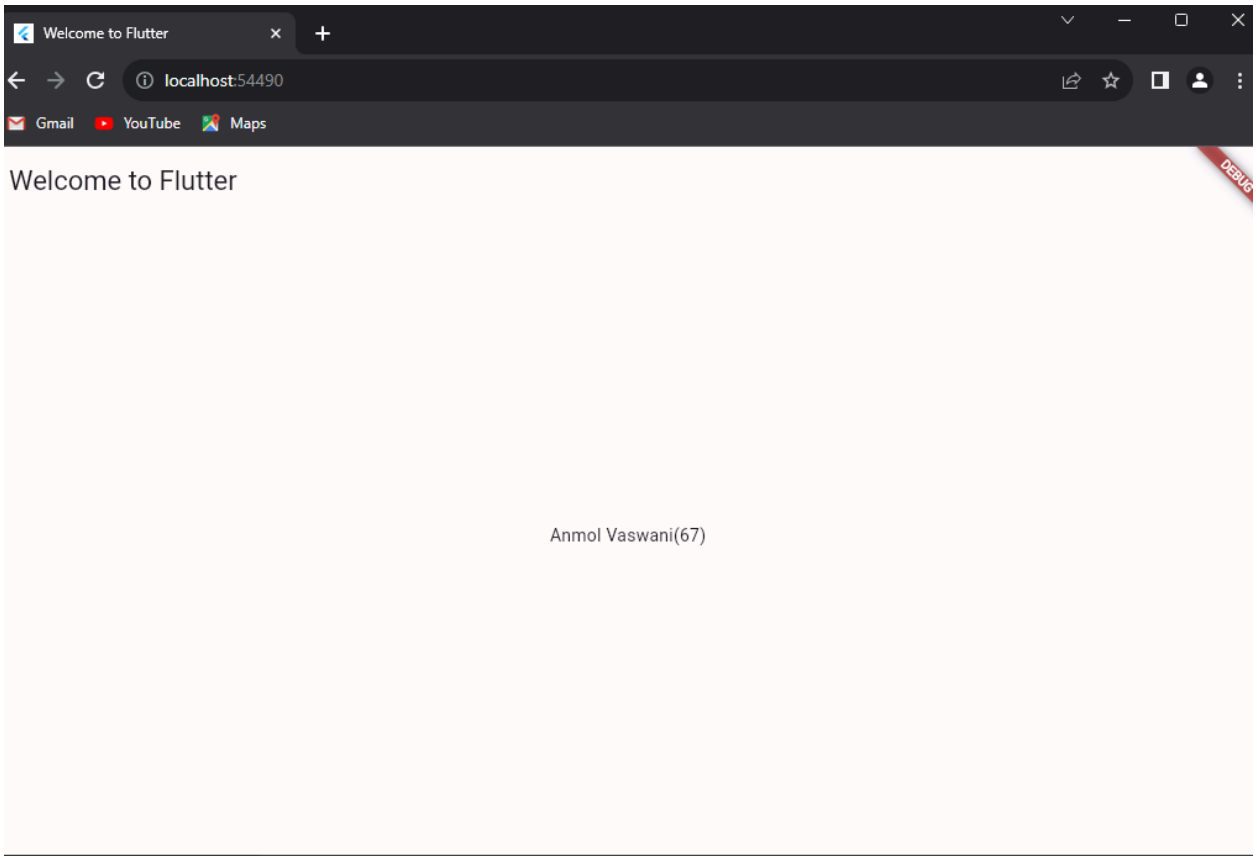

Command Prompt - flutter - f
Microsoft Windows [Version 10.0.22631.3007]
(c) Microsoft Corporation. All rights reserved.
C:\Users\ANMOL>flutter
Manage your Flutter app development.
Common commands:
flutter create <output directory>
Create a new Flutter project in the specified directory.
flutter run [options]
Run your Flutter application on an attached device or in an emulator.
Usage: flutter <command> [arguments]
Global options:
-h, --help Print this usage information.
-v, --verbose Noisy logging, including all shell commands executed.
If used with "--help", shows hidden options. If used with "flutter doctor", shows additional
diagnostic information. (Use "-vv" to force verbose logging in those cases.)
-d, --device-id Target device id or name (prefixes allowed).
--version Reports the version of this tool.
--enable-analytics Enable telemetry reporting each time a flutter or dart command runs.
--disable-analytics Disable telemetry reporting each time a flutter or dart command runs, until it is
re-enabled.
--suppress-analytics Suppress analytics reporting for the current CLI invocation.
Available commands:


Edit environment variable
%USERPROFILE%\AppData\Local\Microsoft\WindowsApps
C:\Users\ANMOL\AppData\Local\Programs\Microsoft VS Code\...
C:\Users\ANMOL\AppData\Roaming\npm
C:\flutter\bin
%USERPROFILE%\.dotnet\tools
New
Edit
Browse...
Delete
Move Up
Move Down
Edit text...
OK
Cancel

Code:

```
import 'package:flutter/material.dart';
void main() {
runApp(const MyApp());
}
class MyApp extends StatelessWidget {
const MyApp({Key? key}) : super(key: key);
@override
Widget build(BuildContext context) {
return MaterialApp( title: 'Welcome to Flutter',
home: Scaffold(
appBar: AppBar(
title: const Text('Welcome to Flutter'),
 ),
body: const Center(
child: Text('Hello World'),
 ),
 ),
 );
 }
 }
```

Output:-


Welcome to Flutter
localhost:54490
Gmail
YouTube
Maps
Welcome to Flutter
DEBUG
Anmol Vaswani(67)