Sahyog College of Management Studies, Thane (W)

Affiliated to Mumbai University

Course : BSC (Information Technology)

Semester : III

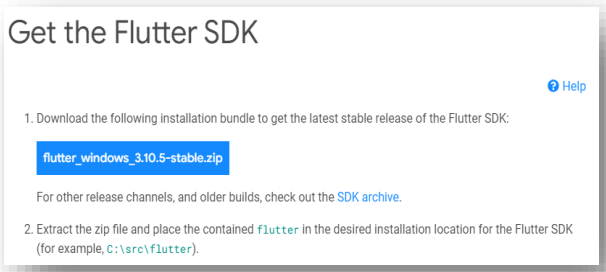
Subject : Mobile Programming

Lab Manual

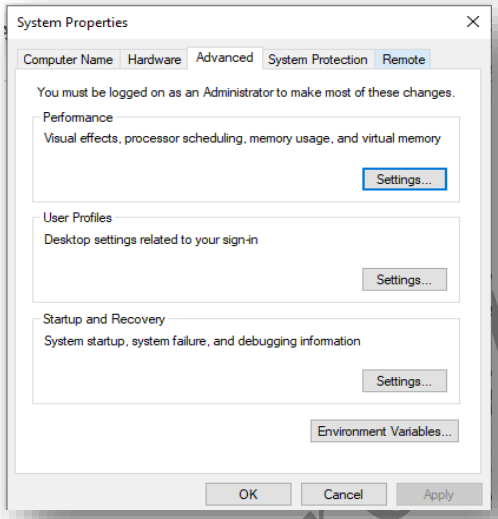
Author: Asst. Prof. Zeenat Sultana

Settings for Flutter

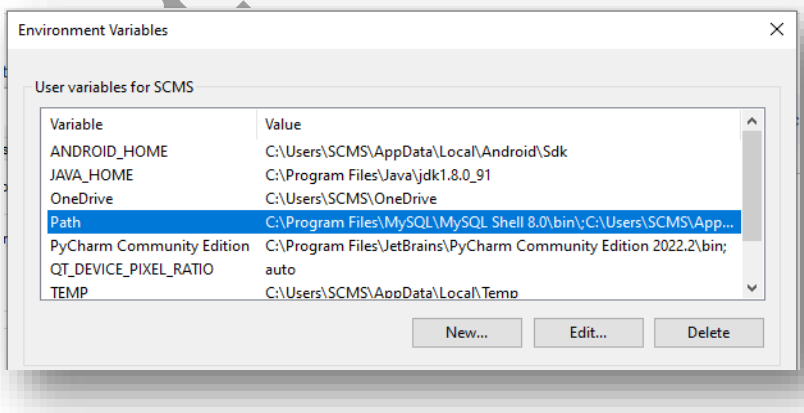
1. Install flutter SDK for windows.



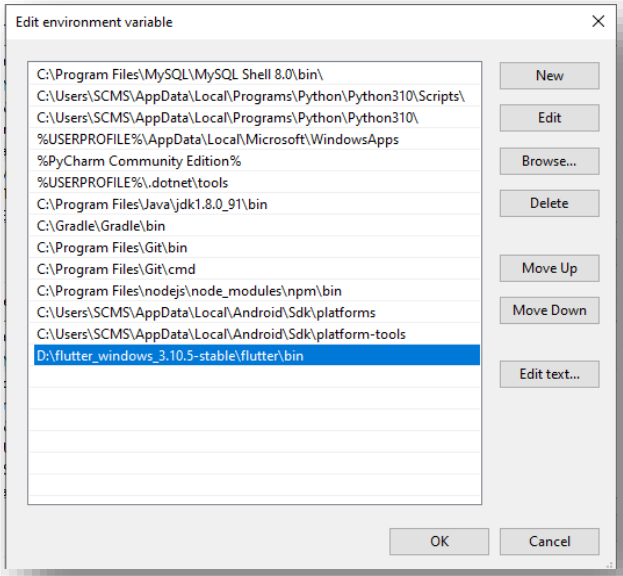
2. Set the environment variable in windows.



Edit “Path” variable.

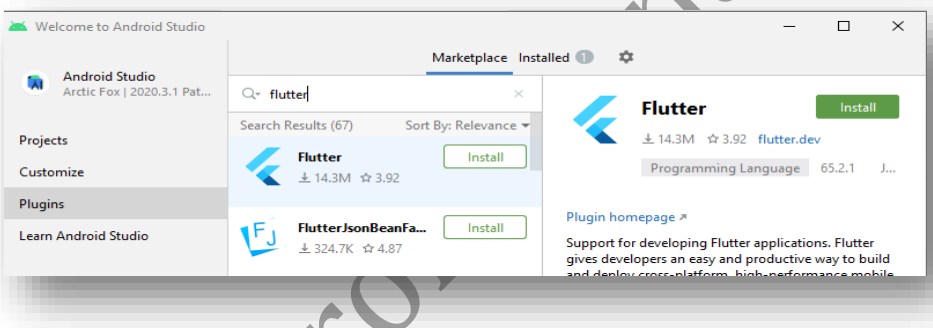


Create a new and paste the path of the flutter bin folder.

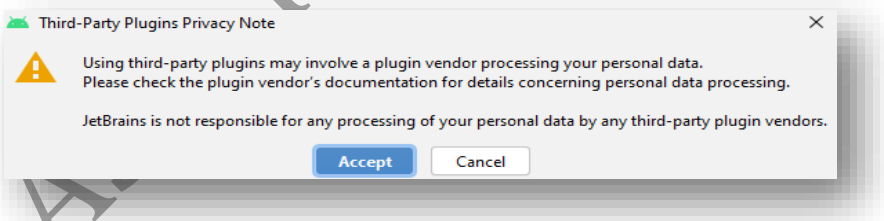


Click Ok and save the settings.

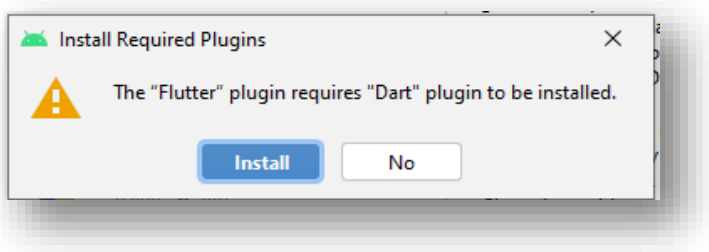
3. Open Android Studio and Install plugin for Flutter.



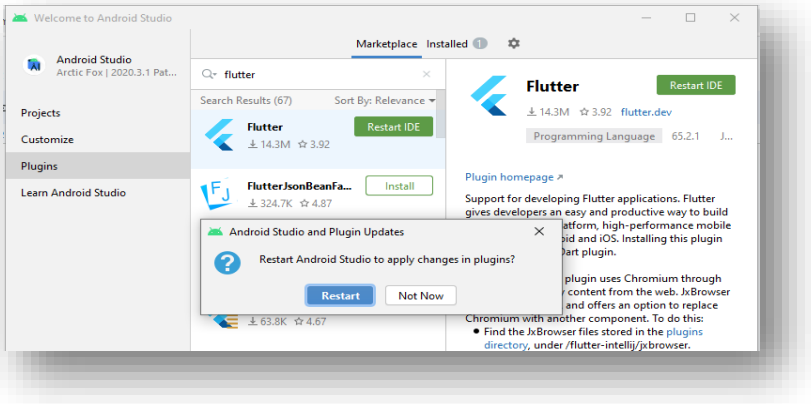
Click Accept.



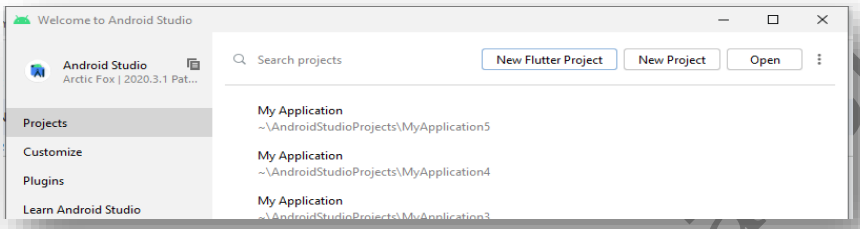
Install Dart with Flutter.



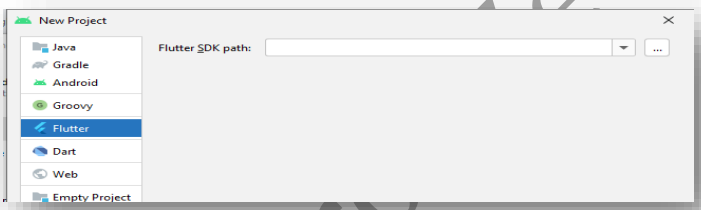
Click on RestartIDE and restart Android Studio to apply the plugin.

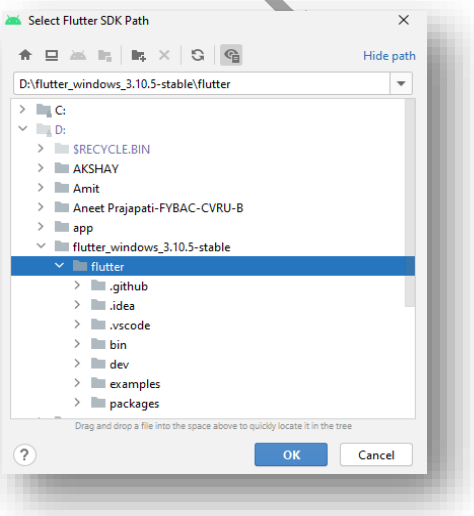


4. Create a new project by clicking on “New Flutter Project”.



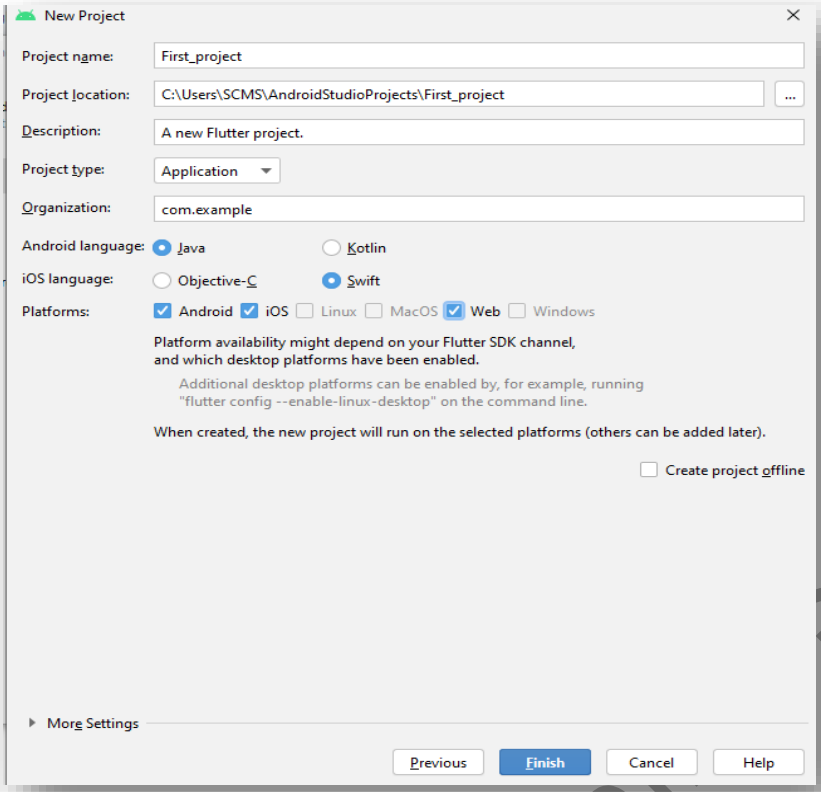
Click on the “Flutter” option. Click on the “...” button and select the flutter SDK path.



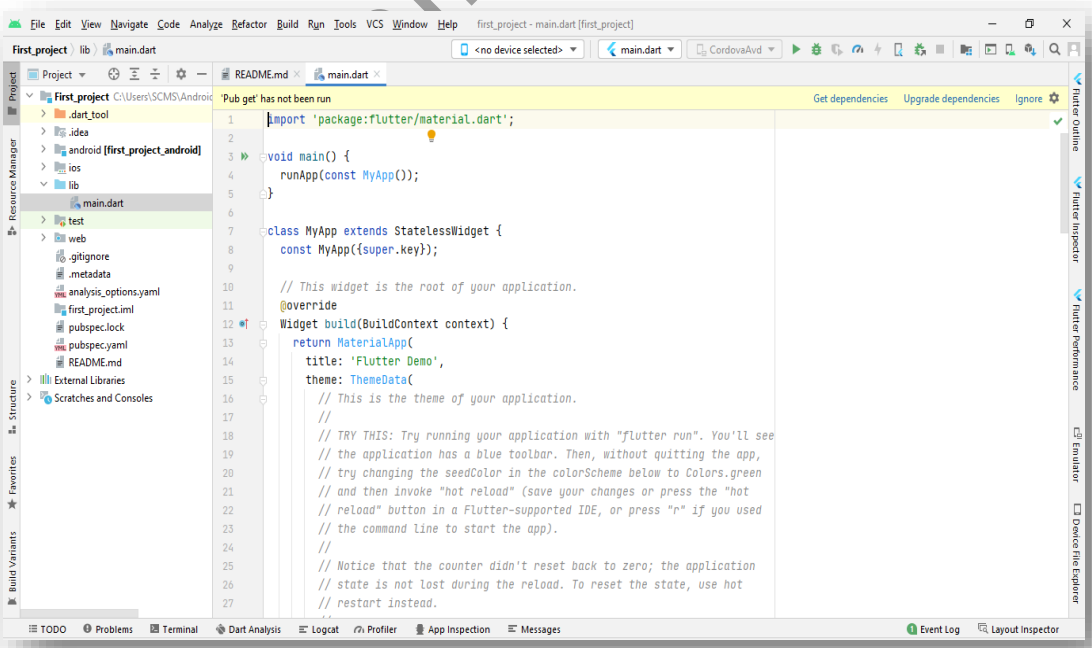


Click “Ok”. Click “Next”.

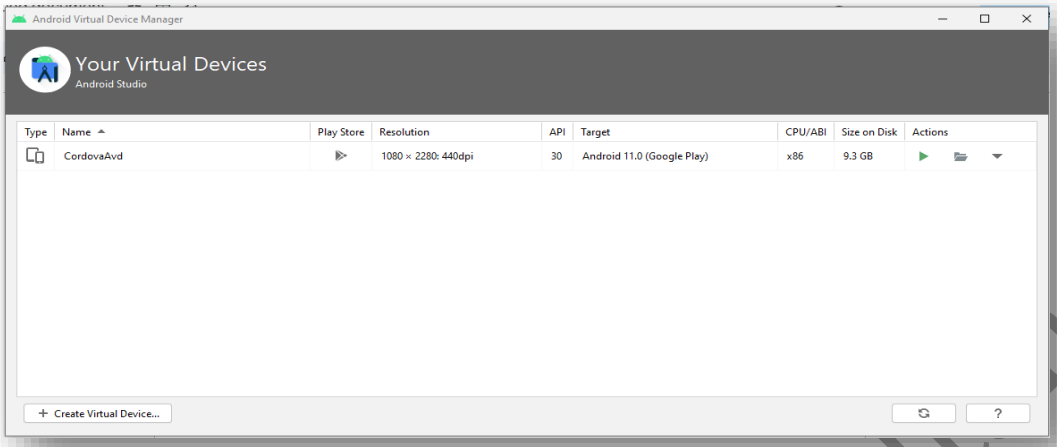
5. Give Project name “first_project”. Select the proper setting. Click “Finish”.



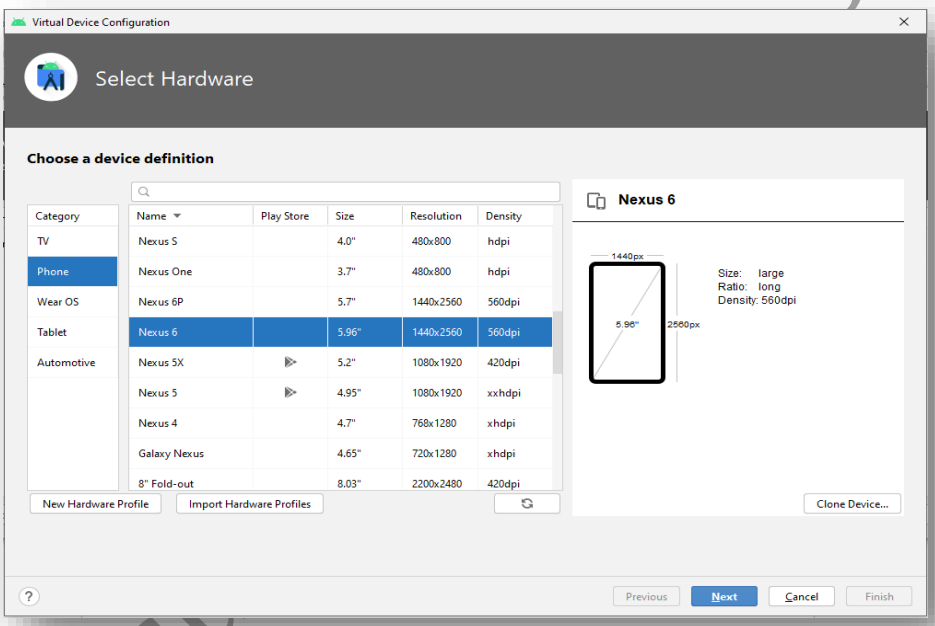
6. Your Flutter application is created with default code. It is to increment the number on the click of the button..



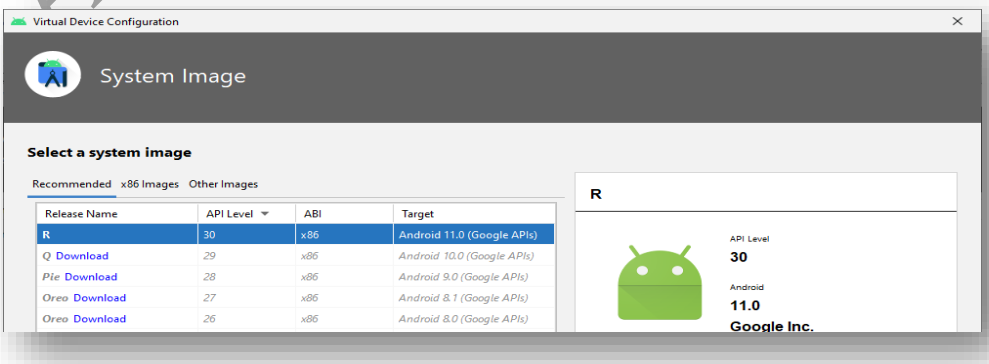
7. For executing the default project. Create a new device in Android Studio. Open Android Virtual Device(AVD) Manager.



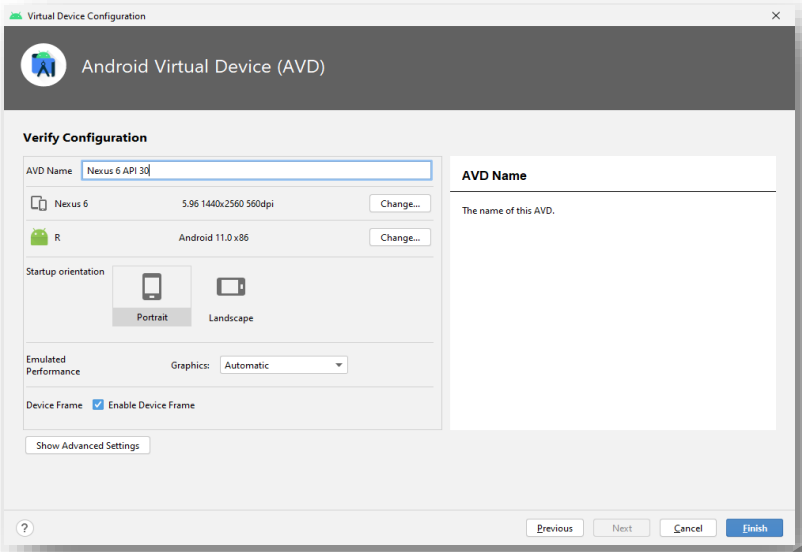
Click on “Create Virtual Device”.



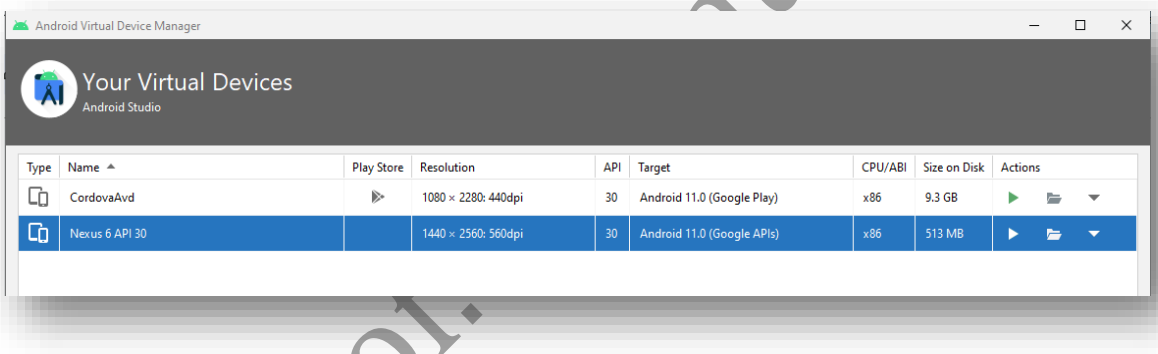
Select “Phone” and “Nexus 6”. Select “Next”.



Select R and Click on “Next”. It will download the files for R.

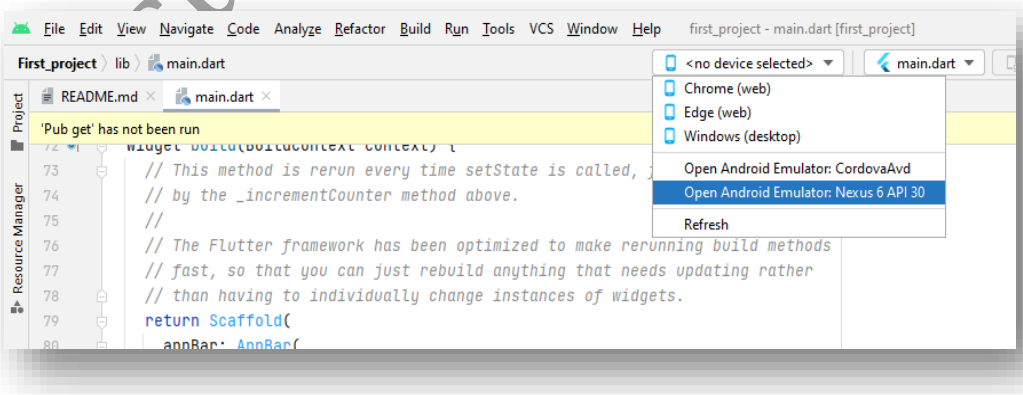


Click on “Finish”.

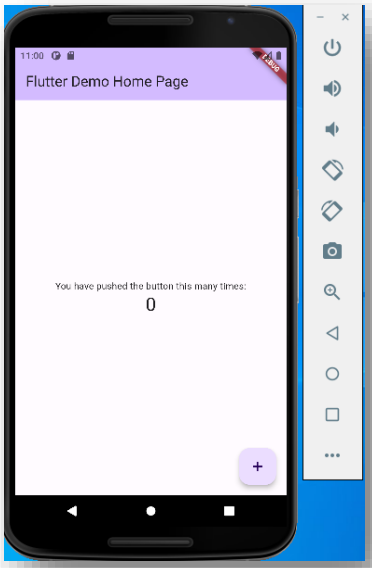


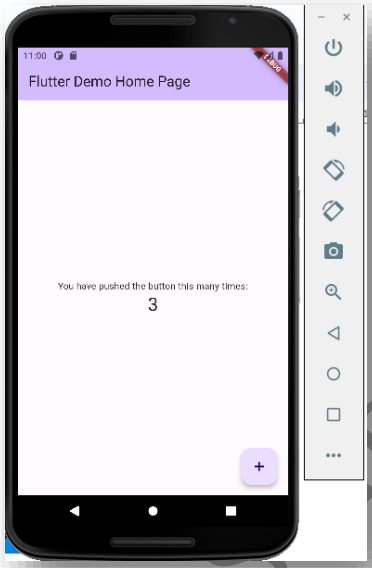
Minimise AVD Manager.

8. Select the device you have created. It will open your phone device.



9. After your device is opened. Click on “run” and execute your program. Check your output on the phone device.



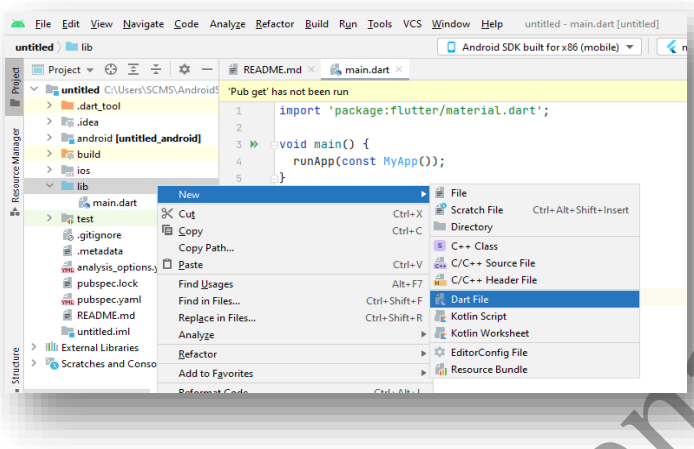


Practical - Dart

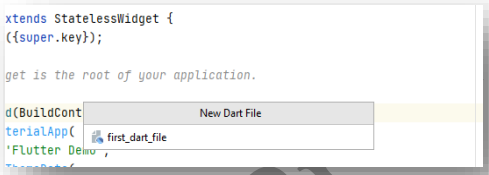
Dart is an open-source, general-purpose, object-oriented programming language with C-style syntax developed by Google in 2011.

QUESTION: Write a Dart program to print the user input value.

How to create a Dart file in Android Studio.

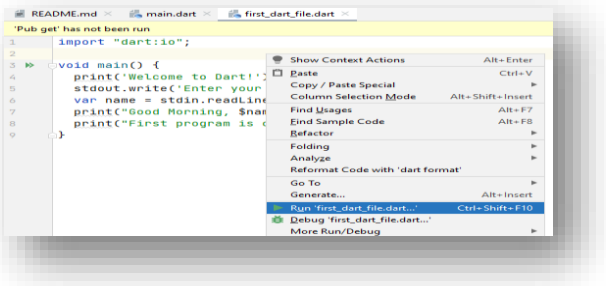


Provide file name for dart file. In this case we have given the name as ”first_dart_file” and press “Enter”.



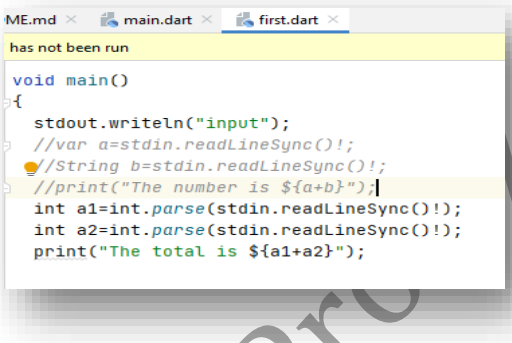
Your dart file will be created.

Execute your program.

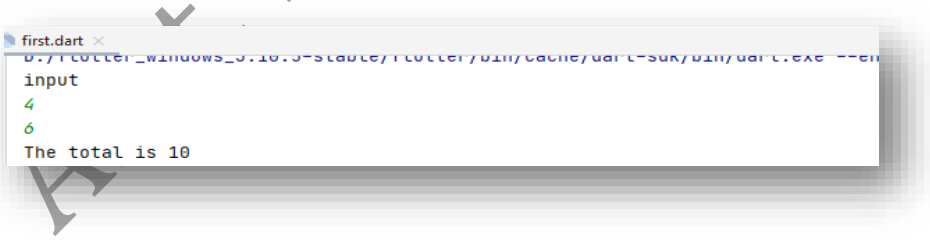


OUTPUT:

QUESTION: Write a Dart program to print the total sum of the user input value.



OUTPUT:



Data Type

Data Type	Example	Descriptions
String	String myName = 'javatpoint';	It holds text. In this, you can use single or double quotation marks. Once you decide the quotation marks, you should have to be consistent with your choice.
num, int, double	int age = 25; double price = 125.50;	The num data type stands for a number. Dart has two types of numbers: ○ Integer (It is a number without a decimal place.) ○ Double (It is a number with a decimal place.)

Boolean	bool var_name = true;
	Or
	bool var_name = false;
		It uses the bool keyword to represents the Boolean value true and false.

object	Person = Person()	Generally, everything in Dart is an object (e.g., Integer, String). But an object can also be more complex.

Operators

- Arithmetic Operators
- Equality and Relational Operators
- Logical Operators

Arithmetic Operators

Sr.No	Operators & Meaning
1	+ Add
2	− Subtract
4	* Multiply
5	/ Divide
7	% Get the remainder of an integer division (modulo)
8	++ Increment
9	-- Decrement

QUESTIONS

1. **Take input of different data types and print the values.**

2. **Perform different operations.**
3. **Take the name and marks(5 subjects) of students and print the total and average of the marks.**

Equality and Relational Operators

Operator	Description	Example
>	Greater than	(A > B) is False
<	Lesser than	(A < B) is True
>=	Greater than or equal to	(A >= B) is False
<=	Lesser than or equal to	(A <= B) is True
==	Equality	(A==B) is False
!=	Not equal	(A!=B) is True

Logical Operators

Logical operators are used to combine two or more conditions. Logical operators return a Boolean value.

Operator	Description	Example
&&	And – The operator returns true only if all the expressions specified return true	(A > 10 && B > 10) is False.
||	OR – The operator returns true if at least one of the expressions specified return true	(A > 10 || B > 10) is True.
!	NOT – The operator returns the inverse of the expression's result. For E.g.: !(7>5) returns false	!(A > 10) is True.

Conditional Expressions

Dart has two operators that let you evaluate expressions that might otherwise require if else statements –

condition ? expr1 : expr2

If the condition is true, then the expression evaluates expr1 (and returns its value); otherwise, it evaluates and returns the value of expr2.

Decision Making and Loops

The decision-making is a feature that allows you to evaluate a condition before the instructions are executed. The Dart language supports the following types of decision-making statements:

- If statement

```
if(boolean_expression){
  // statement(s) will execute if the boolean expression is true.
}
```

- If-else statement

```
if(boolean_expression){
  // statement(s) will execute if the Boolean expression is true.
} else {
  // statement(s) will execute if the Boolean expression is false.
}
```

- Switch statement

```
switch(variable_expression) {
  case constant_expr1: {
    // statements;
  }
  break;

  case constant_expr2: {
    //statements;
  }
  break;

  default: {
    //statements;
  }
  break;
}
```

QUESTIONS

1.Write a dart program to Print whether the user is eligible for voting or not.(take name and age as input).

```
import 'dart:io';
void main() {
print("Enter your age: ");
var age = int.parse(stdin.readLineSync()!);
if (age >= 18)
{
print("You are eligible to vote.");
}
else
{
print("You are not eligible to vote.");
}
}
```

2.Write a dart program to Compare three user input numbers and print the greatest number.

```
import 'dart:io';
void main()
{
print("Enter the first number: ");
int a = int.parse(stdin.readLineSync()!);
print("Enter the second number: ");
int b = int.parse(stdin.readLineSync()!);
print("Enter the third number: ");
int c = int.parse(stdin.readLineSync()!);
if (a > b && a > c)
{
print("$a is the largest");
}
else if (b > a && b > c)
{
print("$b is the largest");
}
else if (c > b && c > a)
{
print("$c is the largest");
}
}
```

3.Write a dart program to check whether a number is divisible by 5 and 11 or not.

```
import 'dart:io';
void main()
{
print("Enter the number: ");
int n = int.parse(stdin.readLineSync()!);
if(n%5 == 0 && n%11 == 0)
{
print(“number is divisible by 5 and 11 ”);
}
else
{
print(“number is not divisible by 5 and 11 ”);
}
}
```

4.Write a dart program to calculate the grade of the student on the basis of the student's five subject marks.
Percentage >= 90% : Grade A
Percentage >= 80% : Grade B
Percentage >= 70% : Grade C
Percentage >= 60% : Grade D
Percentage >= 40% : Grade E
Percentage < 40% : Grade F

```
import 'dart:io';
void main()
{
print("Enter the Marks 1 : ");
int m1 = int.parse(stdin.readLineSync()!);
print("Enter the Marks 2 : ");
int m2 = int.parse(stdin.readLineSync()!);
print("Enter the Marks 3 : ");
int m3 = int.parse(stdin.readLineSync()!);
print("Enter the Marks 4 : ");
int m4 = int.parse(stdin.readLineSync()!);
print("Enter the Marks 5 : ");
int m5 = int.parse(stdin.readLineSync()!);

}
int total = m1 + m2 + m3 + m4 + m5;
double perc = (total/500)*100;
if(perc >= 90)
{
print(“Grade A”);
}
else if(perc >= 80)
```

```
{
print(“Grade B”);
}
else if(perc >= 70)
{
print(“Grade C”);
}
else if(perc >= 60)
{
print(“Grade D”);
}
else if(perc >= 40)
{
print(“Grade E”);
}
else if(perc < 40)
{
print(“Grade F”);
}
}
```

5.Write a dart program to check whether the number is even or odd.

```
import 'dart:io';
void main()
{
print("Enter the number: ");
int num = int.parse(stdin.readLineSync()!);
if(num%2 == 0)
{
print(“The number $num is Even”);
}
else
{
print(“The number $num is Odd”);
}
}
```

6.Write a dart program to check if the number is positive, negative or zero.

7.Write a dart program to input week number and print week day.

```
import 'dart:io';
void main() {
```

```
print("Enter a week number (1-7): ");
int weekNumber = int.parse(stdin.readLineSync()!);
if(weekNumber == 1){
print(“Monday”);
}
else if(weekNumber == 2){
print(“Tuesday”);
}
else if(weekNumber == 3){
print(“Wednesday”);
}
else if(weekNumber == 4){
print(“Thursday”);
}
else if(weekNumber == 5){
print(“Friday”);
}
else if(weekNumber == 6){
print(“Saturday”);
}
else if(weekNumber == 7){
print(“Sunday”);
}
}
```

8.Write a dart program to input month number and print number of days in that month.
9.Write a dart program to input angles of a triangle and check whether triangle is valid or not.
10.Write a dart program to input electricity unit charges and calculate total electricity bill according to the given condition:
For first 50 units Rs. 0.50/unit
For next 100 units Rs. 0.75/unit
For next 100 units Rs. 1.20/unit
For unit above 250 Rs. 1.50/unit
An additional surcharge of 20% is added to the bill
11.Write a dart program to print menu
i. Area of square
ii. Perimeter of square
iii. Area of rectangle
iv. Perimeter of rectangle
And perform the operation as per selected option.

Looping Statement

Loops are used to execute a block of code repeatedly until a specified condition becomes true. Dart language supports the following types of loop statements:

- for

```
for (initial_count_value; termination-condition; step) {
  //statements
}
```

- for..in

```
for (variable_name in object){
  statement or block to execute
}
```

```
void main() {
  var obj = [12,13,14];

  for (var prop in obj) {
    print(prop);
  }
}
```

- while

```
while (expression) {
  Statement(s) to be executed if expression is true
}
```

- do..while

```
do {
  Statement(s) to be executed;
} while (expression);
```


QUESTIONS

1. **Write a dart program to the Print table (1-10) of the user input number.**
2. **Write a dart program to take a number from the user and print the tables (1-10) from 1 to the given number.**

3. **Write a dart program to print the even number sequence and odd number sequence separately.**
4. **Write a dart program to print the factorial of a number given by the user.**
5. **Write a dart program to check whether the number given by the user is palindrome or not.**
6. **Write a dart program to print the sum of digits in a user input number.**
7. **Write a dart program to print the sequence and pattern -**

1) **$ $ $ $**
   $ $ $ $
   $ $ $ $

2) *** * ***
   *** ***
   *** * ***

3) **1**
   1 1
   1 1 1

4) **1**
   1 2
   1 2 3
   1 2 3 4

5) **1 4 9 16 25 …**
6) **1 8 27 64 125 …**
7) **2 5 10 17 26 37 …**
8) **1 1 1**
   2 2
   3 3
   4 4 4

9) **# # #**
   @ @
   # #
   @ @ @

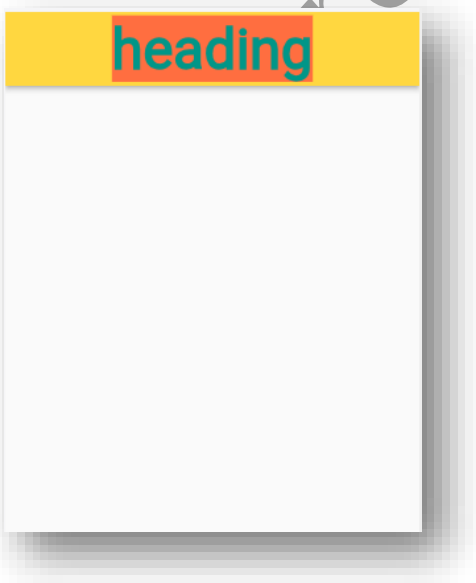
10) **12 15 18 21**
11) **5 15 25 35**
12) **1 4 9 16**
13) **10 20 15 25 20**
14) **2 3 5 8 13**

Practical - Flutter

QUESTION: Create an application in flutter to implement Text widget.

```
import 'package:flutter/material.dart';
void main() {
 runApp(MaterialApp(
  debugShowCheckedModeBanner: false,
  home: Scaffold(
   appBar: AppBar(
    title: const Text("heading ",
      textAlign: TextAlign.center ,
      style: TextStyle(fontSize: 43,
        fontWeight: FontWeight.bold,
        backgroundColor: Colors.deepOrangeAccent,
          color: Colors.teal),
      ),
    backgroundColor: Colors.amberAccent,
    centerTitle: true,
   ),
  )
 ));
}
```

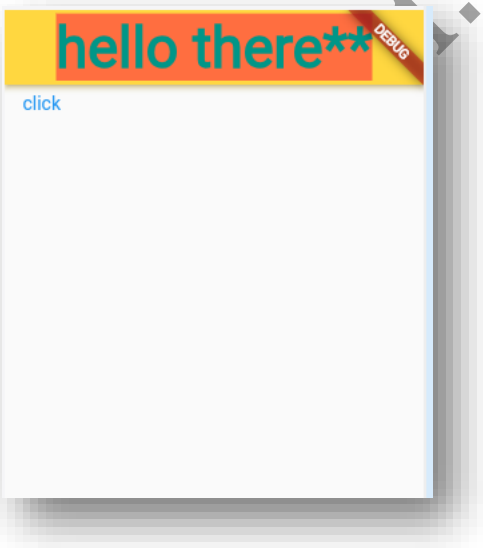
OUTPUT:

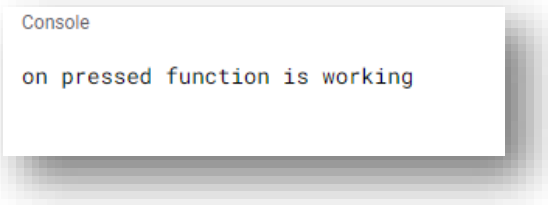


QUESTION: Create an application in flutter to implement TextButton widget.

```
import 'package:flutter/material.dart';
void main() {
 runApp(MaterialApp(
   home: Scaffold(
   appBar: AppBar(
   title: const Text("hello there** ",
   textAlign: TextAlign.center ,
   style: TextStyle(fontSize: 43,
      fontWeight: FontWeight.bold,
      backgroundColor: Colors.deepOrangeAccent,
      color: Colors.teal),
   ),
   backgroundColor: Colors.amberAccent,
   centerTitle: true,

 ),
 body:  TextButton(
 child: const Text("click"),
 onPressed: (){ print("on pressed function is working");},

 ), ),
  ));
}
```

OUTPUT:



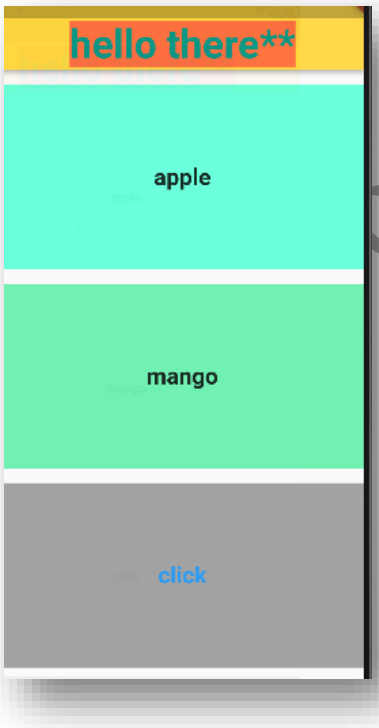


QUESTION: Create an application in flutter to implement Centre, Container, and Column widget.

```
import 'package:flutter/material.dart';
void main() {
 runApp(MaterialApp(
  home: Scaffold(
   appBar: AppBar(
    title: const Text("hello there**",
    textAlign: TextAlign.center ,
    style: TextStyle(fontSize: 43,
    fontWeight: FontWeight.bold,
    backgroundColor: Colors.deepOrangeAccent,
    color: Colors.teal),
    overflow: TextOverflow.ellipsis,
    selectionColor: Colors.black12,),
   backgroundColor: Colors.amberAccent,
   centerTitle: true,
  ),
   body:
    Center(
     child: Column(
       mainAxisAlignment: MainAxisAlignment.spaceEvenly,

      children: [
       Container(child: Center(
        child: Text("apple",
         style:TextStyle(
          fontSize: 25.0,
          fontWeight: FontWeight.bold,
         )),
       ),
       height:200.0,
       width:400.0,
       color:Colors.tealAccent),
       Container(child: Center(
        child: Text("mango",
         style:TextStyle(
          fontSize: 25.0,
          fontWeight: FontWeight.bold,
         ) ),
       ),
         height:200.0,
         width:400.0,
         color:Colors.greenAccent),
       Container(
        child: TextButton(
```

```
            onPressed:
            ()
            {
              print("fruit");
            },
            child: Center(child: Text("click",
              style:TextStyle(
              fontSize: 25.0,
              fontWeight: FontWeight.bold,)
            ))
          ),
          color: Colors.grey,
          height:200.0,
          width:400.0,
        )
       ],
      ),) )
 ));
}
```

OUTPUT:

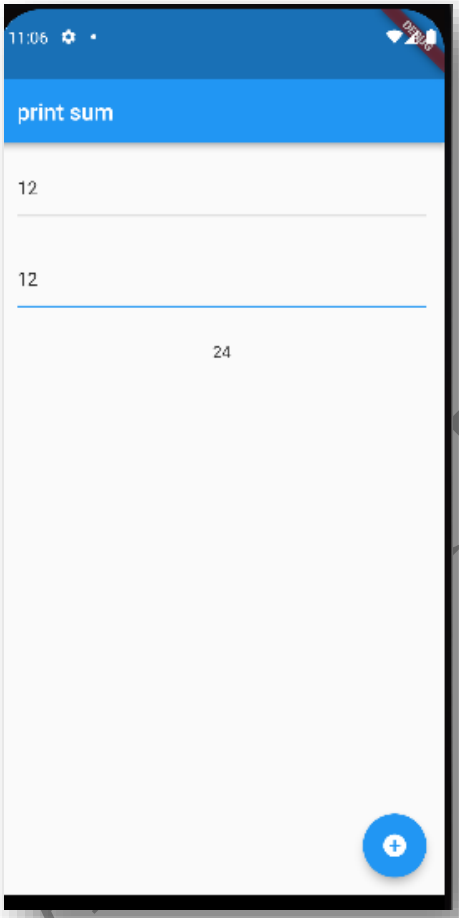


QUESTION: Create an application in flutter to add two numbers and print the addition on Text widget.

```
import 'package:flutter/material.dart';
void main() => runApp(const MyApp());
class MyApp extends StatelessWidget {
 const MyApp({super.key});
 @override
 Widget build(BuildContext context) {
  return const MaterialApp(
   home: MyCustomForm(),
  );}}
class MyCustomForm extends StatefulWidget {
 const MyCustomForm({super.key});
 @override
 State<MyCustomForm> createState() => _MyCustomFormState();
}
class _MyCustomFormState extends State<MyCustomForm> {
 final myController = TextEditingController();
 final myController1 = TextEditingController();
 @override
 void dispose() {
  myController.dispose();
  super.dispose();}
 int total=0;
 void sum()
   {
    setState(() {
     int a = int.parse(myController.text);
     int b = int.parse(myController1.text);
     total = a + b;
    });}
 @override
 Widget build(BuildContext context) {
  return Scaffold(
   appBar: AppBar(
    title: const Text('print sum'),),
   body: Column(
    children: [
     Padding(
      padding: const EdgeInsets.all(16),
      child: TextField(
       controller: myController,
       keyboardType: TextInputType.number,
      ),),
     Padding(
      padding: const EdgeInsets.all(16),
      child: TextField(
```

```
          controller: myController1,
        ),),
       Padding(
        padding: const EdgeInsets.all(16),
        child: Text( '$total'
        ),),],),
    floatingActionButton: FloatingActionButton(
     onPressed: () {sum();},
     child: const Icon(Icons.add_circle),
    ),);}}
```

OUTPUT:

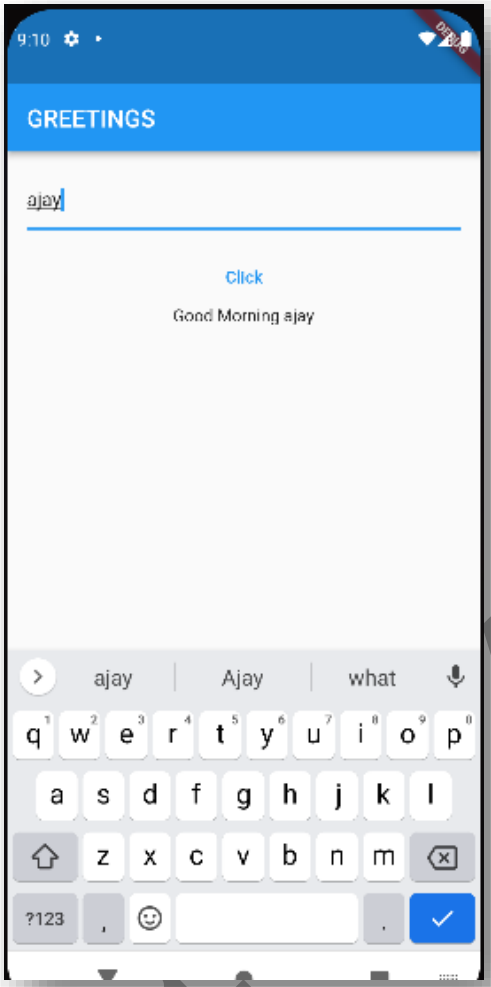


QUESTION: Create an application in flutter to print the greetings to the user. (take input in TextField)

```
import 'package:flutter/material.dart';
void main() => runApp(const MyApp());

class MyApp extends StatelessWidget {
 const MyApp({super.key});
 @override
 Widget build(BuildContext context) {
  return const MaterialApp(
   home: MyCustomForm(),
  );}}

  class MyCustomForm extends StatefulWidget {
 const MyCustomForm({super.key});
 @override
 State<MyCustomForm> createState() => _MyCustomFormState();
}

class _MyCustomFormState extends State<MyCustomForm> {
 final name=TextEditingController();
 var value='';
 void greet()
 {
  setState(() {
   var a=name.text;
   value='Good Morning $a';
  });
 }

 Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(
    title: const Text('GREETINGS'),),

      body:
    Column(
     children: [
      Padding(
       padding: const EdgeInsets.all(16.0),
       child: TextField(
        controller: name,
       ),),
      TextButton(onPressed:(){greet();},
        child: Text("Click")),
      Text("$value")
```

```
      ],
    )
  );
}}
```

OUTPUT:



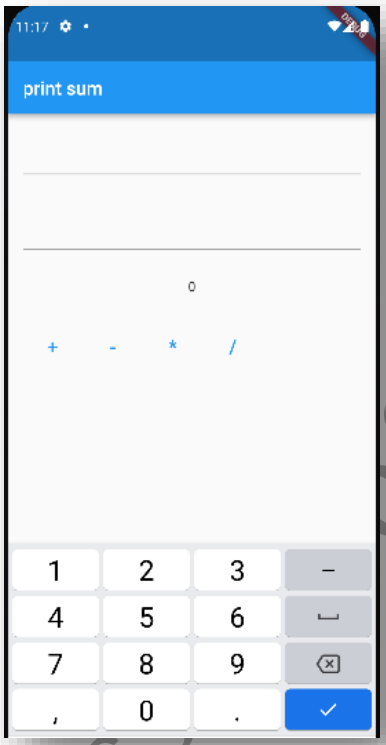
QUESTION: Create a calculator in flutter. (Operations – addition, subtraction, multiplication, division.)

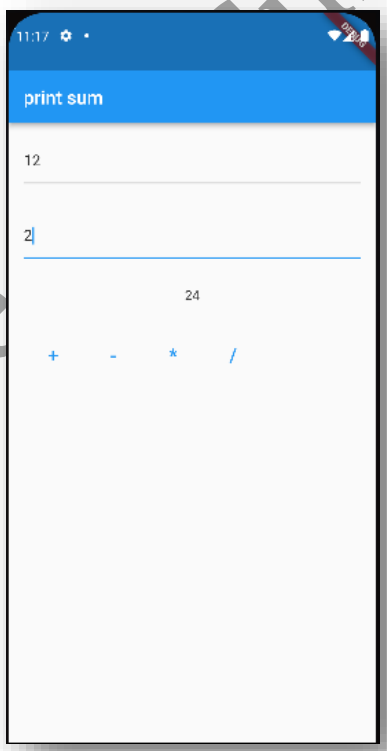
```
import 'package:flutter/material.dart';
void main() => runApp(const MyApp());
class MyApp extends StatelessWidget {
 const MyApp({super.key});
 @override
 Widget build(BuildContext context) {
  return const MaterialApp(
   home: MyCustomForm(),
  );}}
class MyCustomForm extends StatefulWidget {
 const MyCustomForm({super.key});
 @override
 State<MyCustomForm> createState() => _MyCustomFormState();
}
class _MyCustomFormState extends State<MyCustomForm> {
 final myController = TextEditingController();
 final myController1 = TextEditingController();
 @override
 void dispose() {
  myController.dispose();
  super.dispose();}
 int total=0;
 void sum()
   {
    setState(() {
     int a = int.parse(myController.text);
     int b = int.parse(myController1.text);
     total = a + b;
    });}
 void sub()
 {
  setState(() {
   int a = int.parse(myController.text);
   int b = int.parse(myController1.text);
   total = a - b;
  });}
 void mul()
 {
  setState(() {
   int a = int.parse(myController.text);
   int b = int.parse(myController1.text);
   total = a * b;
  });}
 void div()
```

```
{
 setState(() {
  int a = int.parse(myController.text);
  int b = int.parse(myController1.text);
  total = a ~/ b;
 });}
@override
Widget build(BuildContext context) {
 return Scaffold(
  appBar: AppBar(
   title: const Text('print sum'),),
  body: Column(
   children: [
    Padding(
     padding: const EdgeInsets.all(16),
     child: TextField(
      controller: myController,
      keyboardType: TextInputType.number,
     ),),
    Padding(
     padding: const EdgeInsets.all(16),
     child: TextField(
      controller: myController1,
     ),),
    Padding(
     padding: const EdgeInsets.all(16),
     child: Text( '$total'
     ),),
    Padding(
     padding: const EdgeInsets.all(16),
     child: Row(
      children: [
       TextButton(
        onPressed: (){sum();},
        child: Text("+",
        style:TextStyle(fontSize: 20))
       ),
       TextButton(
          onPressed: (){sub();},
          child: Text("-",
            style:TextStyle(fontSize: 20))
       ),
       TextButton(
          onPressed: (){mul();},
          child: Text("*",
            style:TextStyle(fontSize: 20))
       ),
```

```
            TextButton(
              onPressed: (){div();},
              child: Text("/",
                style:TextStyle(fontSize: 20))
            ),
          ],
        ),
      ),
    ],),
  );}}
```

OUTPUT:





QUESTIONS

1. Create an application in flutter to print the factorial on the screen of the input value. (take input in TextField)
2. Create an application in flutter to print whether the number is even or odd on the screen. (take input in TextField)
3. Create an application in flutter to implement Icon, Row and Column widget.
4. Create an application in flutter to print whether the number is positive, negative or zero. (take input in TextField)
5. Create an application in flutter to subtract two numbers and print the value on the screen. (take input in TextField)
6. Create an application in flutter to multiply two numbers and print the value on the screen. (take input in TextField)
7. Create an application in flutter to division two numbers and print the value on the screen. (take input in TextField)