Marwadi University Marwadi Chandarana Group NAAC A+	**Marwadi University** **Faculty of Technology** **Department of Information and Communication Technology**	
Subject: Cross-Platform Mobile Application Development (01CT1517)	**Aim:** To Study the basics of Dart language and design a basic Flutter App to Create Unit convertor(for length, weight, temperature, Area) app using Flutter.	
Experiment No:- 02	**Date:-** 20-09-2024	**Enrollment No:-** 92200133030

Objective:- To Study the basics of Dart language and design a basic Flutter App to Create Unit convertor(for length, weight, temperature, Area) app using Flutter.

Code :-

```
import 'package:flutter/material.dart';

void main() {
  runApp(const MyApp());
}

class MyApp extends StatelessWidget {
  const MyApp({super.key});

  // This widget is the root of your application.
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Flutter Demo',
      theme: ThemeData(
        // This is the theme of your application.
        //
        // TRY THIS: Try running your application with "flutter run". You'll see
        // the application has a purple toolbar. Then, without quitting the app,
        // try changing the seedColor in the colorScheme below to Colors.green
        // and then invoke "hot reload" (save your changes or press the "hot
        // reload" button in a Flutter-supported IDE, or press "r" if you used
        // the command line to start the app).
        //
        // Notice that the counter didn't reset back to zero; the application
        // state is not lost during the reload. To reset the state, use hot
        // restart instead.
        //
        // This works for code too, not just values: Most code changes can be
        // tested with just a hot reload.
        colorScheme: ColorScheme.fromSeed(seedColor: Colors.deepPurple),
        useMaterial3: true,
      ),
      home: ConverterScreen(),
    );
  }
}

class ConverterScreen extends StatefulWidget {
  @override
  _ConverterScreenState createState() => _ConverterScreenState();
}

class _ConverterScreenState extends State<ConverterScreen> {
  // Conversion options with units (from -> to)
```

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```
final List<String> _conversionTypes = [
  'Meters to Kilometers',
  'Kilometers to Meters',
  'Grams to Kilograms',
  'Kilograms to Grams',
  'Celsius to Fahrenheit',
  'Fahrenheit to Celsius',
  'Square Meters to Hectares',
  'Hectares to Square Meters',
  // New conversions
  'Miles to Kilometers',
  'Kilometers to Miles',
  'Pounds to Kilograms',
  'Kilograms to Pounds',
  'Liters to Milliliters',
  'Milliliters to Liters',
  'Kilometers per hour to Miles per hour',
  'Miles per hour to Kilometers per hour'
];

// Mapping for input and output units
final Map<String, String> _inputUnits = {
  'Meters to Kilometers': 'meters',
  'Kilometers to Meters': 'kilometers',
  'Grams to Kilograms': 'grams',
  'Kilograms to Grams': 'kilograms',
  'Celsius to Fahrenheit': 'Celsius',
  'Fahrenheit to Celsius': 'Fahrenheit',
  'Square Meters to Hectares': 'square meters',
  'Hectares to Square Meters': 'hectares',
  // New conversions
  'Miles to Kilometers': 'miles',
  'Kilometers to Miles': 'kilometers',
  'Pounds to Kilograms': 'pounds',
  'Kilograms to Pounds': 'kilograms',
  'Liters to Milliliters': 'liters',
  'Milliliters to Liters': 'milliliters',
  'Kilometers per hour to Miles per hour': 'km/h',
  'Miles per hour to Kilometers per hour': 'mph',
};

final Map<String, String> _outputUnits = {
  'Meters to Kilometers': 'kilometers',
  'Kilometers to Meters': 'meters',
  'Grams to Kilograms': 'kilograms',
  'Kilograms to Grams': 'grams',
  'Celsius to Fahrenheit': 'Fahrenheit',
  'Fahrenheit to Celsius': 'Celsius',
  'Square Meters to Hectares': 'hectares',
  'Hectares to Square Meters': 'square meters',
  'Miles to Kilometers': 'kilometers',
  'Kilometers to Miles': 'miles',
```

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```
  'Pounds to Kilograms': 'kilograms',
  'Kilograms to Pounds': 'pounds',
  'Liters to Milliliters': 'milliliters',
  'Milliliters to Liters': 'liters',
  'Kilometers per hour to Miles per hour': 'mph',
  'Miles per hour to Kilometers per hour': 'km/h',
};

// Input controller
final TextEditingController _inputController = TextEditingController();

// Selected conversion type and result
String _selectedConversion = 'Meters to Kilometers';
double _result = 0.0;

@override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(
      title: Text(
        'Unit Converter',
        style: TextStyle(
          color: Colors.white,
          fontWeight: FontWeight.bold,
        ),
      ),
      backgroundColor: Colors.deepPurple,
    ),
    body: Padding(
      padding: const EdgeInsets.all(16.0),
      child: Column(
        children: <Widget>[
          // Dropdown for selecting conversion type
          DropdownButton<String>(
            value: _selectedConversion,
            onChanged: (String? newValue) {
              setState(() {
                _selectedConversion = newValue!;
              });
            },
            items: _conversionTypes.map((String value) {
              return DropdownMenuItem<String>(
                value: value,
                child: Text(value),
              );
            }).toList(),
          ),
          SizedBox(height: 20),

          // Input field with dynamic unit label
          Row(
            children: [
```

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```
              Expanded(
                child: TextField(
                  controller: _inputController,
                  keyboardType: TextInputType.number,
                  decoration: InputDecoration(
                    labelText: 'Enter value',
                  ),
                ),
              ),
              SizedBox(width: 10),
              Text(
                _inputUnits[
                    _selectedConversion]!, // Dynamic unit next to input field
                style: TextStyle(fontSize: 16),
              ),
            ],
          ),
          SizedBox(height: 20),

          // Convert button
          ElevatedButton(
            onPressed: _convert,
            child: Text('Convert'),
          ),
          SizedBox(height: 20),

          // Display result with unit
          Text(
            'Result: $_result ${_outputUnits[_selectedConversion]}',
            style: TextStyle(fontSize: 20),
          ),
        ],
      ),
    ),
  );
}

// Conversion logic based on selected type
void _convert() {
  double inputValue = double.tryParse(_inputController.text) ?? 0.0;

  switch (_selectedConversion) {
    case 'Meters to Kilometers':
      _result = _convertMetersToKilometers(inputValue);
      break;
    case 'Kilometers to Meters':
      _result = _convertKilometersToMeters(inputValue);
      break;
    case 'Grams to Kilograms':
      _result = _convertGramsToKilograms(inputValue);
      break;
    case 'Kilograms to Grams':
```

```
      _result = _convertKilogramsToGrams(inputValue);
      break;
    case 'Celsius to Fahrenheit':
      _result = _convertCelsiusToFahrenheit(inputValue);
      break;
    case 'Fahrenheit to Celsius':
      _result = _convertFahrenheitToCelsius(inputValue);
      break;
    case 'Square Meters to Hectares':
      _result = _convertSquareMetersToHectares(inputValue);
      break;
    case 'Hectares to Square Meters':
      _result = _convertHectaresToSquareMeters(inputValue);
      break;
    // New conversions
    case 'Miles to Kilometers':
      _result = _convertMilesToKilometers(inputValue);
      break;
    case 'Kilometers to Miles':
      _result = _convertKilometersToMiles(inputValue);
      break;
    case 'Pounds to Kilograms':
      _result = _convertPoundsToKilograms(inputValue);
      break;
    case 'Kilograms to Pounds':
      _result = _convertKilogramsToPounds(inputValue);
      break;
    case 'Liters to Milliliters':
      _result = _convertLitersToMilliliters(inputValue);
      break;
    case 'Milliliters to Liters':
      _result = _convertMillilitersToLiters(inputValue);
      break;
    case 'Kilometers per hour to Miles per hour':
      _result = _convertKilometersToMilesPerHour(inputValue);
      break;
    case 'Miles per hour to Kilometers per hour':
      _result = _convertMilesToKilometersPerHour(inputValue);
      break;
    default:
      _result = 0.0;
  }

  setState(() {});
}

// Conversion functions for each type
// Length conversions
double _convertMetersToKilometers(double value) {
  return value / 1000; // 1 meter = 0.001 kilometers
}
```

```
double _convertKilometersToMeters(double value) {
  return value * 1000; // 1 kilometer = 1000 meters
}

// Weight conversions
double _convertGramsToKilograms(double value) {
  return value / 1000; // 1 gram = 0.001 kilograms
}

double _convertKilogramsToGrams(double value) {
  return value * 1000; // 1 kilogram = 1000 grams
}

// Temperature conversions
double _convertCelsiusToFahrenheit(double value) {
  return (value * 9 / 5) + 32; // (C * 9/5) + 32 = F
}

double _convertFahrenheitToCelsius(double value) {
  return (value - 32) * 5 / 9; // (F - 32) * 5/9 = C
}

// Area conversions
double _convertSquareMetersToHectares(double value) {
  return value / 10000; // 1 square meter = 0.0001 hectares
}

double _convertHectaresToSquareMeters(double value) {
  return value * 10000; // 1 hectare = 10000 square meters
}

// New conversion functions
// Length: Miles and Kilometers
double _convertMilesToKilometers(double value) {
  return value * 1.60934; // 1 mile = 1.60934 kilometers
}

double _convertKilometersToMiles(double value) {
  return value / 1.60934; // 1 kilometer = 0.621371 miles
}

// Weight: Pounds and Kilograms
double _convertPoundsToKilograms(double value) {
  return value * 0.453592; // 1 pound = 0.453592 kilograms
}

double _convertKilogramsToPounds(double value) {
  return value / 0.453592; // 1 kilogram = 2.20462 pounds
}

// Volume: Liters and Milliliters
double _convertLitersToMilliliters(double value) {
```

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```
    return value * 1000; // 1 liter = 1000 milliliters
  }

  double _convertMillilitersToLiters(double value) {
    return value / 1000; // 1 milliliter = 0.001 liters
  }

  // Speed: Kilometers per hour and Miles per hour
  double _convertKilometersToMilesPerHour(double value) {
    return value * 0.621371; // 1 km/h = 0.621371 mph
  }

  double _convertMilesToKilometersPerHour(double value) {
    return value / 0.621371; // 1 mph = 1.60934 km/h
  }
}
```

Output:-