Assignment 4, Question 10:

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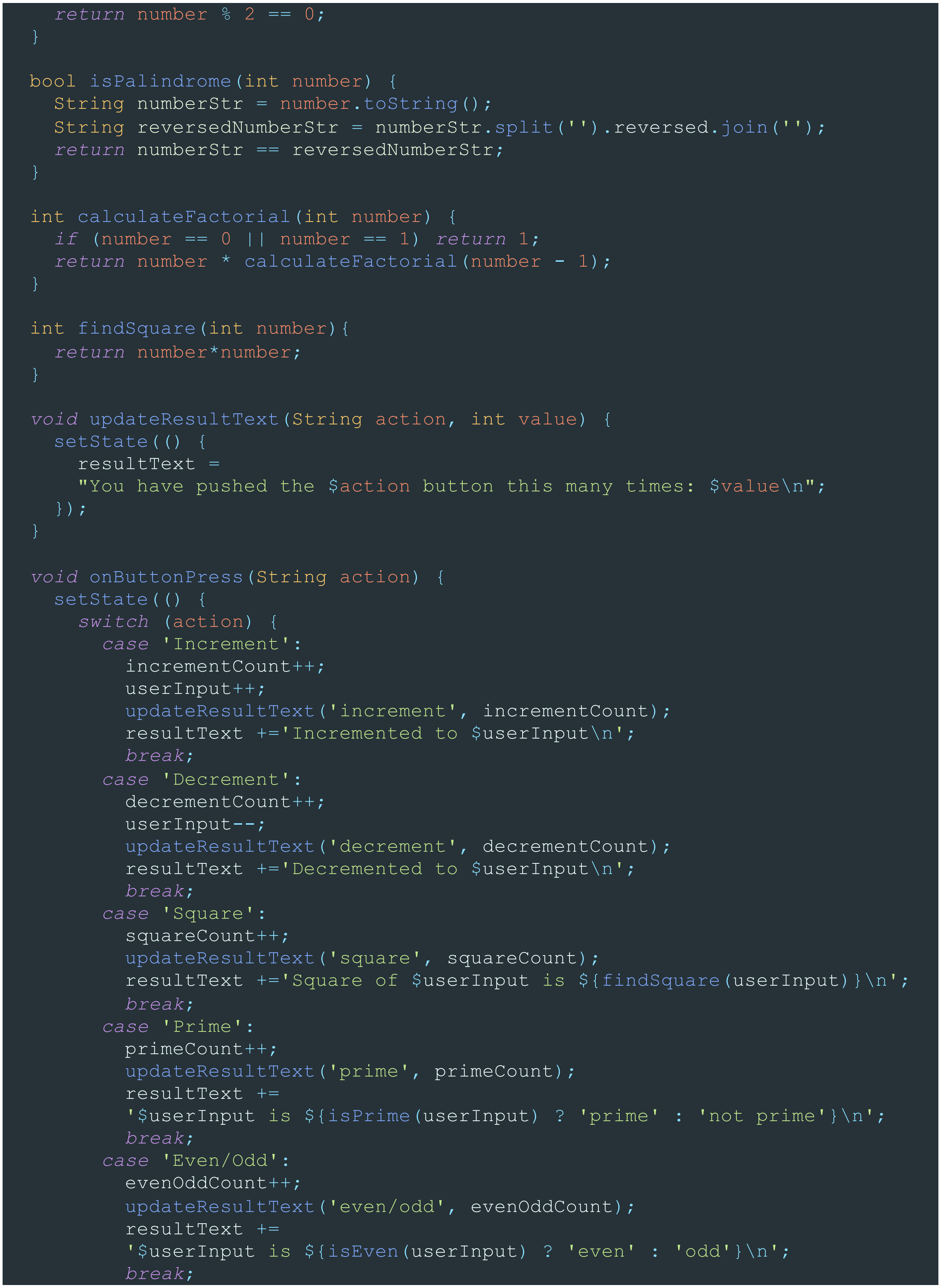
Q10. Write a program to create the Application to perform the following operations on the number

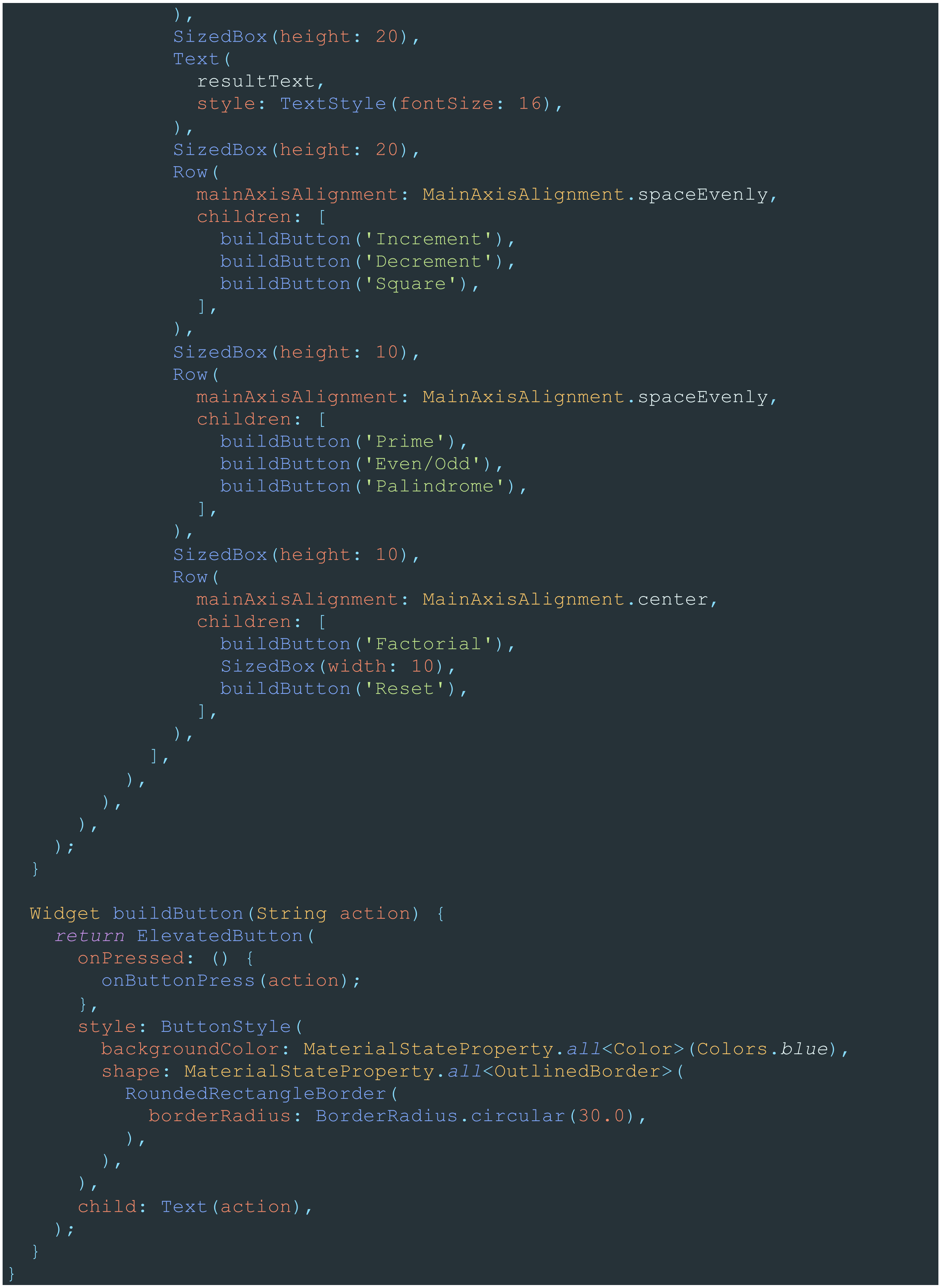
Increment, Decrement, Square, Reset

Check Prime, Check Even/Odd, Check Palindrome, Compute Factorial

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

void main() {
  runApp(FirstFlutterApp());
}

class FirstFlutterApp extends StatefulWidget {
  @override
  _FirstFlutterAppState createState() => _FirstFlutterAppState();
}

class _FirstFlutterAppState extends State<FirstFlutterApp> {
  int incrementCount = 0;
  int decrementCount = 0;
  int squareCount = 0;
  int primeCount = 0;
  int evenOddCount = 0;
  int palindromeCount = 0;
  int factorialCount = 0;
  int userInput = 0;

  String resultText = '';

  bool isPrime(int number) {
    if (number <= 1) return false;
    if (number == 2) return true;
    for (int i = 2; i <= sqrt(number); i++) {
      if (number % i == 0) return false;
    }
    return true;
  }

  bool isEven(int number) {
```

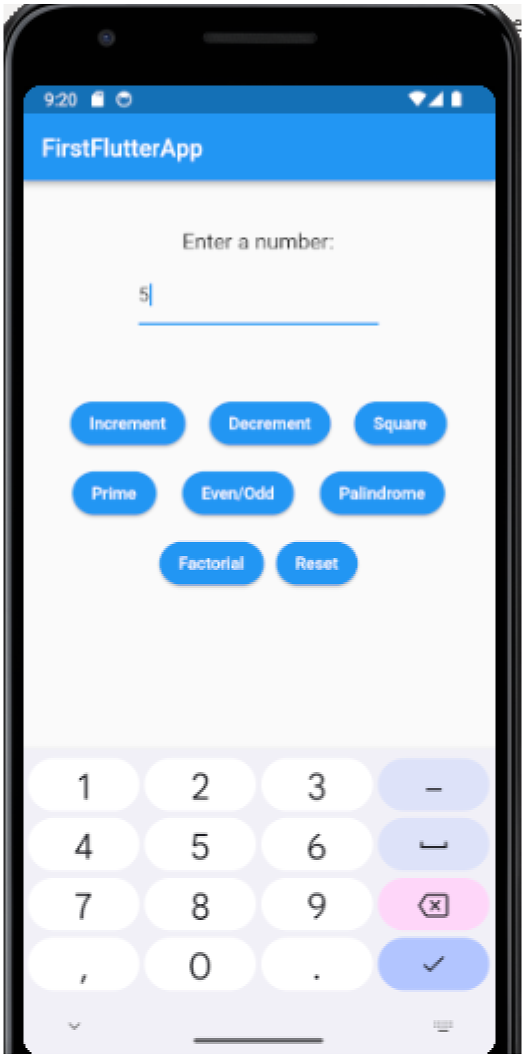


```
  return number % 2 == 0;
}

bool isPalindrome(int number) {
  String numberStr = number.toString();
  String reversedNumberStr = numberStr.split('').reversed.join('');
  return numberStr == reversedNumberStr;
}

int calculateFactorial(int number) {
  if (number == 0 || number == 1) return 1;
  return number * calculateFactorial(number - 1);
}

int findSquare(int number){
  return number*number;
}

void updateResultText(String action, int value) {
  setState(() {
    resultText =
    "You have pushed the $action button this many times: $value\n";
  });
}

void onButtonPress(String action) {
  setState(() {
    switch (action) {
      case 'Increment':
        incrementCount++;
        userInput++;
        updateResultText('increment', incrementCount);
        resultText +='Incremented to $userInput\n';
        break;
      case 'Decrement':
        decrementCount++;
        userInput--;
        updateResultText('decrement', decrementCount);
        resultText +='Decremented to $userInput\n';
        break;
      case 'Square':
        squareCount++;
        updateResultText('square', squareCount);
        resultText +='Square of $userInput is ${findSquare(userInput)}\n';
        break;
      case 'Prime':
        primeCount++;
        updateResultText('prime', primeCount);
        resultText +=
        '$userInput is ${isPrime(userInput) ? 'prime' : 'not prime'}\n';
        break;
      case 'Even/Odd':
        evenOddCount++;
        updateResultText('even/odd', evenOddCount);
        resultText +=
        '$userInput is ${isEven(userInput) ? 'even' : 'odd'}\n';
        break;
        case 'Palindrome':
          palindromeCount++;
          updateResultText('palindrome', palindromeCount);
          resultText +=
          '$userInput is ${isPalindrome(userInput) ? 'palindrome' : 'not
palindrome'}\n';
          break;
        case 'Factorial':
          factorialCount++;
          updateResultText('factorial', factorialCount);
          resultText +=
          'Factorial of $userInput is ${calculateFactorial(userInput)}\n';
          break;
        case 'Reset':
          incrementCount = 0;
          decrementCount = 0;
          squareCount = 0;
          primeCount = 0;
          evenOddCount = 0;
          palindromeCount = 0;
          factorialCount = 0;
          resultText = '';
          // Reset userInput to its original value
          userInput =0;
          break;
      }
    });
  }

  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'FirstFlutterApp',
      debugShowCheckedModeBanner: false,
      home: Scaffold(
        appBar: AppBar(
          title: Text('FirstFlutterApp'),
        ),
        body: SingleChildScrollView(
          padding: EdgeInsets.all(20),
          child: Column(
            crossAxisAlignment: CrossAxisAlignment.center,
            children: <Widget>[
              SizedBox(height: 20),
              Text(
                'Enter a number:',
                style: TextStyle(fontSize: 18),
              ),
              SizedBox(height: 10),
              Container(
                width: 200, // Set a specific width
                child: TextField(
                  keyboardType: TextInputType.number,
                  onChanged: (value) {
                    userInput = int.tryParse(value) ?? 0;
                  },
                ),
```



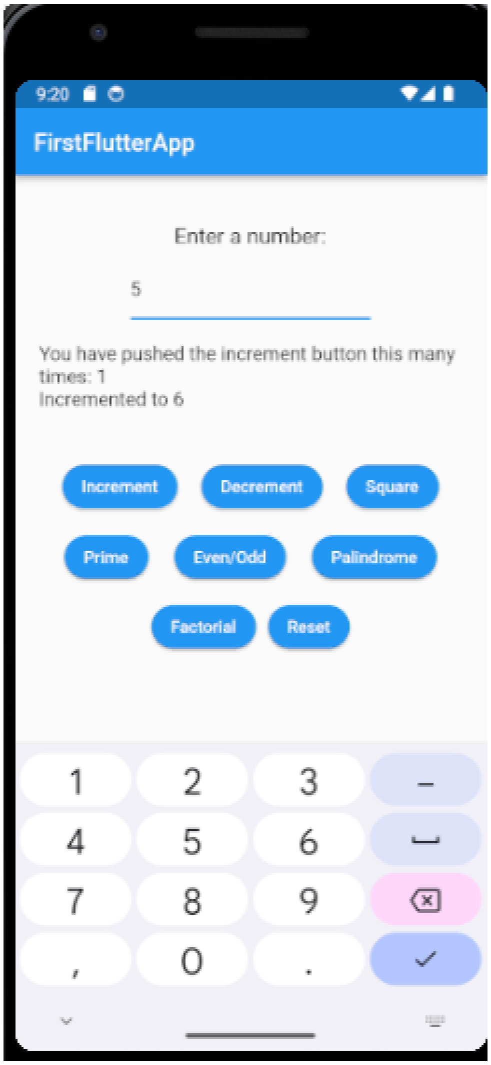
```
              ),
              SizedBox(height: 20),
              Text(
                resultText,
                style: TextStyle(fontSize: 16),
              ),
              SizedBox(height: 20),
              Row(
                mainAxisAlignment: MainAxisAlignment.spaceEvenly,
                children: [
                  buildButton('Increment'),
                  buildButton('Decrement'),
                  buildButton('Square'),
                ],
              ),
              SizedBox(height: 10),
              Row(
                mainAxisAlignment: MainAxisAlignment.spaceEvenly,
                children: [
                  buildButton('Prime'),
                  buildButton('Even/Odd'),
                  buildButton('Palindrome'),
                ],
              ),
              SizedBox(height: 10),
              Row(
                mainAxisAlignment: MainAxisAlignment.center,
                children: [
                  buildButton('Factorial'),
                  SizedBox(width: 10),
                  buildButton('Reset'),
                ],
              ),
            ],
          ),
        ),
      ),
    );
  }

  Widget buildButton(String action) {
    return ElevatedButton(
      onPressed: () {
        onButtonPress(action);
      },
      style: ButtonStyle(
        backgroundColor: MaterialStateProperty.all<Color>(Colors.blue),
        shape: MaterialStateProperty.all<OutlinedBorder>(
          RoundedRectangleBorder(
            borderRadius: BorderRadius.circular(30.0),
          ),
        ),
      ),
      child: Text(action),
    );
  }
}
```

Output:



Enter a number:

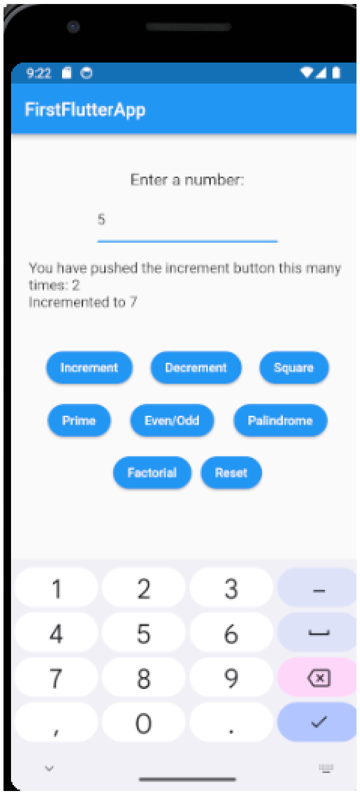
5



Enter a number:

5

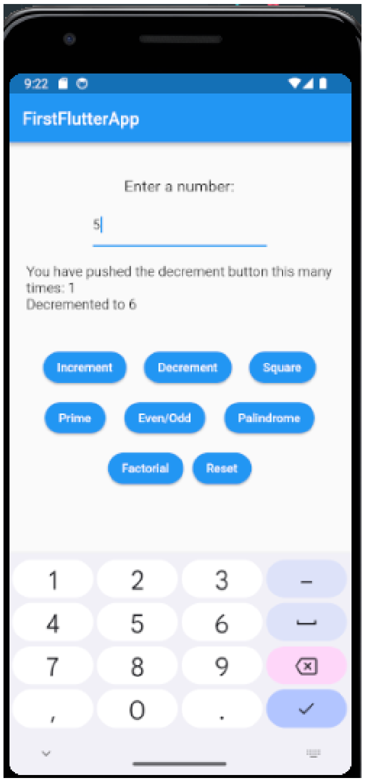
You have pushed the increment button this many times: 1
Incremented to 6



Enter a number:

5

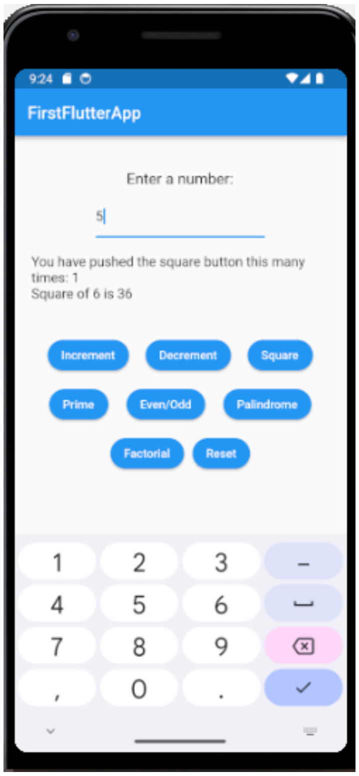
You have pushed the increment button this many times: 2
Incremented to 7



Enter a number:

5

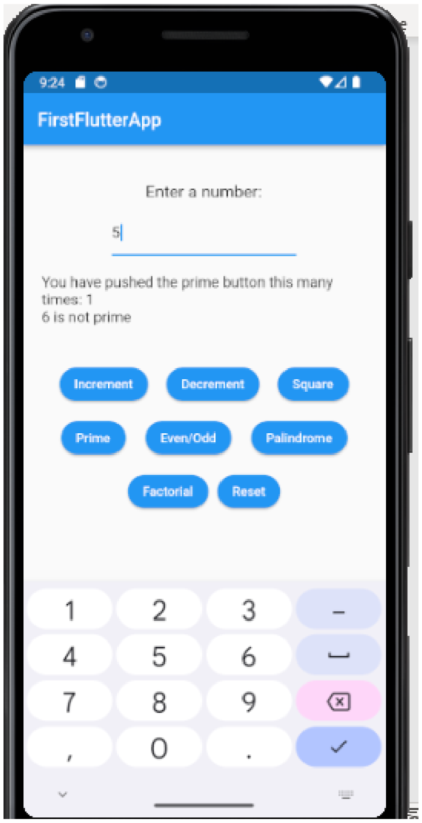
You have pushed the decrement button this many times: 1
Decremented to 6



Enter a number:

5

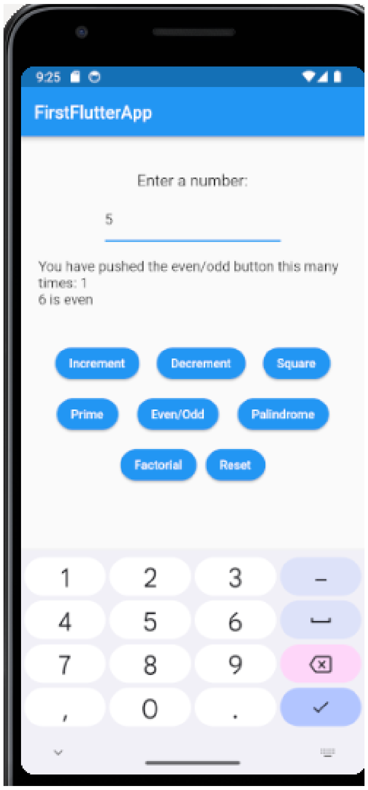
You have pushed the square button this many times: 1
Square of 6 is 36



Enter a number:

5

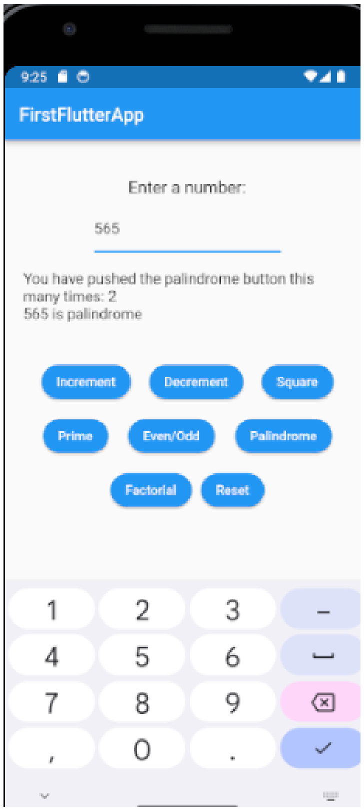
You have pushed the prime button this many times: 1
6 is not prime



Enter a number:

5

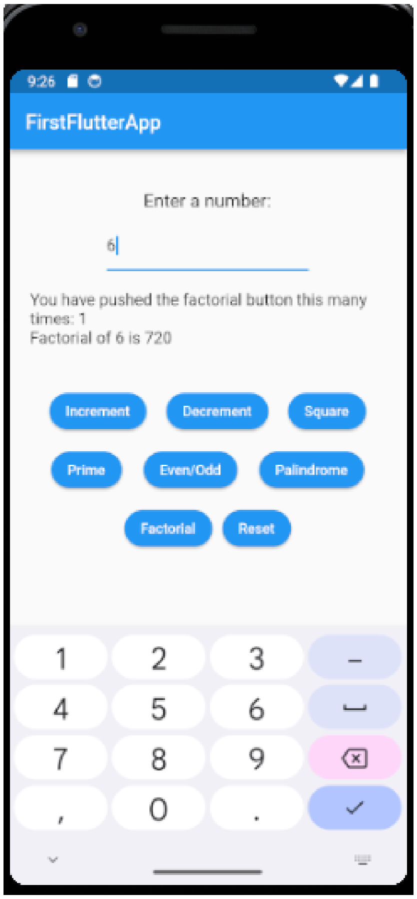
You have pushed the even/odd button this many times: 1
6 is even



Enter a number:

565

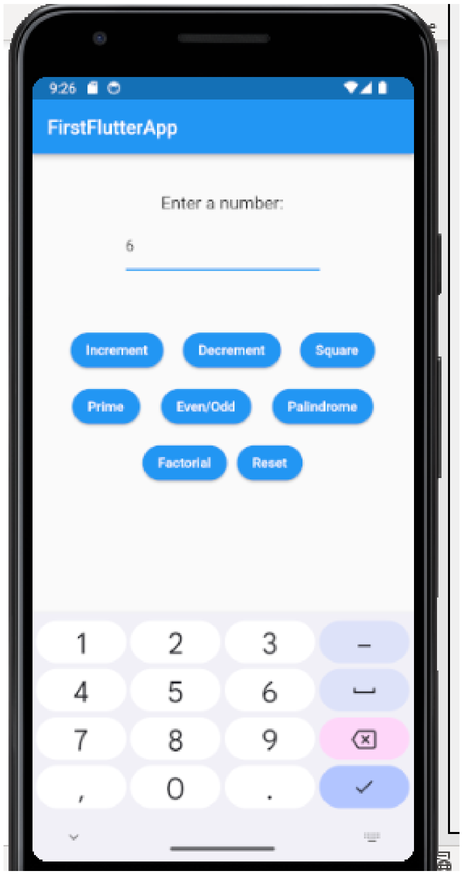
You have pushed the palindrome button this many times: 2
565 is palindrome



Enter a number:

6

You have pushed the factorial button this many times: 1
Factorial of 6 is 720



Enter a number:

6