Arduino and Flutter Communication using Bluetooth

Fernando Nicolei Esperida

WHO AM I?

Fernando Nicolei Esperida

- BSIT – Software Development

- Freelance Flutter Mobile Developer

- Founder of Nicolei Games

- Creator of Bulalord Extreme (2014)

- Programmers, Codeposting Administrator

- Microsoft Learn Student Ambassador

Microsoft Learn Student Ambassadors

Become the next
Microsoft Learn Student Ambassador!

What is Microsoft Learn Student Ambassador?

Microsoft Learn Student Ambassador (MLSA) are student technology leaders, empowered to build Microsoft communities on their campus and share their deep knowledge and passion for technology with their fellow classmates.

Why become one of the MLSAs?

The MLSA program is an educational and promotional program to sponsor undergraduate and postgraduate students majoring in disciplines related to technology and computer science.

Student Ambassador Roadmap

New to the program? Use this roadmap to get started on your journey.

New

☑ You've been invited
☐ Engage in Leagues and attend monthly League events
☐ Complete a Learning Path to advance
☐ Start your Technical Onboarding

Alpha

☐ Unlock your benefits: Azure, free certification exam, LinkedIn Learning
☐ Complete your Technical Onboarding
☐ Showcase Microsoft technologies by hosting and reporting an event or actively participate in a Social Impact League Project

Beta

☐ Unlock your benefits: another free certification exam, pilot prizing for AI Gaming tournaments
☐ Receive your Swag box
☐ Continue your journey to be considered for Gold nomination:
  ☐ Skilling on Learn
  ☐ Hosting events
  ☐ Contributing to the community

Gold

☐ Unlock your benefits: four more free certification exams
☐ Consideration for special events and speaking engagements
☐ Recognition for your high-impact achievements
☐ Eligible for Microsoft Most Valuable Professional (MVP) mentoring
☐ Potential nomination as Microsoft MVP upon graduation

Benefits of being an MLSA

- Office 365 subscription (Alpha)
- Visual Studio Enterprise (like MSDN subscription) along with Azure credits worth $150/month
- LinkedIn Learning free for 6 months
- Free trainings in Microsoft technologies via Microsoft Learn
- Food and Beverage support in events through Subway (Beta)
- Networking opportunity with Microsoft officials (Gold)
- Chance to visit nearby Microsoft HQ for meetups or hackathons
- Opportunity to be invited for annual regional MSP Summit (Beta)

How to apply?

It's easy to apply in the Microsoft Learn Student Ambassador program. Just head over to https://studentambassadors.microsoft.com and click apply!

Microsoft Learn
Student Ambassadors

Agenda

Agenda

- What is Flutter?
- What is Dart?
- Installing Flutter and Visual Studio Code
- Create Flutter App from Scratch
  - Widgets
  - Packages

What is Flutter?

What is Flutter?

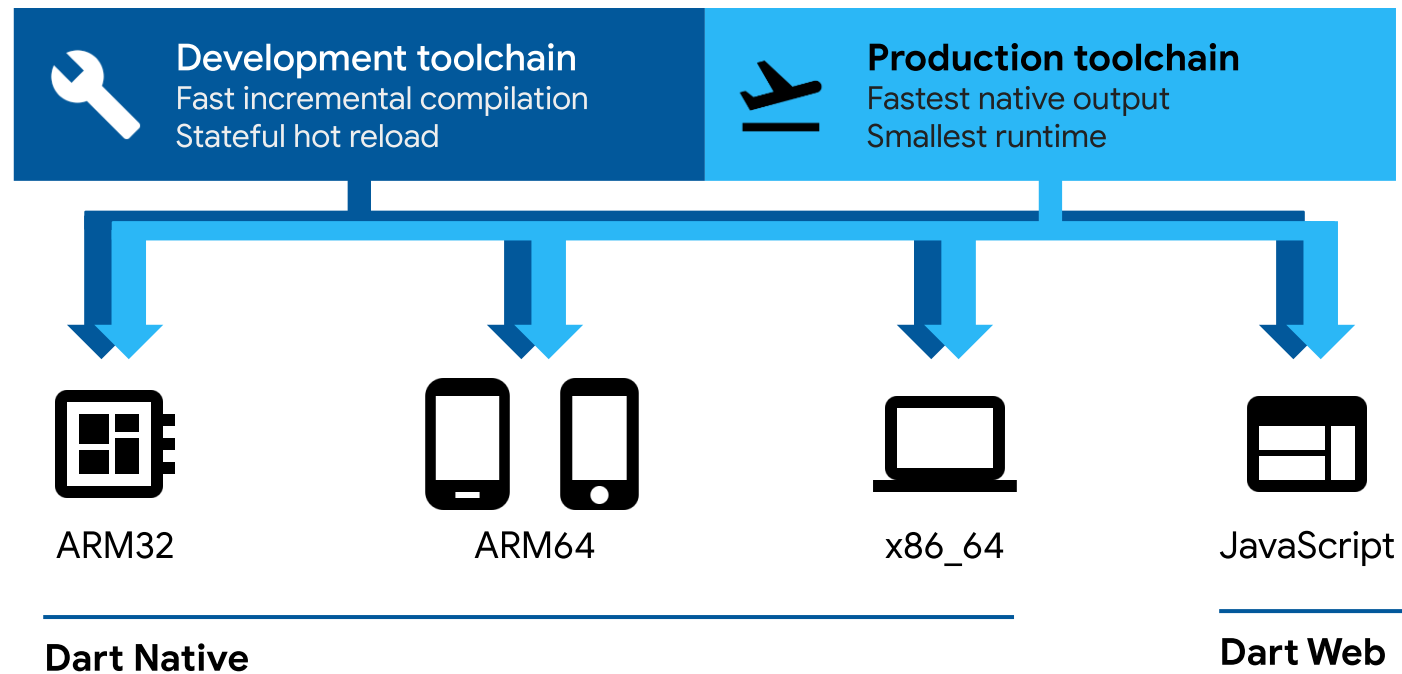Flutter is an open-source UI toolkit for mobile, web and desktop applications from a single codebase.

Flutter uses Dart language.

So, what is Dart Language?

Dart is a client-optimized language for developing fast apps on any platform.

Dart Language Sample Code Snippet


```dart
void main() {
  print("Hello, World!");
}
```

Dart Language Sample Code Snippet

```dart
void main() {
  print(isEven(2));
}

bool isEven(int number) {
  return number % 2 == 0;
}
```

Dart Language Sample Code Snippet

```dart
void main() {
  var numbers = [1,2,3,4,5,6,7,8,9,10];

  for(var count = 0; count < numbers.length; count++){
    if(isEven(numbers[count])){
      print(numbers[count]);
    }
  }
}


bool isEven(int number) {
  return number % 2 == 0;
}
```
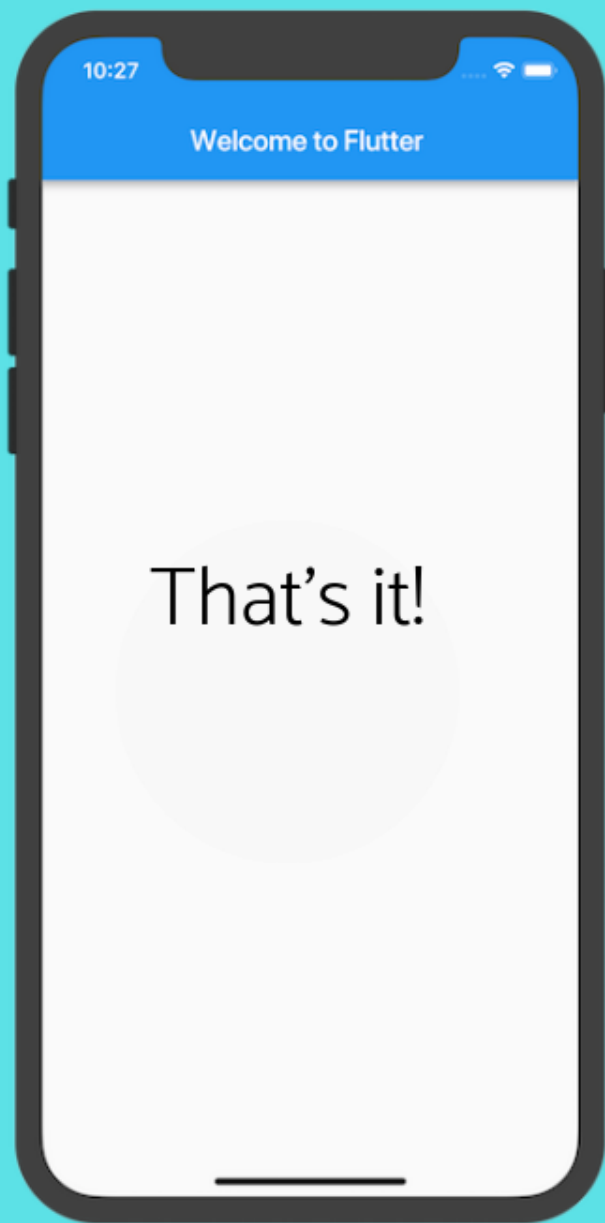
http://bit.ly/isEvenForDart

Dart Language Sample Code Snippet

```dart
void main() {
  var numbers = {1,2,3,4,5,6,7,8,9,10};
  numbers.forEach((value) => {
    if(isEven(value)){
      print(value)
    }
  });
}

bool isEven(int number) {
  return number % 2 == 0;
}
```

Everything in Flutter is a Widget

http://bit.ly/flutterWidgetSample
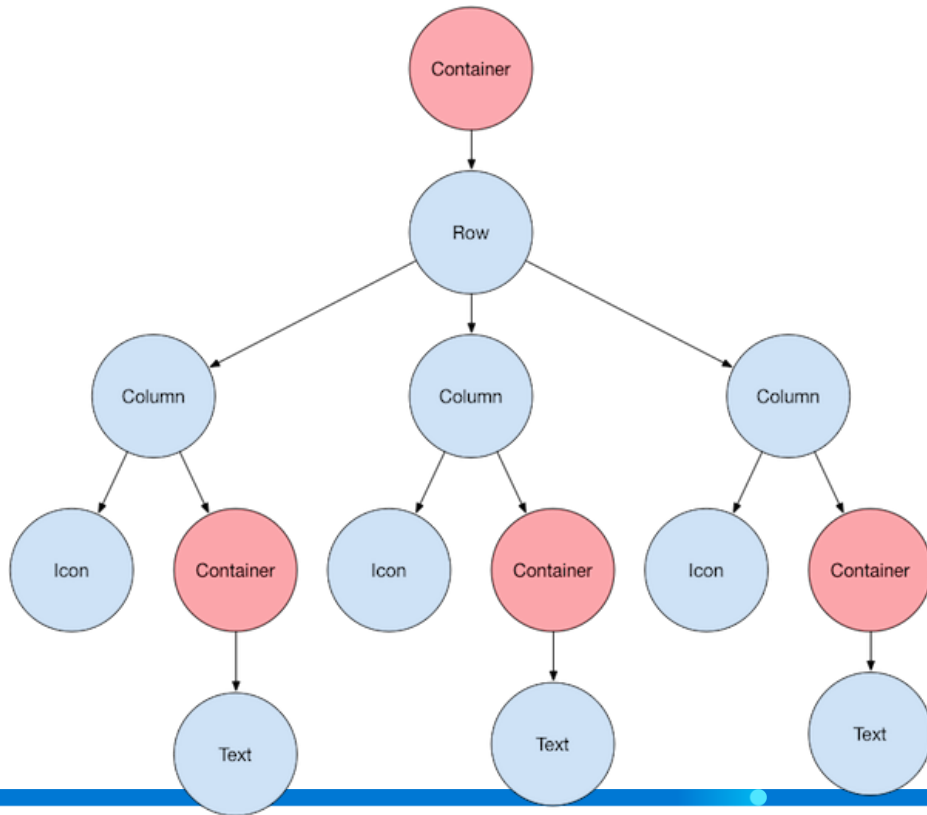
```dart
Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text(widget.title),
      ),
      body: Center(
        child: Container(
          height: 100,
          width: 200,
          child: Row(
            mainAxisAlignment: MainAxisAlignment.spaceEvenly,
            children: [
              Column(
                children: [
                  Icon(
                    Icons.local_phone,
                  ),
                  Text('Call'),
                ],
              ),
              Column(
                children: [
                  Icon(
                    Icons.near_me,
                  ),
                  Text('Route'),
                ],
              ),
              Column(
                children: [
                  Icon(
                    Icons.share,
                  ),
                  Text('Share'),
                ],
              ),
            ],
          ),
        ),
      ),
    );
}
```

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

void main() => runApp(MyApp());


class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Welcome to Flutter',
      home: Scaffold(
        appBar: AppBar(
          title: Text('Welcome to Flutter'),
        ),
        body: Center(
          child: Text('That's it!'),
        ),
      ),
    );
  }
}
```
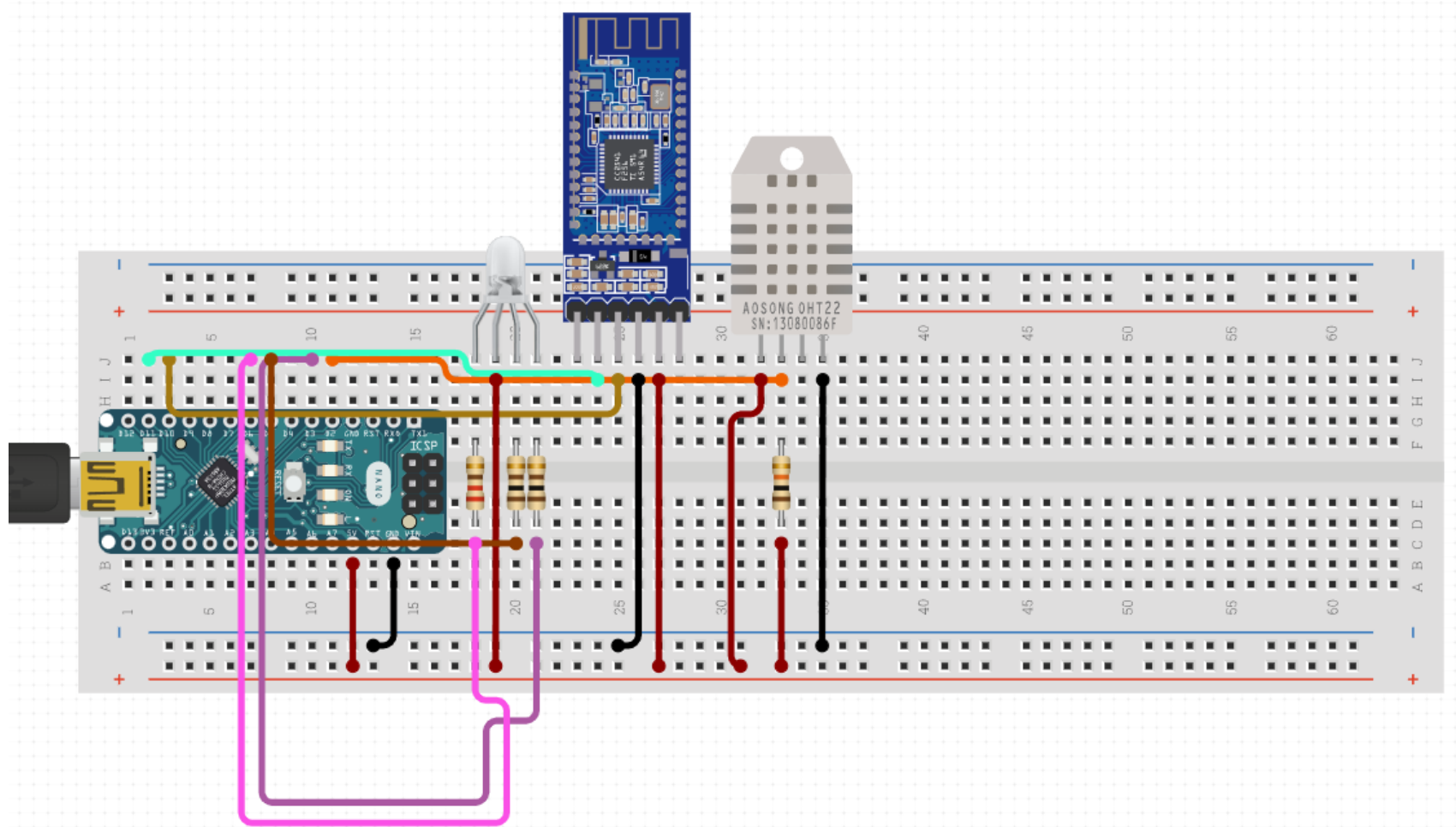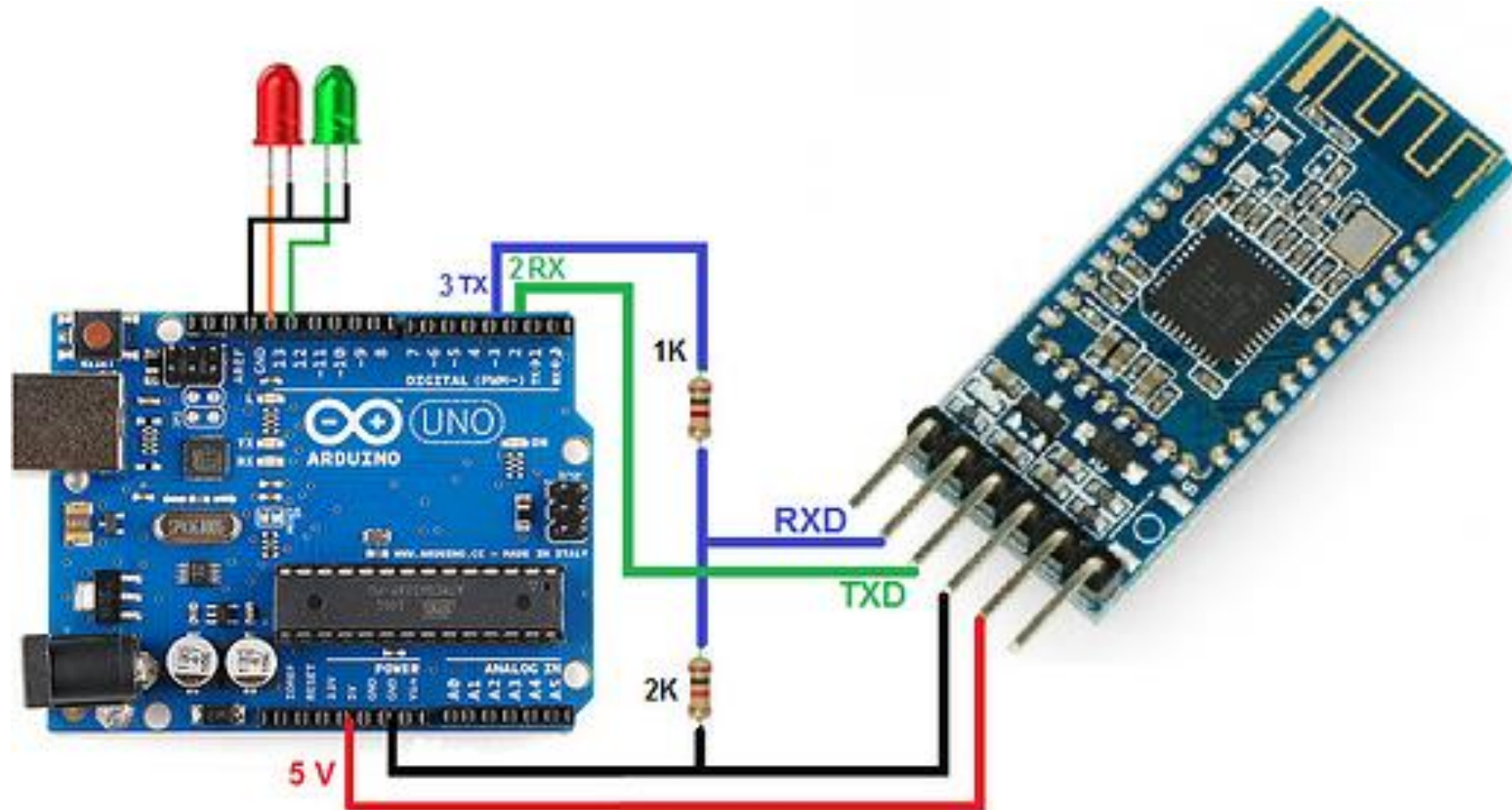
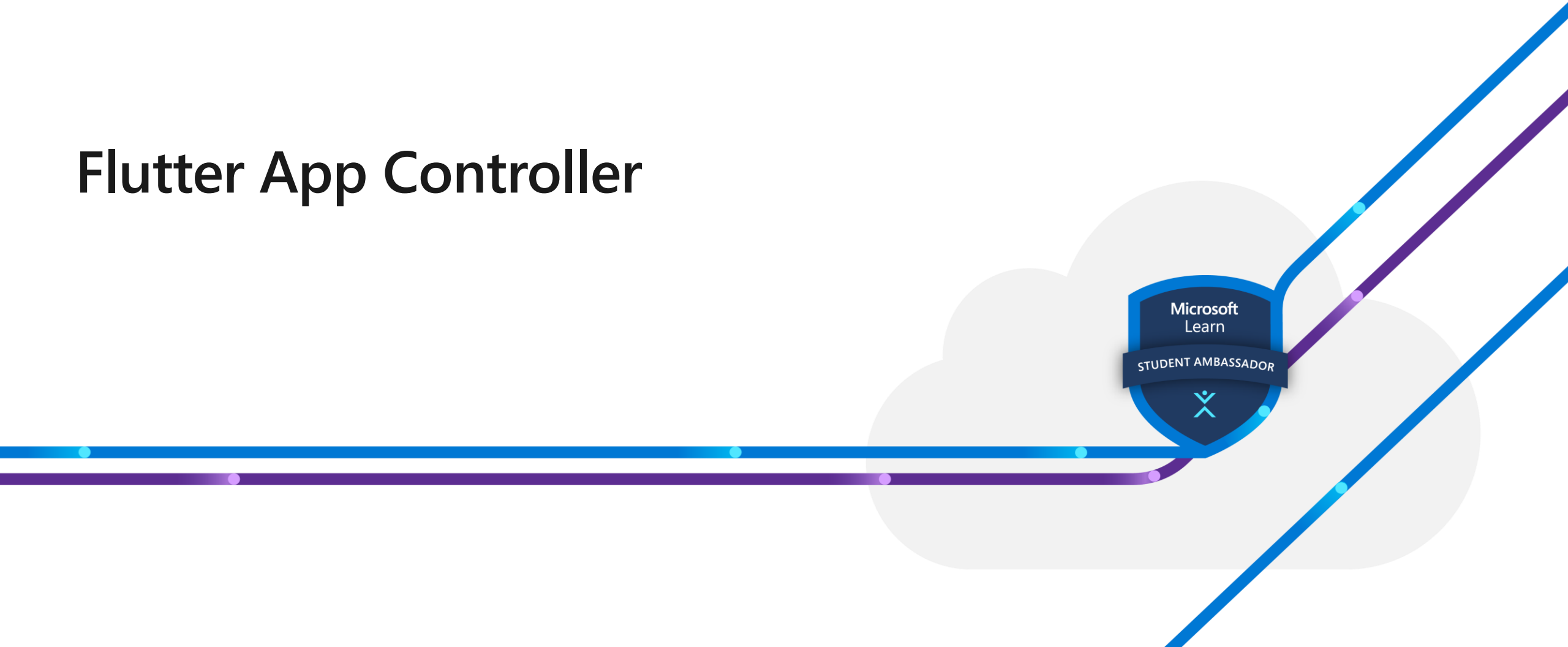# Installing Flutter and Visual Studio Code

Exploring Arduino Nano and Circuit

Arduino Circuit Diagram

https://www.circuito.io/app?components=514,10167,10820,11022,395589

Arduino Bluetooth Diagram

Flutter App Controller

Resources

- https://flutter.dev/docs
- https://dart.dev/overview
- https://material.io/develop/flutter
- https://flutter.dev/docs/codelabs
- https://www.youtube.com/c/flutterdev/
- http://robojax.com/node/894
- https://medium.com/@yostane/using-the-at-09-ble-module-with-the-arduino-3bc7d5cb0ac2

Resources

- https://github.com/haliknihudas666/flutter_arduino_day_demo

Contact

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