

Dart

Dart Runtime

- install (fvm) (homebrew)

```
dart run main.dart  
dart create xspring-app
```

- **dartpad**

Basic File Structure

- bin
- lib
- test
- pubspec.yaml
- pubspec.lock

Testing in Dart and OOP

- modify test file
- test class `Calculator`
- implement `Calculator` with `plus`
- remove `as`;

OOP cont.

```
class Calculator {  
    final _a;  
    final _b;  
  
    Calculator(this._a, this._b);  
  
    int plus() {  
        return _a + _b;  
    }  
}
```

OOP cont.

```
class Calculator {  
    final _a;  
    final _b;  
  
    Calculator(this._a, this._b);  
  
    int plus() {  
        return _a + _b;  
    }  
}
```

OOP extend

```
class SuperCalculator extends Calculator {  
    SuperCalculator(int a, int b) : super(a, b);  
  
    @override  
    int plus() {  
        return super.plus() + 1;  
    }  
}
```

Async, Await

```
Future<int> plusAsync() async {  
    return _a + _b;  
}  
  
test('plusAsync', () async {  
    int a = 1;  
    int b = 2;  
  
    Calculator cal = Calculator(a, b);  
  
    expect(await cal.plusAsync(), 3);  
});
```


Flutter

- structure (similar to above)
- introduce **GetX**

Flutter

- Initializing
- main.dart -> setup.dart -> app.dart
- Flavor and Target
- null safety ?, !

app.dart

- Route

GetX

- pass params
- GetX service, controller -> Life cycle
 - controller, return mem once unused
 - service, longer live
- `GetX.arguments`
- `GetX.Put`, `GetX.find`
- `GetX.toNamed`