This Ohm Calculator

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Server

Server has a standard web controller that serves html page request, and a WebApi end points that handles data request such as retrieve color codes and calculate ohm value.

The ohm calculation logic is sitting in a App service layer, WebApi controller doesn't have any business logic, it simply pass the task to App service layer, very light, there is really no need to unit test its logic except testing is passing task to correct service.

Dependency Injection is used in WebApi Controller creation and it is loosely coupled with App service.

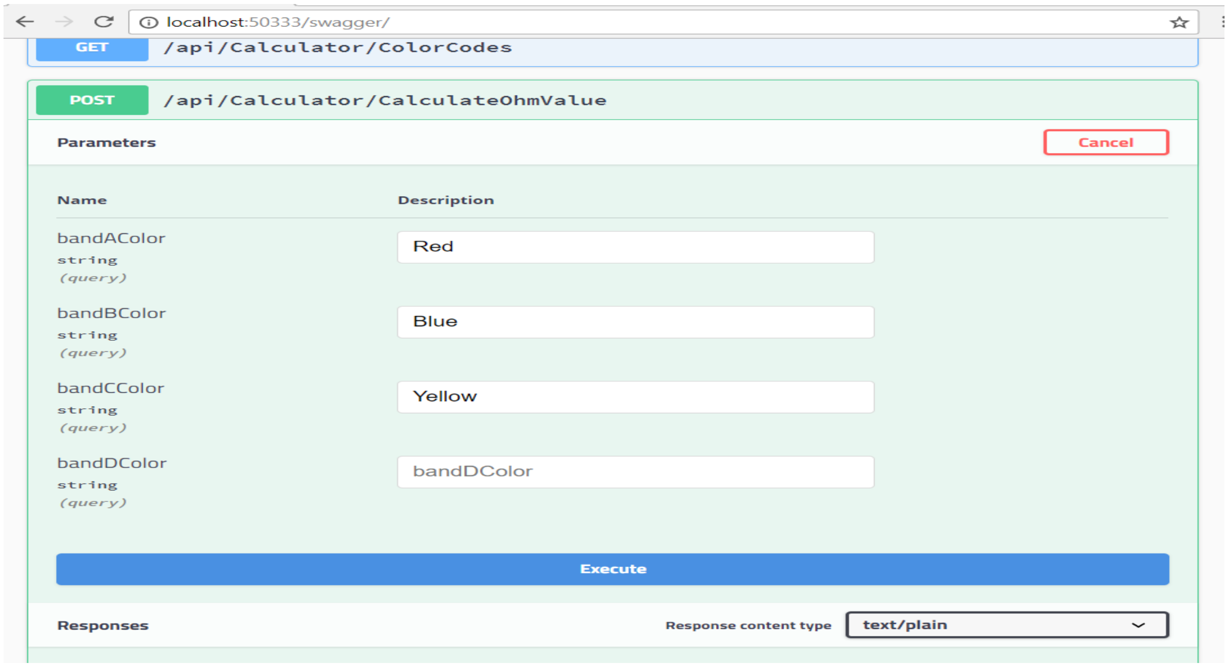
Asp.Net Core

Used Aasp.Net Core 2.0 for server technology, used .net Core build in dependency container.

Swagger API Documentation and Discovery

WebApi used Swagger middleware to generate useful documentation and help pages for WebAPIs, it provides benefits such as interactive documentation, client SDK generation, and API discoverability. The swagger page can even be used to test Api End points.

Wager API discovery link: http://localhost:50333/swagger/



/api/Calculator/ColorCodes

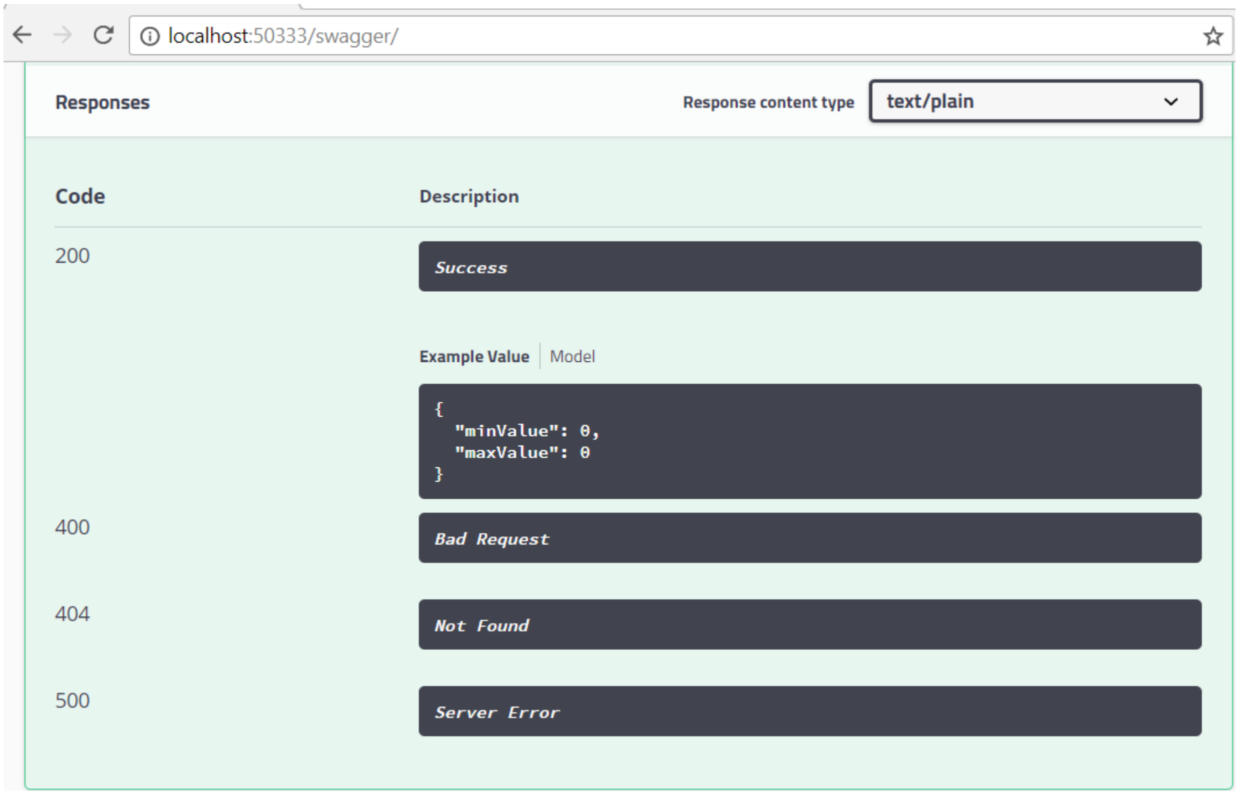
/api/Calculator/CalculateOhmValue

Parameters

Name	Description
bandAColor string *(query)*	Red
bandBColor string *(query)*	Blue
bandCColor string *(query)*	Yellow
bandDColor string *(query)*	bandDColor

Responses

Response content type: text/plain



Responses

Response content type: text/plain

Code	Description
200	*Success*
400	*Bad Request*
404	*Not Found*
500	*Server Error*

```
{
  "minValue": 0,
  "maxValue": 0
}
```

Server Unit Test

Use XUnit and Moq for server side unit test

Client Side Angular 4

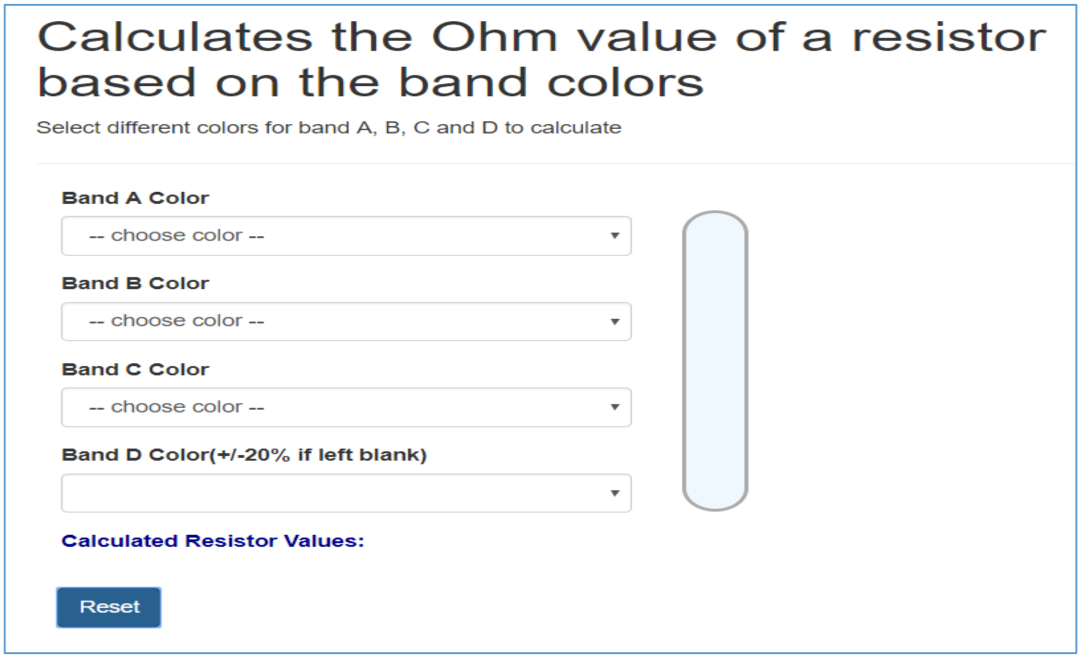
Client side is SPA build with angular 4, the home component is the UI interface of the Ohm Calculator. It is a simple and easy to use interface, user select from 4 dropdown to pick colors for each band of a resistor, as used picks color the corresponding band color changes to match the picked value. The components automatically detects changes and send calculation request to server through a DataService.

DataService

This service encapsulates the Api call to server

HomeComponent

This component handles user input and activate DataService calls to retrieve data.



Calculates the Ohm value of a resistor based on the band colors

Select different colors for band A, B, C and D to calculate

Band A Color

-- choose color --

Band B Color

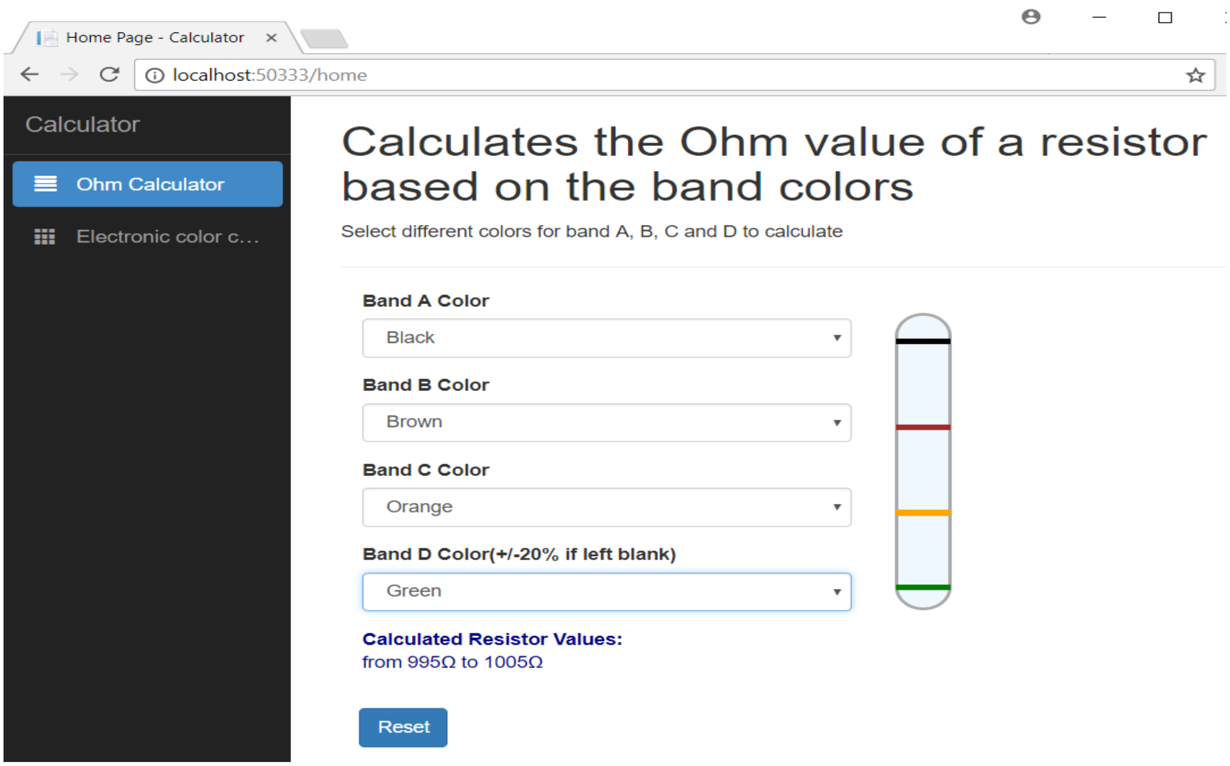
-- choose color --

Band C Color

-- choose color --

Band D Color(+/-20% if left blank)

Calculated Resistor Values:



Calculates the Ohm value of a resistor based on the band colors

Select different colors for band A, B, C and D to calculate

Band A Color: Black

Band B Color: Brown

Band C Color: Orange

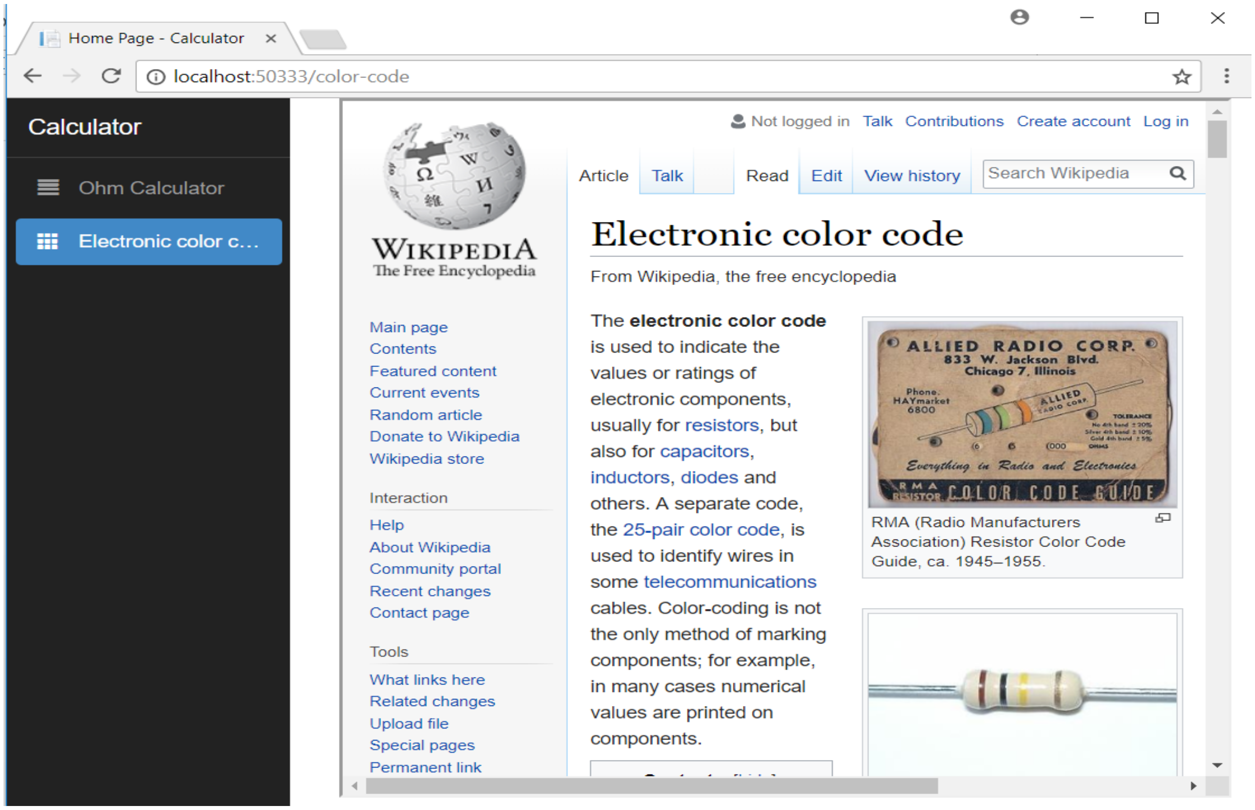
Band D Color(+/-20% if left blank): Green

Calculated Resistor Values:
from 995Ω to 1005Ω

Client Unit Test

Use Angular Test bed, Jasmine

A link to knowledge about Electronic Color Code



Electronic color code

From Wikipedia, the free encyclopedia

The **electronic color code** is used to indicate the values or ratings of electronic components, usually for resistors, but also for capacitors, inductors, diodes and others. A separate code, the 25-pair color code, is used to identify wires in some telecommunications cables. Color-coding is not the only method of marking components; for example, in many cases numerical values are printed on components.

RMA (Radio Manufacturers Association) Resistor Color Code Guide, ca. 1945–1955.

Supported Browser

Chrome, Edge, Firefoix.

IE is not suported