

Hybrid Mobile



Putting it all together

COVID 19 Tracker

COS216

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COVID 19 TRACKER

- What we want to achieve:
 - Getting data from an external API
 - Process this data and use an ion-list to display
 - Getting Flag images using variables
 - Display a form using UI Components
 - Validation
 - Local Notifications
 - Having Fun 😊

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- First off let's start with a template:

*-> **npm install -g @angular/cli@13.2.2***

*-> **npm install -g @ionic/cli@6.20.4***

*-> **npm install @ionic/angular@latest --save***

*-> **npm install -g cordova***

*-> **npm i -g cordova-res***

*-> **ionic start covid --cordova***

Then follow the prompts, we going to use Angular and Cordova, not Capacitor

Let it install 😊

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Ionic:

```
Ionic CLI           : 6.20.4 (C:\Users\Avinash\AppData\Roaming\npm\node_modules\@ionic\cli)
Ionic Framework     : not installed
@angular-devkit/build-angular : 16.0.1
@angular-devkit/schematics   : 16.0.1
@angular/cli        : 16.0.1
@ionic/angular-toolkit : 9.0.0
```

Cordova:

```
Cordova CLI       : 10.0.0
Cordova Platforms : android 10.1.2
Cordova Plugins   : cordova-plugin-ionic-keyboard 2.2.0, cordova-plugin-ionic-webview 5.0.0, (and 10 other plugins)
```

Utility:

```
cordova-res (update available: 0.15.4) : 0.15.3
native-run (update available: 1.7.2)   : 1.4.1
```

System:

```
Android SDK Tools : 26.1.1 (C:\Users\Avinash\AppData\Local\Android\Sdk)
NodeJS             : v16.16.0 (C:\Program Files\nodejs\node.exe)
npm               : 8.11.0
OS                : Windows 10
```

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Angular CLI

Angular CLI: 16.0.1
Node: 16.16.0
Package Manager: npm 8.11.0
OS: win32 x64

Angular: 16.0.1
... animations, cli, common, compiler, compiler-cli, core, forms
... language-service, platform-browser, platform-browser-dynamic
... router

Package	Version
@angular-devkit/architect	0.1600.1
@angular-devkit/build-angular	16.0.1
@angular-devkit/core	16.0.1
@angular-devkit/schematics	16.0.1
@schematics/angular	16.0.1
rxjs	7.8.1
typescript	5.0.4

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- For the requirements let us add some native libraries, run the following commands:

```
ionic cordova plugin add cordova-plugin-advanced-http
```

```
npm install @awesome-cordova-plugins/http
```

```
ionic cordova plugin add cordova-plugin-local-notification
```

```
npm install @awesome-cordova-plugins/local-notifications
```

```
ionic cordova plugin add cordova-plugin-x-socialsharing
```

```
npm install @awesome-cordova-plugins/social-sharing
```

```
ionic cordova plugin add cordova-plugin-androidx
```

```
ionic cordova plugin add cordova-plugin-androidx-adapter
```

```
ionic cordova plugin add cordova-plugin-file
```

```
ionic cordova plugin add cordova-plugin-actionsheet
```

```
npm install @awesome-cordova-plugins/action-sheet
```

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- For the requirements let us add gradle 7.1.1 and JDK 11:
- Download Gradle from their website
- Unzip the folder your C:// or /opt/
- Then add the bin folder to your environment

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- For the requirements let us add Install Android build-tools 30, API 30 and emulator 30:

SDK Platforms SDK Tools SDK Update Sites

Each Android SDK Platform package includes the Android platform and sources pertaining to an API level by default. Once installed, the IDE will automatically check for updates. Check "show package details" to display individual SDK components.

Name	API Level	Revision	Status
<input type="checkbox"/> Android UpsideDownCake Preview	UpsideDownCake	4	Not installed
<input type="checkbox"/> Android TiramisuPrivacySandbox Preview	TiramisuPrivacySandbox	9	Not installed
<input type="checkbox"/> Android API 33	33	2	Not installed
<input type="checkbox"/> Android API 32	32	1	Not installed
<input checked="" type="checkbox"/> Android 12.0 (S)	31	1	Installed
<input checked="" type="checkbox"/> Android 11.0 (R)	30	3	Installed
<input checked="" type="checkbox"/> Android 10.0 (Q)	29	5	Installed
<input checked="" type="checkbox"/> Android 9.0 (Pie)	28	6	Installed
<input type="checkbox"/> Android 8.1 (Oreo)	27	3	Partially installed
<input type="checkbox"/> Android 8.0 (Oreo)	26	2	Not installed
<input type="checkbox"/> Android 7.1.1 (Nougat)	25	3	Not installed
<input type="checkbox"/> Android 7.0 (Nougat)	24	2	Not installed
<input type="checkbox"/> Android 6.0 (Marshmallow)	23	3	Not installed
<input type="checkbox"/> Android 5.1 (Lollipop)	22	2	Not installed
<input type="checkbox"/> Android 5.0 (Lollipop)	21	2	Not installed

SDK Platforms SDK Tools SDK Update Sites

Below are the available SDK developer tools. Once installed, the IDE will automatically check for updates. Check "show package details" to display available versions of an SDK Tool.

Name	Version	Status
Android SDK Build-Tools 34-rc4		
<input type="checkbox"/> 34.0.0-rc4	34.0.0 rc4	Not installed
<input type="checkbox"/> 34.0.0-rc3	34.0.0 rc3	Not installed
<input type="checkbox"/> 34.0.0-rc2	34.0.0 rc2	Not installed
<input type="checkbox"/> 34.0.0-rc1	34.0.0 rc1	Not installed
<input type="checkbox"/> 33.0.2	33.0.2	Not installed
<input type="checkbox"/> 33.0.1	33.0.1	Not installed
<input type="checkbox"/> 33.0.0	33.0.0	Not installed
<input type="checkbox"/> 32.1.0-rc1	32.1.0 rc1	Not installed
<input checked="" type="checkbox"/> 32.0.0	32.0.0	Installed
<input type="checkbox"/> 31.0.0	31.0.0	Not installed
<input checked="" type="checkbox"/> 30.0.3	30.0.3	Installed
<input type="checkbox"/> 30.0.2	30.0.2	Not installed
<input type="checkbox"/> 30.0.1	30.0.1	Not installed
<input type="checkbox"/> 30.0.0	30.0.0	Not installed
<input type="checkbox"/> 29.0.3	29.0.3	Not installed
<input type="checkbox"/> 29.0.2	29.0.2	Not installed
<input type="checkbox"/> 29.0.1	29.0.1	Not installed
<input type="checkbox"/> 29.0.0	29.0.0	Not installed

☒ Hide Obsolete Packages ☒ Show Package Details

Select a system image

Recommended x86 Images Other Images

Release Name	API Level	ABI	Target
R	30	x86	Android 11.0 (Google APIs)
Q Download	29	x86	Android 10.0 (Google APIs)
Pie Download	28	x86	Android 9.0 (Google APIs)
Oreo Download	27	x86	Android 8.1 (Google APIs)
Oreo	26	x86	Android 8.0 (Google APIs)
Nougat Download	25	x86	Android 7.1.1 (Google APIs)
Nougat Download	24	x86	Android 7.0 (Google APIs)
Marshmallow Download	23	x86	Android 6.0 (Google APIs)
Lollipop Download	22	x86	Android 5.1 (Google APIs)

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- Now that we have installed the plugins, we need let's start the emulator:

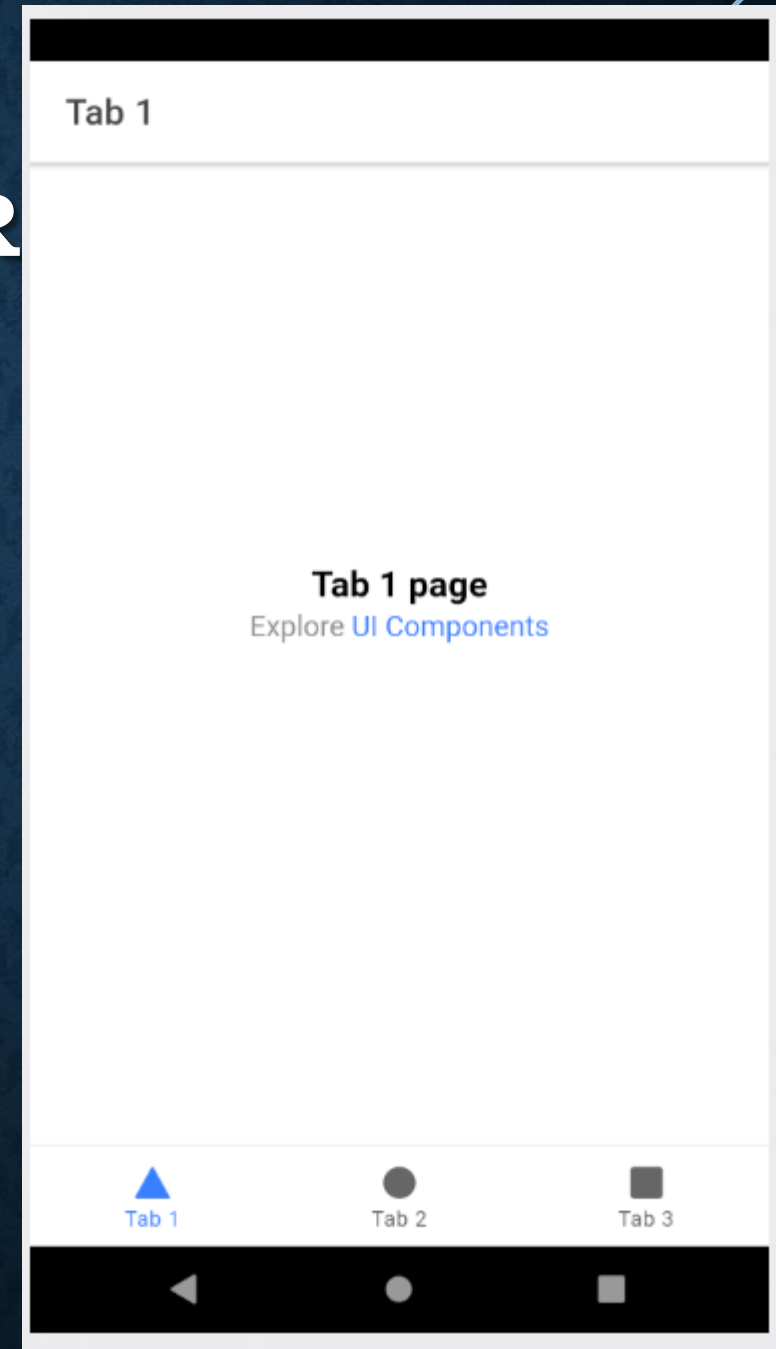
-> **ionic cordova platform add android@10**

-> **ionic cordova run android**

Add to config.xml

```
<preference name="AndroidPersistentFileLocation" value="Compatibility" />
```

```
<application android:usesCleartextTraffic="true" /> -- to the platform -> edit-config
```



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- Great! Now let us do the HTTP imports

```
import { HTTP } from '@awesome-cordova-plugins/http/ngx';
import { ToastController } from '@ionic/angular';

...
data: any = undefined;
dataOld: any = undefined;
search: string = "";
constructor(private http: HTTP, private toastController: ToastController,
private platform: Platform) {
  this.platform.ready().then(() => this.getData());
}
```


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- Now let's create a Toast

```
async presentToast(message : string) {  
  const toast = await this.toastController.create({  
    message: message,  
    duration: 2000  
  });  
  await toast.present();  
}
```

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- **Let's implement a function to getData()**

```
getData() {  
  this.http.get('https://api.covid19api.com/summary', {}, {})  
    .then(data => {  
      console.log(data);  
      if (data.status === 200) {  
        console.log(data.data); // data received by server  
        this.data = JSON.parse(data.data) ;  
        this.dataOld = JSON.parse(data.data).Countries;  
      }  
    })  
    .catch(error => {  
      console.log(error);  
      console.log(error.status);  
      console.log(error.data);  
      this.presentToast("Failed to get data from API.");  
    });  
}
```

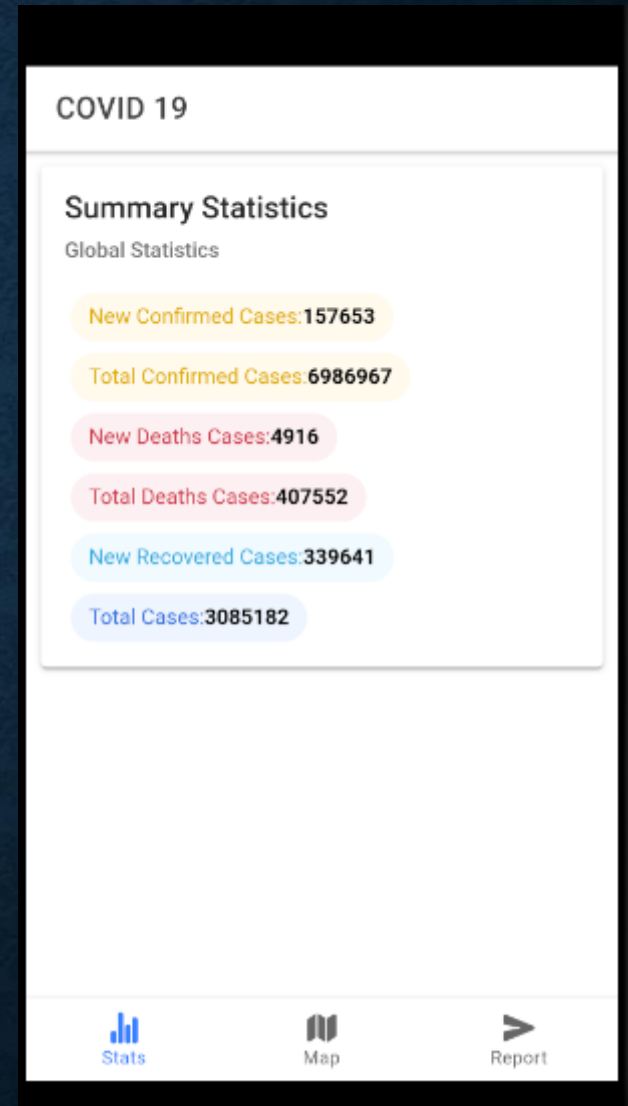

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- The Data Snippet

```
{
  "Global": {
    "NewConfirmed": 157653,
    "TotalConfirmed": 6986967,
    "NewDeaths": 4916,
    "TotalDeaths": 407552,
    "NewRecovered": 339641,
    "TotalRecovered": 3085182
  },
  "Countries": [
    {
      "Country": "Afghanistan",
      "CountryCode": "AF",
      "Slug": "afghanistan",
      "NewConfirmed": 582,
      "TotalConfirmed": 19551,
      "NewDeaths": 18,
      "TotalDeaths": 327,
      "NewRecovered": 68,
      "TotalRecovered": 1830,
      "Date": "2020-06-07T09:36:23Z"
    },
  ],
}
```

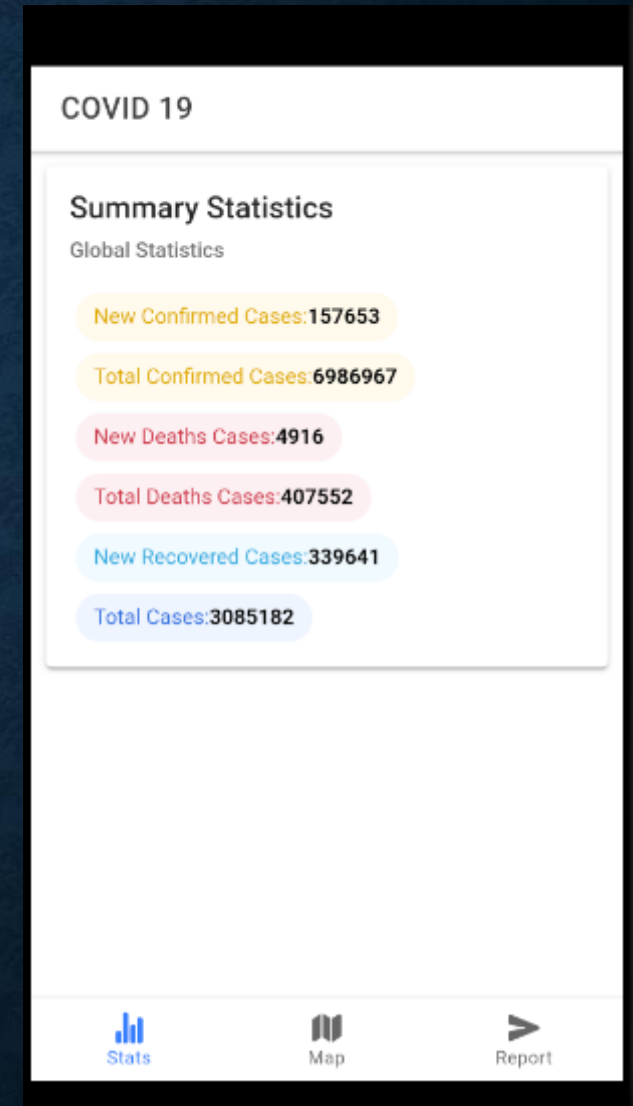
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```
<ion-card>
  <ion-card-header>
    <ion-card-title>Summary Statistics</ion-card-title>
    <ion-card-subtitle>Global Statistics</ion-card-subtitle>
  </ion-card-header>
  <ion-card-content *ngIf="data != undefined">
    <ion-chip color="warning">
      New Confirmed Cases:
      <ion-label class="black"> {{ data['Global']['NewConfirmed'] }} </ion-label>
    </ion-chip>
    <ion-chip color="warning">
      Total Confirmed Cases:
      <ion-label class="black"> {{ data.Global.TotalConfirmed }} </ion-label>
    </ion-chip>
    ...
  </ion-card-content>
</ion-card>
```



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- But that is too simple, we have the data for Countries let us do something cool with it.
- For this we will use ngFor, ion-list, ion-item and avatars
- For the avatars we will use country flags 😊



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```
<ion-title size="large">Countries</ion-title>
<ion-searchbar animated="true" placeholder="Search
Countries" (ionInput)="handleInput($event)"></ion-searchbar>
<ion-list>
  <ion-item *ngFor="let d of data.Countries">
    <ion-avatar slot="start">
      
    </ion-avatar>
    <ion-label>
      <h2>{{ d.Country }}</h2>
      <h3>New Cases: {{ d.NewConfirmed }}</h3>
      <p>Total Deaths: {{ d.TotalDeaths }}</p>
    </ion-label>
  </ion-item>
</ion-list>
```

Tab 1

Summary Statistics

Global Statistics

New Confirmed Cases:177325

Total Confirmed Cases:674300771

Countries

Q Animated



Afghanistan

New Cases: 0

Total Deaths: 7896

Suggest contact names? Touch for info.

Q W E R T Y U I O P

A S D F G H J K L

Z X C V B N M

?123

,



COVID 19 TRACKER

```
<ion-title size="large">Countries</ion-title>
<ion-searchbar animated="true" placeholder="Search
Countries" (ionInput)="handleInput($event)"></ion-
searchbar>
<ion-list>
  <ion-item *ngFor="let d of data.Countries">
    <ion-avatar slot="start">
      
    </ion-avatar>
    <ion-label>
      <h2>{{ d.Country }}</h2>
      <h3>New Cases: {{ d.NewConfirmed }}</h3>
      <p>Total Deaths: {{ d.TotalDeaths }}</p>
    </ion-label>
  </ion-item>
</ion-list>
```

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Total Deaths: 25



Slovakia

New Cases: 2

Total Deaths: 28



Slovenia

New Cases: 5

Total Deaths: 109



Somalia

New Cases: 85

Total Deaths: 82



South Africa

New Cases: 2539

Total Deaths: 952



South Sudan

New Cases: 0

Total Deaths: 10



Spain

New Cases: 332

Total Deaths: 27135



Stats



Map



Report

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- Let's implement a function to getData()

```
handleInput(event: any) {  
  const query = event.target.value.toLowerCase();  
  this.data.Countries = this.dataOld.filter((d: any) =>  
d.Country.toLowerCase().indexOf(query) > -1);  
}
```

Tab 1

Summary Statistics

Global Statistics

New Confirmed Cases:177325

Total Confirmed Cases:674300771

Countries

Q South

X



Korea (South)

New Cases: 10335

Total Deaths: 34093



South Africa

New Cases: 426

Total Deaths: 102595



South Sudan

New Cases: 0

Total Deaths: 138



Tab 1



Tab 2



Tab 3

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- Now let us implement the Risk Checker, this won't have much functionality just some basic form and some validation. For this, we will use a module called `ReactiveFormsModule` and add it to the imports, also add it to the `tabs.module.ts`

```
import { ReactiveFormsModule } from "@angular/forms";
```

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- Next import the following:

```
import { FormBuilder, FormGroup, Validators } from "@angular/forms";
```


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- Create a variable:

```
myForm: FormGroup;
```

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- Create Validators

```
constructor(public formBuilder: FormBuilder, private localNotifications: LocalNotifications, private
actionSheetController: ActionSheetController) {
  this.myForm = formBuilder.group({
    name: ["", Validators.compose([Validators.maxLength(30),Validators.pattern("[a-zA-Z ]*"),
      Validators.required,
    ]),
    surname: ["", Validators.compose([Validators.maxLength(30),Validators.pattern("[a-zA-Z ]*"),
      Validators.required,
    ]),
    gender: [Validators.compose([Validators.required])],
    date: [Validators.compose([Validators.required])],
    travel: [Validators.compose([Validators.required])],
    contact: [Validators.compose([Validators.required])],
  });
}
```


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```
<form [formGroup]="myForm">
  <ion-list>
    <ion-item>
      <ion-label position="floating">Name: </ion-label>
      <ion-input [class.invalid]="!myForm.controls['name'].valid"
formControlName="name"></ion-input>
    </ion-item>
    <ion-item>
      <ion-label position="floating">Surname: </ion-label>
      <ion-input [class.invalid]="!myForm.controls['surname'].valid"
formControlName="surname"></ion-input>
    </ion-item>
    ...
```

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```
...
<ion-radio-group formControlName="gender">
  <ion-list-header>
    <ion-label><b>Gender</b></ion-label>
  </ion-list-header>
  <ion-item>
    <ion-label>Male</ion-label>
    <ion-radio slot="end" value="male"></ion-radio>
  </ion-item>
  <ion-item>
    <ion-label>Female</ion-label>
    <ion-radio slot="end" value="female"></ion-radio>
  </ion-item>
  <ion-item>
    <ion-label>Other</ion-label>
    <ion-radio slot="end" value="other"></ion-radio>
  </ion-item>
</ion-radio-group>
...
```

COVID 19 TRACKER

```
...
<ion-item>
  <ion-label position="floating">Date: </ion-label>
  <ion-datetime formControlName="date"
[class.invalid]="!myForm.controls['date'].valid" ></ion-datetime>
</ion-item>

<ion-radio-group formControlName="travel">
  <ion-list-header>
    <ion-label><b>Have you travelled recently?</b></ion-label>
  </ion-list-header>
  <ion-item>
    <ion-label>Yes</ion-label>
    <ion-radio slot="end" value="yes"></ion-radio>
  </ion-item>
  ...

```


COVID 19 TRACKER

```
...
  <ion-item>
    <ion-label>No</ion-label>
    <ion-radio slot="end" value="no"></ion-radio>
  </ion-item>
</ion-radio-group>

<ion-radio-group formControlName="contact">
  <ion-list-header>
    <ion-label><b>Have you been in contact with an infected person?</b></ion-label>
  </ion-list-header>
  <ion-item>
    <ion-label>Yes</ion-label>
    <ion-radio slot="end" value="yes"></ion-radio>
  </ion-item>
  <ion-item>
    <ion-label>No</ion-label>
    <ion-radio slot="end" value="no"></ion-radio>
  </ion-item>
</ion-radio-group>
...
```

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```
...  
</ion-list>  
  
</form>  
<ion-button expand="full" (click)="detect()">Submit</ion-button>
```

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Risk Detector

Gender

Male ☐

Female ☐

Other ☐

Date of Birth:

Have you travelled recently?

Yes ☐




No ☐

Where you in contact with an infected person?

Yes ☐

No ☐

SUBMIT

 Stats  Map  Report

Risk Detector

Name:

Surname:

Gender

Male ☐

Female ☐

Other ☐




Date of Birth:

Have you travelled recently?

Yes ☐

No ☐

Where you in contact with an infected person?

 Stats  Map  Report

COVID 19 TRACKER

```
detect() {  
  if (this.myForm.valid) {  
    let risk = this.myForm.controls["travel"].value == "no" ? "GREEN" :  
"RED";  
    this.localNotifications.schedule({  
      id: 1,  
      text: "Risk Status: " + risk,  
      color: risk,  
      data: {},  
    });  
    this.presentActionSheet(risk);  
  } else console.log(this.myForm);  
}
```

COVID 19 TRACKER

```
async presentActionSheet(risk) {  
  const actionSheet = await this.actionSheetController.create({  
    header: "Risk Status",  
    cssClass: risk,  
    buttons: [  
      {  
        text: risk,  
        role: "destructive",  
        cssClass: risk,  
        handler: () => {  
          console.log("clicked");  
        },  
      },  
    ],  
  });  
  await actionSheet.present();  
}
```

Risk Detector

Gender

Male

Female

Other

Date of Birth:

06/03/2020

Have you travelled recently?

Yes

No

Where you in contact with an infected person?

Yes

No

SUBMIT

Stats

Map

Report

Risk Status

RED

11:35

Sun, Jun 7

Android Setup

Android SDK built for x86 setup in progress
Tap to finish Android SDK built for x86 setup

MyApp • now

MyApp
Risk Status: RED

Silent notifications

Android System

USB debugging connected
Tap to turn off USB debugging

Android System • Charging this device via USB

Risk Status

Manage

Clear all

RED

IONIC - DOCUMENTATION

- <https://ionicframework.com/docs/>



