



**MALAD KANDIVALI EDUCATION SOCIETY'S**  
**NAGINDAS KHANDWALA COLLEGE OF COMMERCE, ARTS &**  
**MANAGEMENT STUDIES & SHANTABEN NAGINDAS KHANDWALA**  
**COLLEGE OF SCIENCE**  
**MALAD [W], MUMBAI – 64**  
**AUTONOMOUS INSTITUTION**  
(Affiliated To University Of Mumbai)  
Reaccredited 'A' Grade by NAAC | ISO 9001:2015 Certified

**CERTIFICATE**

Name: Satyam Thaker

Roll No: 386

Programme: BSc IT/CS

Semester: III

This is certified to be a bonafide record of practical works done by the above student in the college laboratory for the course **Hybrid Application Development(classcode: 2037UCSMD)** for the partial fulfilment of Third Semester of BSc IT/CS during the academic year 2020-21.

The journal work is the original study work that has been duly approved in the year 2020-21 by the undersigned.

\_\_\_\_\_  
External Examiner

\_\_\_\_\_  
Mr. Gangashankar Singh  
(Subject-In-Charge)

Date of Examination:

(College Stamp)

**Subject: Hybrid Application Development  
INDEX**

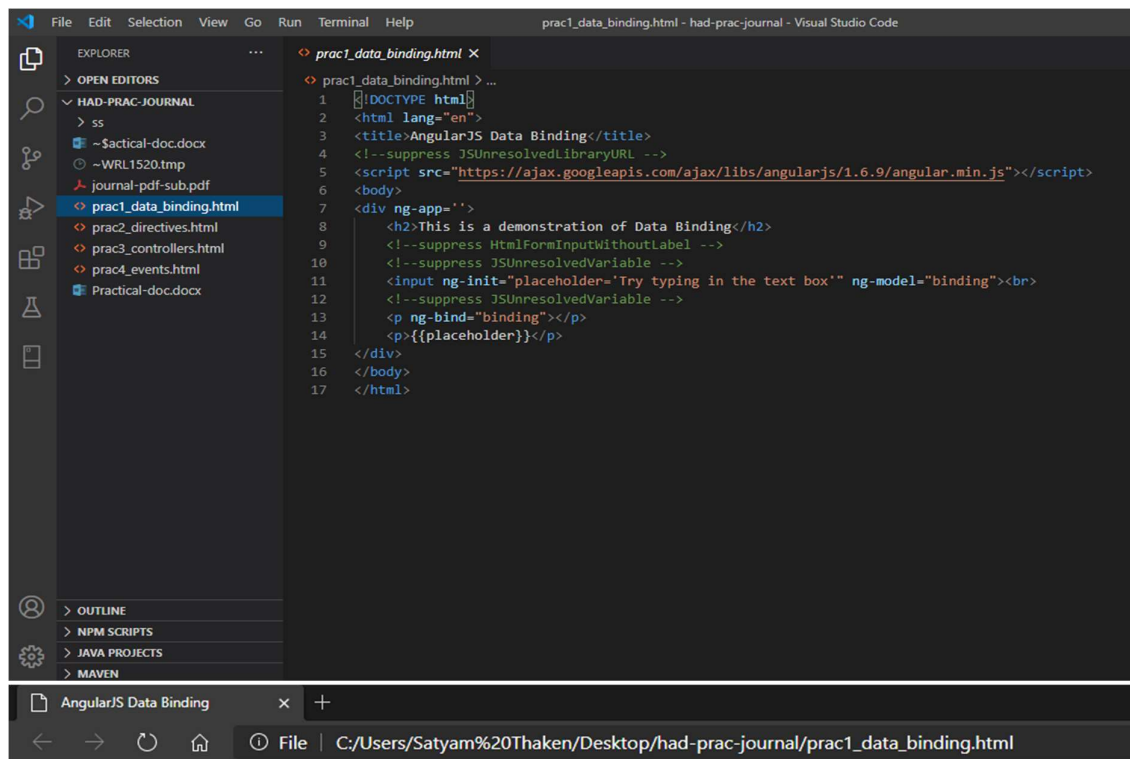
<b>Sr. No</b>	<b>Date</b>	<b>Topic</b>	<b>Sign</b>
<b>1</b>	<b>27/07/2020</b>	<b>AngularJS Data Binding</b>	
<b>2</b>	<b>7/08/2020</b>	<b>AngularJS Directives</b>	
<b>3</b>	<b>14/08/2020</b>	<b>AngularJS Controllers</b>	
<b>4</b>	<b>25/08/2020</b>	<b>AngularJS Events</b>	
<b>5</b>	<b>08/09/2020</b>	<b>Ionic Create and Build First Project</b>	
<b>6</b>	<b>12/09/2020</b>	<b>Ionic Adding Cordova Android Platform</b>	
<b>7</b>	<b>19/09/2020</b>	<b>Ionic Create, Generate and Add Pages</b>	
<b>8</b>	<b>29/09/2020</b>	<b>Ionic Use Tabs Starter Template</b>	

## Practical-1: program to demonstrate Databinding

### Theory

- Data-binding in AngularJS apps is the automatic synchronization of data between the model and view components.
- The way that AngularJS implements data-binding lets you treat the model as the single-source-of-truth in your application.
- The view is a projection of the model at all times. When the model changes, the view reflects the change, and vice versa.

### Code and Output:

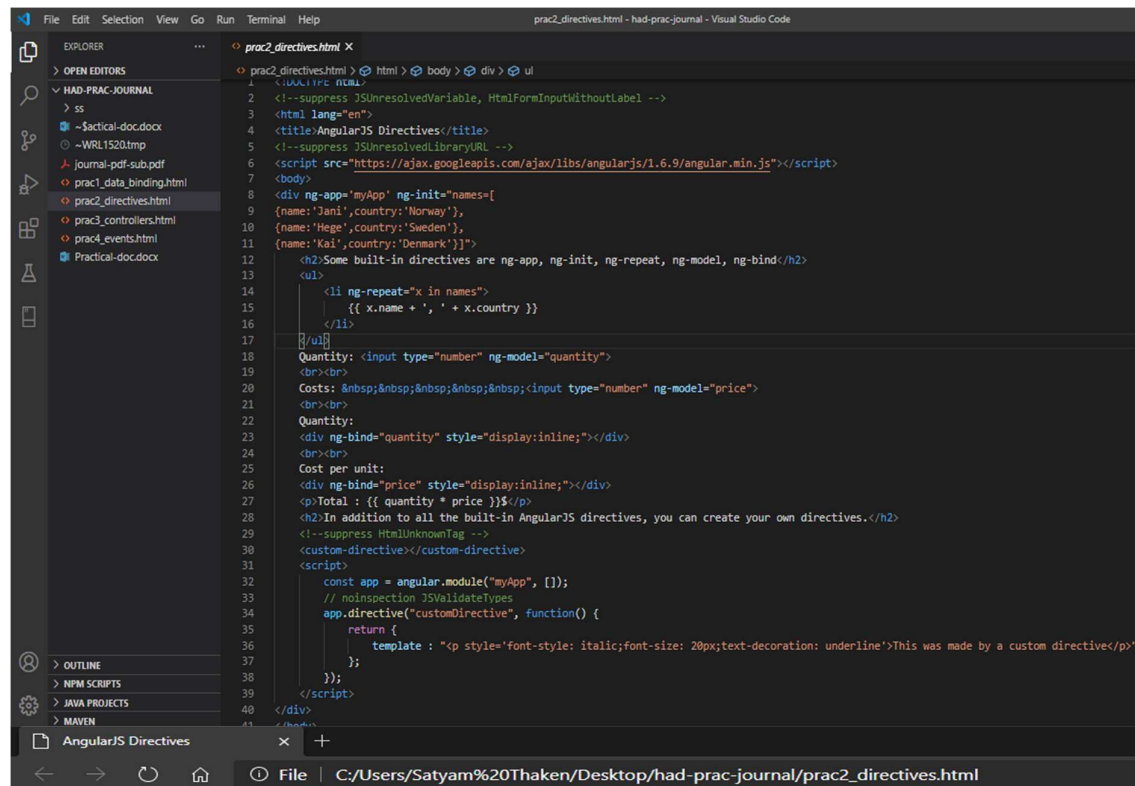


## Practical-2: program to demonstrate Directives

### Theory

- AngularJS directives are extended HTML attributes with the prefix `ng-`.
- The `ng-app` directive initializes an AngularJS application.
- The `ng-init` directive initializes application data.
- The `ng-model` directive binds the value of HTML controls (input, select, textarea) to application data.

### Code and Output:



```
1 <!DOCTYPE html>
2 <!--suppress JSUnresolvedVariable, HtmlFormInputWithoutLabel -->
3 <html lang="en">
4 <title>AngularJS Directives</title>
5 <!--suppress JSUnresolvedLibraryURL -->
6 <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.6.9/angular.min.js"></script>
7 <body>
8 <div ng-app="myApp" ng-init="names=[
9 (name:'Jani',country:'Norway'),
10 (name:'Hege',country:'Sweden'),
11 (name:'Kai',country:'Denmark')]">
12 <h2>Some built-in directives are ng-app, ng-init, ng-repeat, ng-model, ng-bind</h2>
13 <ul>
14 <li ng-repeat="x in names">
15 {{ x.name + ', ' + x.country }}
16 </li>
17 </ul>
18 Quantity: <input type="number" ng-model="quantity">
19 <br><br>
20 Costs: <input type="number" ng-model="price">
21 <br><br>
22 Quantity:
23 <div ng-bind="quantity" style="display:inline;"></div>
24 <br><br>
25 Cost per unit:
26 <div ng-bind="price" style="display:inline;"></div>
27 <p>Total : {{ quantity * price }}</p>
28 <h2>In addition to all the built-in AngularJS directives, you can create your own directives.</h2>
29 <!--suppress HtmlUnknownTag -->
30 <custom-directive></custom-directive>
31 <script>
32 const app = angular.module("myApp", []);
33 // noinspection JSValidateTypes
34 app.directive("customDirective", function() {
35 return {
36 template : "<p style='font-style: italic;font-size: 20px;text-decoration: underline;'>This was made by a custom directives</p>"
37 };
38 });
39 </script>
40 </div>
41 </body>
```

Some built-in directives are `ng-app`, `ng-init`, `ng-repeat`, `ng-model`, `ng-bind`

- Jani, Norway
- Hege, Sweden
- Kai, Denmark

Quantity:

Costs:

Quantity: 23

Cost per unit: 11

Total : 253\$

In addition to all the built-in AngularJS directives, you can create your own directives.

This was made by a custom directive

## Practical-3: program to demonstrate controllers

### Theory

- In AngularJS, a Controller is defined by a JavaScript constructor function that is used to augment the AngularJS Scope.
- Controllers can be attached to the DOM in different ways. For each of them, AngularJS will instantiate a new Controller object, using the specified Controller's constructor function:
  - the `ngController` directive. A new child scope will be created and made available as an injectable parameter to the Controller's constructor function as `$scope`.
  - a route controller in a `$route` definition.
  - the controller of a regular directive, or a component directive.

### Code and Output:

The screenshot shows a Visual Studio Code editor with the file 'prac3\_controllers.html' open. The code is as follows:

```
1 <!DOCTYPE html>
2 <!--suppress HtmlFormInputWithoutLabel -->
3 <html lang="en">
4 <title>AngularJS Controllers</title>
5 <!--suppress JSUnresolvedLibraryURL -->
6 <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.6.9/angular.min.js"></script>
7 <body>
8 <div ng-app="myApp" ng-controller="myCtrl">
9   <h2>This is a demonstration of Controllers</h2>
10  First Name: <input type="text" ng-model="firstName"><br>
11  Last Name: <input type="text" ng-model="lastName"><br>
12  Full Name: {{fullName()}}<br>
13  <div ng-controller="index">
14    <input type="button" ng-click="function1()" ng-value="variable">
15  </div>
16 </div>
17 </body>
18 </html>
19
20 <script>
21 const app = angular.module('myApp', []);
22 // noinspection JSValidateTypes
23 app.controller('myCtrl', function($scope) {
24   $scope.firstName = "Joe";
25   $scope.lastName = "Biden";
26   $scope.fullName = function() {
27     return $scope.firstName + " " + $scope.lastName;
28   };
29 });
30 // noinspection JSValidateTypes
31 app.controller("index", function ($scope) {
32   $scope.variable = "Call Controller";
33   $scope.function1 = function () {
34     alert("Controller invoked");
35   }
36 });
37 </script>
38 </body>
39 </html>
```

The browser output shows the rendered HTML with the form fields and the button. The button text is "Call Controller".

This is a demonstration of Controllers

First Name:   
Last Name:

Full Name: satyam thaker

This page says  
Controller invoked

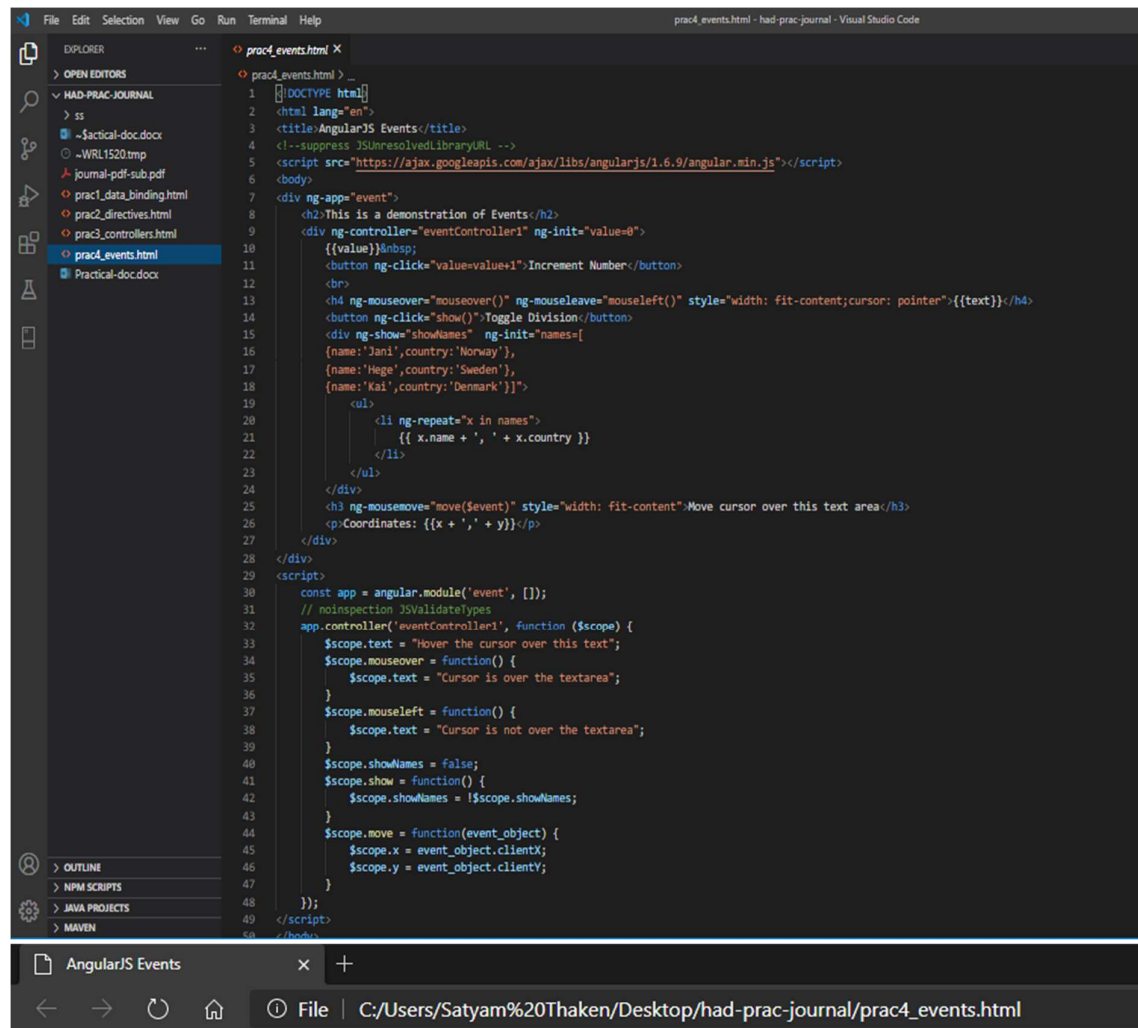
OK

## **Practical-4: program to demonstrate Events**

### **Theory**

- The event directives allow us to run AngularJS functions at certain user events.
- An AngularJS event will not overwrite an HTML event, both events will be executed.
- AngularJS includes certain directives which can be used to provide custom behavior on various DOM events, such as click, mouseover etc.
- You can pass the \$event object as an argument when calling the function. The \$event object contains the browser's event object.

## Code and Output:



```
1 <!DOCTYPE html>
2 <html lang="en">
3 <title>AngularJS Events</title>
4 <!--suppress JSUnresolvedLibraryURL -->
5 <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.6.9/angular.min.js"></script>
6 <body>
7 <div ng-app="event">
8 <h2>This is a demonstration of Events</h2>
9 <div ng-controller="eventController1" ng-init="value=0">
10 <div>{{value}}</div>
11 <button ng-click="value=value+1">Increment Number</button>
12 <br>
13 <div ng-mouseover="mouseover()" ng-mouseleave="mouseleave()" style="width: fit-content; cursor: pointer;">{{text}}</div>
14 <button ng-click="show()">Toggle Division</button>
15 <div ng-show="showNames" ng-init="names=[
16 (name:'Jani',country:'Norway'),
17 (name:'Hege',country:'Sweden'),
18 (name:'Kai',country:'Denmark')]">
19 <ul>
20 <li ng-repeat="x in names">
21 {{ x.name + ', ' + x.country }}
22 </li>
23 </ul>
24 </div>
25 <div ng-mousemove="move($event)" style="width: fit-content;">Move cursor over this text area</div>
26 <p>Coordinates: {{x + ', ' + y}}</p>
27 </div>
28 </div>
29 <script>
30 const app = angular.module('event', []);
31 // noinspection JSValidateTypes
32 app.controller('eventController1', function ($scope) {
33 $scope.text = "Hover the cursor over this text";
34 $scope.mouseover = function() {
35 $scope.text = "Cursor is over the textarea";
36 }
37 $scope.mouseleave = function() {
38 $scope.text = "Cursor is not over the textarea";
39 }
40 $scope.showNames = false;
41 $scope.show = function() {
42 $scope.showNames = !$scope.showNames;
43 }
44 $scope.move = function(event_object) {
45 $scope.x = event_object.clientX;
46 $scope.y = event_object.clientY;
47 }
48 });
49 </script>
50 </body>
```

AngularJS Events

File | C:/Users/Satyam%20Thaken/Desktop/had-prac-journal/prac4\_events.html

### This is a demonstration of Events

6 Increment Number

Cursor is not over the textarea

Toggle Division

- Jani, Norway
- Hege, Sweden
- Kai, Denmark

Move cursor over this text area

Coordinates: 112,279

## Practical 5: Ionic Create and Build First Project

### Theory

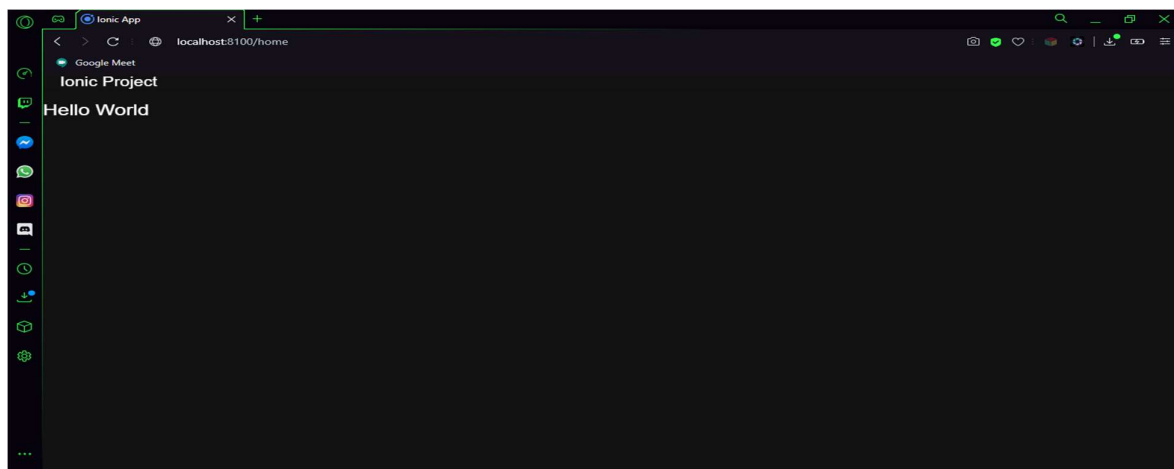
#### What is a hybrid app?

This solution is a blend, hence the name hybrid, of both native and web solutions. Where the core of the application is written using web technologies (HTML, CSS, and JavaScript), which are then encapsulated within a native application. Through the use of plugins, these applications can have full access to the mobile device's features. To better understand this approach, let's break down how it all fits together

#### Steps for creating Ionic Web app:

1. Install ionic using `npm install -g ionic`
2. Get ionic info using `ionic info`
3. To create an ionic app type `ionic start <app name>`
4. Then it will ask to choose a framework if you want to make it in angular choose angular
5. Then to start running the ionic web page in the server type `ionic serve`.
6. To access the web page go on `http://localhost:8100`

```
C: > Users > Satyam Thaker > Desktop > had-prac-journal > < home.page.html > ion-content
1  <ion-header>
2    <ion-navbar>
3      <ion-title>
4        Ionic Project
5      </ion-title>
6    </ion-navbar>
7  </ion-header>
8
9  <ion-content padding>
10    <h2>Hello World</h2>
11  </ion-content>
```





## Practical-6: Ionic Adding Cordova Android Platform

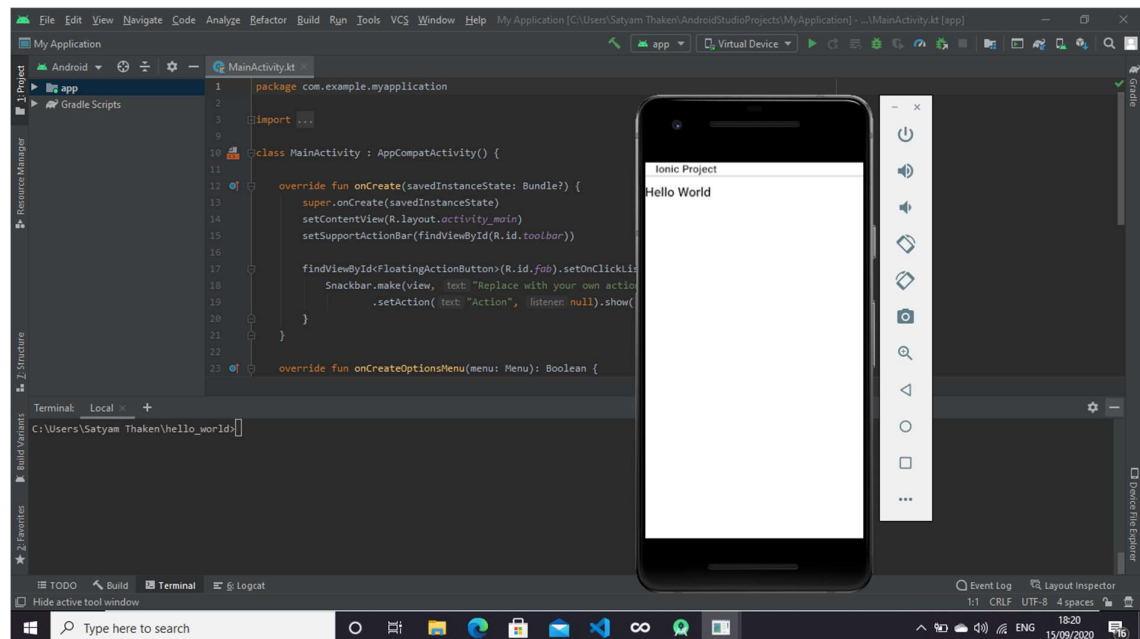
### Theory

#### How to create and Ionic Android app:

##### Steps to create an ionic android app:

- After you have built the web app next command you should type is ionic cordova platform add android. This will add and android platform to
  - your web app directory.
- Now type ionic cordova build android to start building your android app.
- Now type ionic cordova run android, if you have connected your machine to a phone and turned on USB debugging the app will export to your pc and if you are running an emulator the out will be like this.

#### ANDROID OUTPUT:



## Practical 7: Ionic Create, Generate and Add Pages

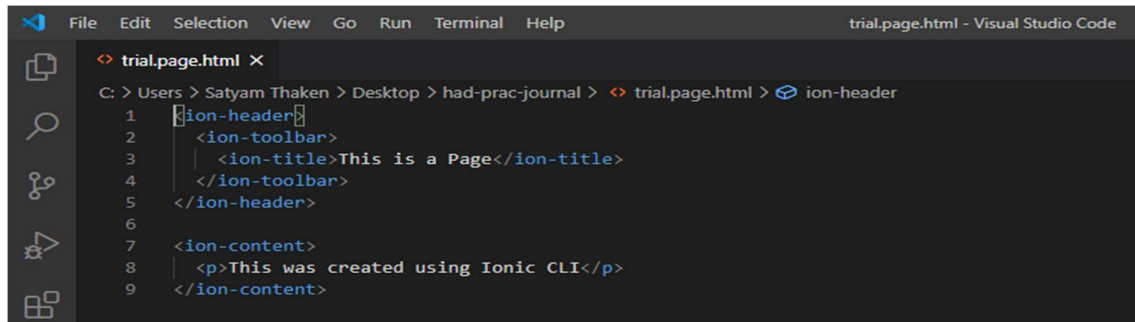
### Theory

- An Ionic page is just an Angular component.
- The Ionic Page handles registering and displaying specific pages based on URLs. It's used underneath NavController so it will never have to be interacted with directly. When a new page is pushed with NavController, the URL is updated to match the path to this page.
- Unlike traditional web apps, URLs don't dictate navigation in Ionic apps. Instead, URLs help us link to specific pieces of content as a breadcrumb. The current URL gets updated as we navigate, but we use the NavController push and pop, or NavPush and NavPop to move around. This makes it much easier to handle complicated nested navigation.

### Steps:

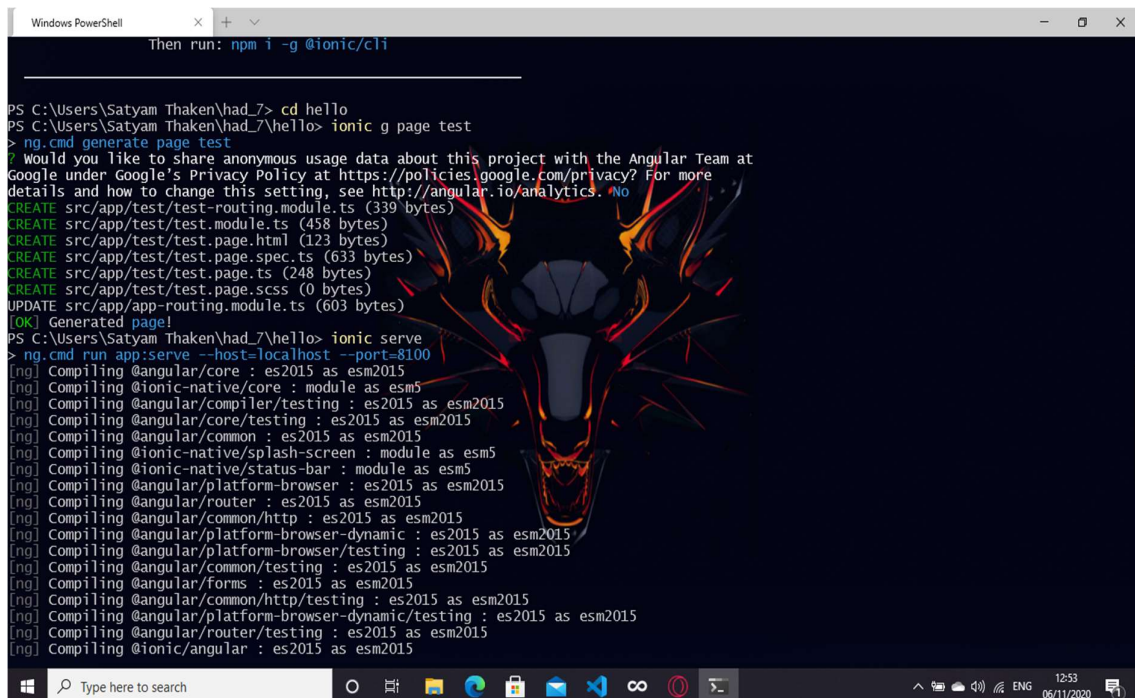
1. Open command prompt as administrator
2. Create a folder for your ionic project by running `md <folder_name>`
3. Navigate to the folder by running `cd <folder_name>`
4. To create an ionic app run `ionic start <app_name> blank`
5. Then it will ask to choose a framework so choose `Angular JS`
6. Navigate to the folder by running `cd <app_name>`
7. To generate and add a page run `ionic g page <page_name>`
8. This will create a folder with all the components of your page in `<pagename>`
9. Then to start running the ionic web page on the server type `ionic serve`
10. To access the web page go on <http://localhost:8100//<pagename>>

## Code, Commands and Output:



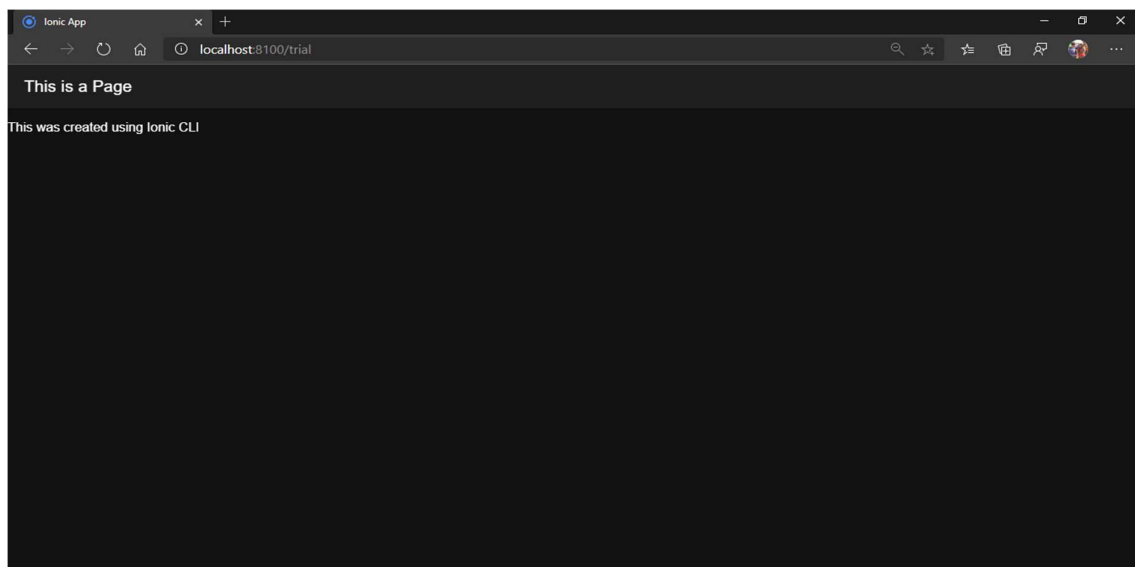
```
File Edit Selection View Go Run Terminal Help trial.page.html - Visual Studio Code

<> trial.page.html X
C: > Users > Satyam Thaken > Desktop > had-prac-journal > <> trial.page.html > ion-header
1 | ion-header
2 |   <ion-toolbar>
3 |     <ion-title>This is a Page</ion-title>
4 |   </ion-toolbar>
5 | </ion-header>
6 |
7 | <ion-content>
8 |   <p>This was created using Ionic CLI</p>
9 | </ion-content>
```



```
Windows PowerShell
Then run: npm i -g @ionic/cli

PS C:\Users\Satyam Thaken\had_7> cd hello
PS C:\Users\Satyam Thaken\had_7\hello> ionic g page test
> ng.cmd generate page test
? Would you like to share anonymous usage data about this project with the Angular Team at
Google under Google's Privacy Policy at https://policies.google.com/privacy? For more
details and how to change this setting, see http://angular.io/analytics. No
CREATE src/app/test/test-routing.module.ts (339 bytes)
CREATE src/app/test/test.module.ts (458 bytes)
CREATE src/app/test/test.page.html (123 bytes)
CREATE src/app/test/test.page.spec.ts (633 bytes)
CREATE src/app/test/test.page.ts (248 bytes)
CREATE src/app/test/test.page.scss (0 bytes)
UPDATE src/app/app-routing.module.ts (603 bytes)
[OK] Generated page!
PS C:\Users\Satyam Thaken\had_7\hello> ionic serve
> ng.cmd run app:serve --host=localhost --port=8100
[ng] Compiling @angular/core : es2015 as esm2015
[ng] Compiling @ionic-native/core : module as esm5
[ng] Compiling @angular/compiler/testing : es2015 as esm2015
[ng] Compiling @angular/core/testing : es2015 as esm2015
[ng] Compiling @angular/common : es2015 as esm2015
[ng] Compiling @ionic-native/splash-screen : module as esm5
[ng] Compiling @ionic-native/status-bar : module as esm5
[ng] Compiling @angular/platform-browser : es2015 as esm2015
[ng] Compiling @angular/router : es2015 as esm2015
[ng] Compiling @angular/common/http : es2015 as esm2015
[ng] Compiling @angular/platform-browser-dynamic : es2015 as esm2015
[ng] Compiling @angular/platform-browser/testing : es2015 as esm2015
[ng] Compiling @angular/common/testing : es2015 as esm2015
[ng] Compiling @angular/forms : es2015 as esm2015
[ng] Compiling @angular/common/http/testing : es2015 as esm2015
[ng] Compiling @angular/platform-browser-dynamic/testing : es2015 as esm2015
[ng] Compiling @angular/router/testing : es2015 as esm2015
[ng] Compiling @ionic/angular : es2015 as esm2015
```



## Practical 8: Ionic Use Tabs Starter Template

### Theory

- Ionic Starter Templates are ready-to-go starter packs for your next Ionic app.
- The ionic starter templates are:
  - Tabs: A starting project for Ionic using a simple tabbed interface
  - Blank: A blank starter project for Ionic
  - Sidemenu: A starting project for Ionic using a side menu with navigation in the content area
  - Maps: An Ionic starter project using Google Maps and a side menu

### Steps:

1. Open command prompt as administrator
2. Create a folder for your ionic project by running `md <folder_name>`
3. Navigate to the folder by running `cd <folder_name>`
4. To create an ionic app run `ionic start <app_name> tabs`
5. Then it will ask to choose a framework so choose Angular JS
6. Navigate to the folder by running `cd <app_name>`
7. Then to start running the ionic web page on the server type `ionic serve`
8. To access the web page go on <http://localhost:8100>

**Output:**