



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: SUNAINA BHARATI Roll No: 308 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

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Practical 1: Data Binding

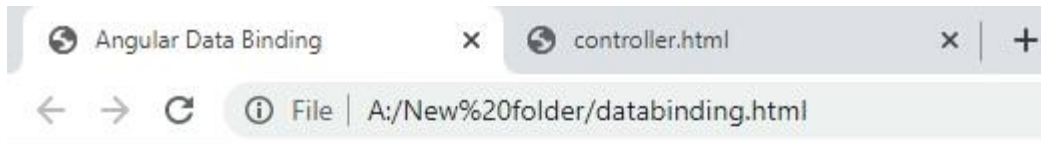
What is Data Binding in AngularJS?

Data-binding in AngularJS apps is the automatic synchronization of data between the model and view components. While you could push values to and pull values from HTML, the application is easier to write, read, and maintain if you turn these tasks over to a binding framework. You simply declare bindings between binding sources, target HTML elements, and let the framework do the rest.

Code:

```
> had practicxal > <> DataBinding.html > html > script
1 <!DOCTYPE html>
2 <html lang="en">
3   <title>Angular Data Binding</title>
4   <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.6.9/angular.js"></script>
5 </script>
6 </script>
7 <body>
8
9   <div ng-app="">
10     <h2> Data Binding Demonstration</h2>
11     <input ng-init="placeholder='your name is being display'" type="text">
12     <p>{{placeholder}}</p>
13     <p ng-bind="binding"></p>
14   </div>
15 </body>
16 </html>
```

Output :



Data Binding Demostration

your name is being displayed here:
sunaina Bharati

Practical 2: Directives

What are Directives in AngularJS?

AngularJS lets you extend HTML with new attributes called Directives.

AngularJS has a set of built-in directives which offers functionality to your applications.

AngularJS also lets you define your own directives.

Code & Output :

practical_1_data_binding.htmlpractical_1_directives.html xpractical_1_events.html

1<!DOCTYPE html>
2<html lang="en">
3<title>AngularJS Directives</title>
4<script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.2.26/angular.min.js"></script>
5<body>
6<div ng-app="myApp" ng-init="names=[
7 {name: 'Jan', country: 'Norway'},
8 {name: 'Hege', country: 'Sweden'},
9 {name: 'Kai', country: 'Denmark'}]></div>
10<h2>Some built-in directives are ng-app, ng-init, ng-repeat, ng-model, ng-bind</h2>
11
12 <li ng-repeat="x in names">
13 {{ x.name + ', ' + x.country }}
14
15
16Quantity: <input type="number" ng-model="quantity">
17

18Costs: <input type="text" value="1234">
19

20Quantity: 5
21Cost per unit: 1234
22Total: 6170\$
23

24In addition to all the built-in AngularJS directives, you can create your own directives.
25<div style="border: 1px solid black; padding: 5px; margin-top: 10px;">
26 This was made by a custom directive
27</div>
28</body>
29</html>

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

- Jan, Norway
- Hege, Sweden
- Kai, Denmark

Quantity:

Costs:

Quantity: 5

Cost per unit: 1234

Total: 6170\$

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

This was made by a custom directive

Practical 3: Controllers

What are Controllers in AngularJS?

AngularJS applications mainly rely on controllers to control the flow of data in the application. A controller is defined using ng-controller directive. A controller is a JavaScript object that contains attributes/properties, and functions. Each controller accepts \$scope as a parameter, which refers to the application/module that the controller needs to handle.

Code & Output :

```

A: > had practicxal > <> controller.html > html > body > script > app.controller('myCtrl') callback
1  <!DOCTYPE html>
2  <html>
3  <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.6.9/angular.js"></script>
4  <body>
5
6  <div ng-app="myApp" ng-controller="myCtrl">
7
8  First Name: <input type="text" ng-model="firstName"><br>
9  Last Name: <input type="text" ng-model="lastName"><br>
10 <br>
11 Full Name: {{firstName + " " + lastName}}
12
13 </div>
14
15 <script>
16 var app = angular.module('myApp', []);
17 app.controller('myCtrl', function($scope) {
18     $scope.firstName = "Sunaina";
19     $scope.lastName = "Bharati";
20 });
21 </script>
22
23 </body>
24 </html>
25

```

Output:

←
→
↻
File | A:/New%20folder/controller.html

First Name:

Last Name:

Full Name: Sunaina Bharati

Practical 4 : AngularJS Events

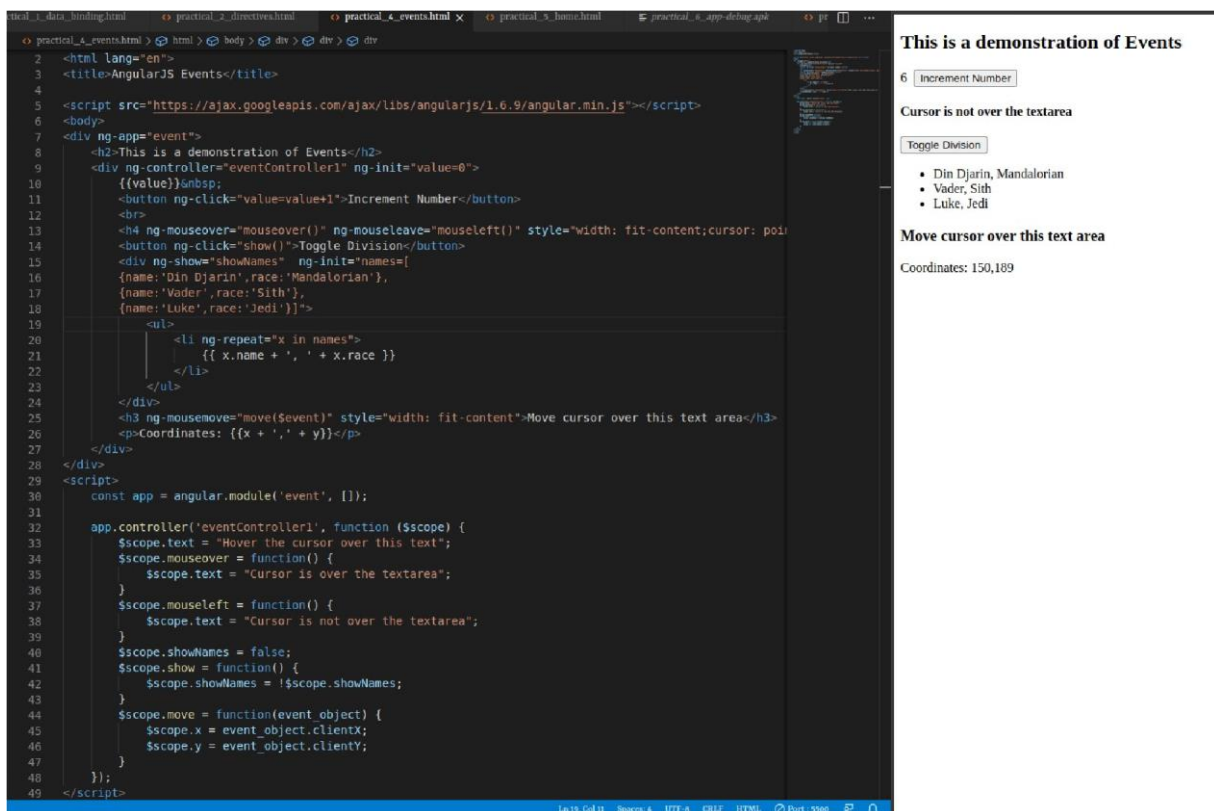
What are Events in AngularJS?

AngularJS includes certain directives which can be used to provide custom behavior on various DOM events, such as click, mouseover etc.

An AngularJS event will not overwrite an HTML event, both events will be executed.

You can pass the \$event object as an argument when calling the function. The \$event object contains the browser's event object.

Code & Output :



```
1 <html lang="en">
2 <title>AngularJS Events</title>
3
4
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     {{value}}&nbsp;
11     <button ng-click="value=value+1">Increment Number</button>
12     <br>
13     <h4 ng-mouseover="mouseover()" ng-mouseleave="mouseleave()" style="width: fit-content; cursor: pointer;">
14       <button ng-click="show()">Toggle Division</button>
15     <div ng-show="showNames" ng-init="names=[
16       {name: 'Din Djarin', race: 'Mandalorian'},
17       {name: 'Vader', race: 'Sith'},
18       {name: 'Luke', race: 'Jedi'}]>
19       <ul>
20         <li ng-repeat="x in names">
21           {{ x.name + ', ' + x.race }}
22         </li>
23       </ul>
24     </div>
25     <h3 ng-mousemove="move($event)" style="width: fit-content">Move cursor over this text area</h3>
26     <p>Coordinates: {{x + ', ' + y}}</p>
27   </div>
28 </div>
29 <script>
30   const app = angular.module('event', []);
31
32   app.controller('eventController1', function ($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>
```

This is a demonstration of Events

6 | Increment Number

Cursor is not over the textarea

Toggle Division

- Din Djarin, Mandalorian
- Vader, Sith
- Luke, Jedi

Move cursor over this text area

Coordinates: 150,189

Practical 5 : Ionic Create and Build First Project

What is a hybrid app?

Like native apps, run on the device, and are written with web technologies (HTML5, CSS and JavaScript). Hybrid apps run inside a native container, and leverage the device's browser engine (but not the browser) to render the HTML and process the JavaScript locally. A web-to-native abstraction layer enables access to device capabilities that are not accessible in Mobile Web applications, such as the accelerometer, camera and local storage. How to create and web app in Ionic:

Requirements:

1. Node.js with npm in path

Steps:

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

Code:

<> practical_5_home.html > ion-content

```
1  <ion-header [translucent]="true">
2    <ion-toolbar>
3      <ion-title>
4        Ionic App
5      </ion-title>
6    </ion-toolbar>
7  </ion-header>
8
9  <ion-content [fullscreen]="true">
10    <ion-header collapse="condense">
11      <ion-toolbar>
12        <ion-title size="large">Ionic App</ion-title>
13      </ion-toolbar>
14    </ion-header>
15
16    <div id="container">
17      <strong>Hello World</strong>
18    </div>
19  </ion-content>
20
```

Commands:

```
Administrator: Windows PowerShell
[ng] Compiling @ionic-native/status-bar : module as esm5
[ng] chunk {} 0.js, 0.js.map () 30.4 kB [rendered]
[ng] chunk {common} common.js, common.js.map (common) 13.4 kB [rendered]
[ng] chunk {focus-visible-f4ad4f1a-js} focus-visible-f4ad4f1a-js.js, focus-visible-f4ad4f1a-js.js.map (focus-visible-f4ad4f1a-js) 1.97 kB [rendered]
[ng] chunk {home-home-module} home-home-module.js, home-home-module.js.map (home-home-module) 8.17 kB [rendered]
[ng] chunk {input-shims-7574994a-js} input-shims-7574994a-js.js, input-shims-7574994a-js.js.map (input-shims-7574994a-js) 15.3 kB [rendered]
[ng] chunk {keyboard-5742b5da-js} keyboard-5742b5da-js.js, keyboard-5742b5da-js.js.map (keyboard-5742b5da-js) 6.03 kB [rendered]
[ng] chunk {main} main.js, main.js.map (main) 19.8 kB [initial] [rendered]
[ng] chunk {polyfills} polyfills.js, polyfills.js.map (polyfills) 268 kB [initial] [rendered]
[ng] chunk {polyfills-core-js} polyfills-core-js.js, polyfills-core-js.js.map (polyfills-core-js) 92.4 kB [rendered]
[ng] chunk {polyfills-css-shim} polyfills-css-shim.js, polyfills-css-shim.js.map (polyfills-css-shim) 10.7 kB [rendered]
[ng] chunk {polyfills-dom} polyfills-dom.js, polyfills-dom.js.map (polyfills-dom) 19.5 kB [rendered]
[ng] chunk {runtime} runtime.js, runtime.js.map (runtime) 9.53 kB [entry] [rendered]
[ng] chunk {shadow-css-58508bb5-js} shadow-css-58508bb5-js.js, shadow-css-58508bb5-js.js.map (shadow-css-58508bb5-js) 15.9 kB [rendered]
[ng] chunk {status-tap-b46a1b02-js} status-tap-b46a1b02-js.js, status-tap-b46a1b02-js.js.map (status-tap-b46a1b02-js) 1.51 kB [rendered]
[ng] chunk {styles} styles.js, styles.js.map (styles) 93 kB [initial] [rendered]
[ng] chunk {swipe-back-53c5a7dd-js} swipe-back-53c5a7dd-js.js, swipe-back-53c5a7dd-js.js.map (swipe-back-53c5a7dd-js) 2.9 kB [rendered]
[ng] chunk {swiper-bundle-95afeea2-js} swiper-bundle-95afeea2-js.js, swiper-bundle-95afeea2-js.js.map (swiper-bundle-95afeea2-js) 200 kB [rendered]
[ng] chunk {tap-click-9f8fd111-js} tap-click-9f8fd111-js.js, tap-click-9f8fd111-js.js.map (tap-click-9f8fd111-js) 5.64 kB [rendered]
[ng] chunk {vendor} vendor.js, vendor.js.map (vendor) 4.77 MB [initial] [rendered]
[ng] Date: 2020-11-12T03:49:14.072Z - Hash: 62fb83caa4bcd22f92d6 - Time: 201468ms
[ng] WARNING in C:\Windows\System32\my_app\practicals\src\test.ts is part of the TypeScript compilation but it's unused.
[ng] Add only entry points to the 'files' or 'include' properties in your tsconfig.
[ng] WARNING in C:\Windows\System32\my_app\practicals\src\environments\environment.prod.ts is part of the TypeScript compilation but it's unused.
[ng] Add only entry points to the 'files' or 'include' properties in your tsconfig.
[INFO] ... and 42 additional chunks
[ng] : Compiled successfully.

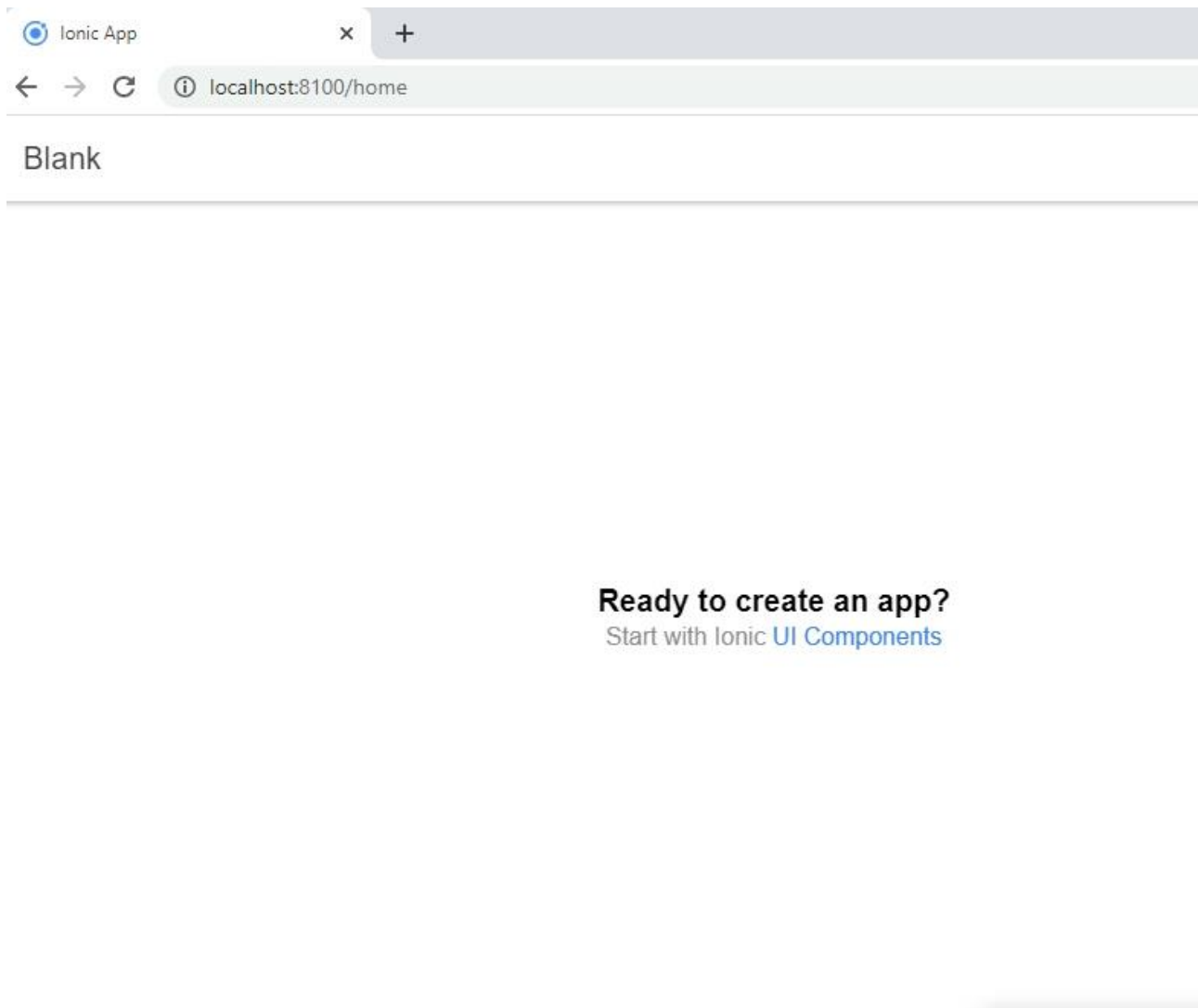
[INFO] Development server running!

      Local: http://localhost:8100

      Use Ctrl+C to quit this process

[INFO] Browser window opened to http://localhost:8100!
```

Output:



Practical 6 : Ionic Adding Cordova Android Platform

What is Cordova?

Apache Cordova is an open-source mobile development framework. It allows you to use standard web technologies - HTML5, CSS3, and JavaScript for crossplatform development. Applications execute within wrappers targeted to each platform, and rely on standards-compliant API bindings to access each device's capabilities such as sensors, data, network status, etc.

Cordova can be used as an integration for Ionic to export Ionic web apps to Native mobile applications like an Android APK.

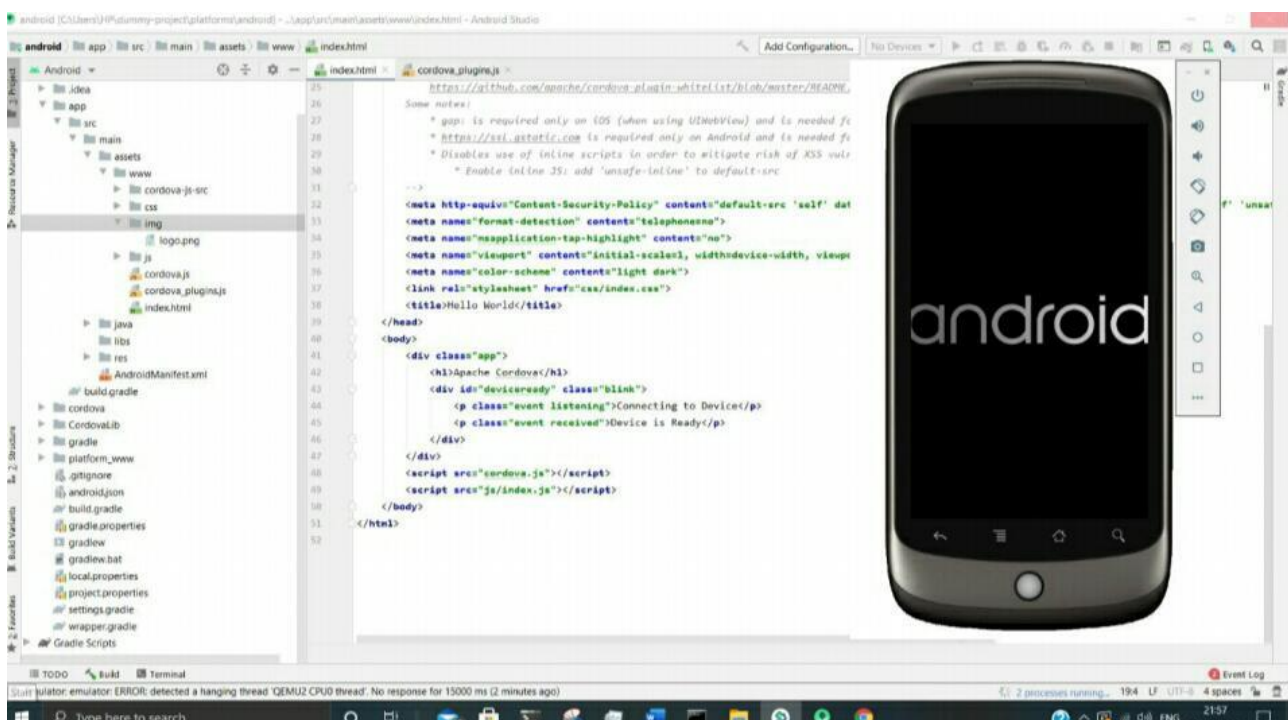
Requirements:

1. Java 8 in path and JAVA_HOME set
2. Android SDK with ANDROID_SDK_ROOT set
3. Gradle in path

Steps:

1. Install cordova resources by running `npm install -g cordova-res`
2. To add support for the Android platform run `ionic cordova platform add android`
3. To build a debug Android APK run `ionic cordova build android`
4. Install app-debug.apk in your device from `{project_root}\platforms\android\app\build\outputs\apk\debug`

Command:



Practical 7 : Ionic Create, Generate and Add Pages

What are Ionic Pages?

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.

The ionic generate or ionic g command uses the Angular CLI to generate features such as pages, components, directives, services, etc.

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 `{project_root}\src\app\{page_name}`
9. Then to start running the ionic web page on the server type `ionic serve`
10. To access the web page go on `https://localhost:8100/{page_name}`

Code & Output:

```
Terminal  Help  test-page.page.html - practicals - Visual Studio Code

Untitled-1  test-page.page.html X

src > app > test-page > test-page.page.html > ion-content

1  <ion-header>
2    <ion-toolbar>
3      <ion-title>test_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>
10
```

```
Administrator: Windows PowerShell

C:\Windows\System32\my_app\practicals>ionic g page
? Name/path of page: test_page
> ng.cmd generate page test_page
CREATE src/app/test-page/test-page-routing.module.ts (356 bytes)
CREATE src/app/test-page/test-page.module.ts (488 bytes)
CREATE src/app/test-page/test-page.page.html (128 bytes)
CREATE src/app/test-page/test-page.page.spec.ts (662 bytes)
CREATE src/app/test-page/test-page.page.ts (267 bytes)
CREATE src/app/test-page/test-page.page.scss (0 bytes)
UPDATE src/app/app-routing.module.ts (622 bytes)
[OK] Generated page!
```

Practical 8 : Ionic Use Tabs Starter Template

What are Ionic Starter Templates?

Ionic Starter Templates are ready-to-go starter packs for your next Ionic app.

Between all project types, there are three templates available:

- tabs: A tab based layout
- sidemenu: A sidemenu based layout
- blank: An empty project with a single page

We will be using 'tabs' in the practical

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`

Code:

tab1.page.html X

src > app > tab1 > tab1.page.html > ...

```
1 <ion-header [translucent]="true">
2   <ion-toolbar>
3     <ion-title>
4       Tab 1
5     </ion-title>
6   </ion-toolbar>
7 </ion-header>
8
9 <ion-content [fullscreen]="true">
10   <ion-header collapse="condense">
11     <ion-toolbar>
12       <ion-title size="large">Tab 1</ion-title>
13     </ion-toolbar>
14   </ion-header>
15
16   <app-explore-container name="Tab 1 page"></app-explore-container>
17 </ion-content>
18
```

Commands:

```

C:\Windows\System32\cmd.exe [Select Administrator: Windows PowerShell]
C:\Windows\System32\cmd.exe ng.cmd run app:serve --host=localhost --port=8100
[ng] Compiling @angular/core : es2015 as esm2015
[ng] chunk {} 0.js, 0.js.map () 30.4 kB [rendered]
[ng] chunk {common} common.js, common.js.map (common) 20.4 kB [rendered]
[ng] chunk {focus-visible-f4ad4f1a-js} focus-visible-f4ad4f1a-js.js, focus-visible-f4ad4f1a-js.js.map (focus-visible-f4ad4f1a-js) 1.97 kB [rendered]
[ng] chunk {input-shims-7574994a-js} input-shims-7574994a-js.js, input-shims-7574994a-js.js.map (input-shims-7574994a-js) 15.3 kB [rendered]
[ng] chunk {keyboard-5742b5da-js} keyboard-5742b5da-js.js, keyboard-5742b5da-js.js.map (keyboard-5742b5da-js) 6.03 kB [rendered]
[ng] chunk {main} main.js, main.js.map (main) 19.7 kB [initial] [rendered]
[ng] chunk {polyfills} polyfills.js, polyfills.js.map (polyfills) 268 kB [initial] [rendered]
[ng] chunk {polyfills-core-js} polyfills-core-js.js, polyfills-core-js.js.map (polyfills-core-js) 92.4 kB [rendered]
[ng] chunk {polyfills-css-shim} polyfills-css-shim.js, polyfills-css-shim.js.map (polyfills-css-shim) 10.7 kB [rendered]
[ng] chunk {polyfills-dom} polyfills-dom.js, polyfills-dom.js.map (polyfills-dom) 10.5 kB [rendered]
[ng] chunk {runtime} runtime.js, runtime.js.map (runtime) 9.64 kB [entry] [rendered]
[ng] chunk {shadow-css-58508bb5-js} shadow-css-58508bb5-js.js, shadow-css-58508bb5-js.js.map (shadow-css-58508bb5-js) 15.9 kB [rendered]
[ng] chunk {status-tap-b46a1b02-js} status-tap-b46a1b02-js.js, status-tap-b46a1b02-js.js.map (status-tap-b46a1b02-js) 1.51 kB [rendered]
[ng] chunk {styles} styles.js, styles.js.map (styles) 93 kB [initial] [rendered]
[ng] chunk {swipe-back-53c5a7dd-js} swipe-back-53c5a7dd-js.js, swipe-back-53c5a7dd-js.js.map (swipe-back-53c5a7dd-js) 2.9 kB [rendered]
[ng] chunk {swiper-bundle-95afeea2-js} swiper-bundle-95afeea2-js.js, swiper-bundle-95afeea2-js.js.map (swiper-bundle-95afeea2-js) 200 kB [rendered]
[ng] chunk {tab1-tab1-module} tab1-tab1-module.js, tab1-tab1-module.js.map (tab1-tab1-module) 7.28 kB [rendered]
[ng] chunk {tab2-tab2-module} tab2-tab2-module.js, tab2-tab2-module.js.map (tab2-tab2-module) 7.28 kB [rendered]
[ng] chunk {tab3-tab3-module} tab3-tab3-module.js, tab3-tab3-module.js.map (tab3-tab3-module) 7.62 kB [rendered]
[ng] chunk {tabs-tabs-module} tabs-tabs-module.js, tabs-tabs-module.js.map (tabs-tabs-module) 8.28 kB [rendered]
[ng] chunk {tap-click-9f8fd111-js} tap-click-9f8fd111-js.js, tap-click-9f8fd111-js.js.map (tap-click-9f8fd111-js) 5.64 kB [rendered]
[ng] chunk {vendor} vendor.js, vendor.js.map (vendor) 4.77 MB [initial] [rendered]
[ng] Date: 2020-11-12T10:16:26.858Z - Hash: 02947dbd26516c8c5d8b - Time: 138853ms
[INFO] ... and 42 additional chunks
[ng] : Compiled successfully.
[ng] Compiling @angular/common : es2015 as esm2015
[ng] Compiling @angular/common/http : es2015 as esm2015
[ng] Compiling @angular/common/http/testing : es2015 as esm2015
[ng] Compiling @angular/core/testing : es2015 as esm2015
[ng] Compiling @angular/platform-browser : es2015 as esm2015
[ng] Compiling @angular/platform-browser-dynamic : es2015 as esm2015
[ng] Compiling @angular/platform-browser/testing : es2015 as esm2015
[ng] Compiling @angular/compiler/testing : es2015 as esm2015
[ng] Compiling @angular/platform-browser-dynamic/testing : es2015 as esm2015
[ng] Compiling @angular/common/testing : es2015 as esm2015
[ng] Compiling @angular/router : es2015 as esm2015
[ng] Compiling @angular/router/testing : es2015 as esm2015
[ng] Compiling @angular/forms : es2015 as esm2015
[ng] Compiling @ionic/angular : es2015 as esm2015
[ng] Compiling @ionic-native/core : module as esm5
[ng] Compiling @ionic-native/splash-screen : module as esm5
[ng] Compiling @ionic-native/status-bar : module as esm5
[ng] WARNING in C:\Windows\System32\my_app\practicals\tabs\src\test.ts is part of the TypeScript compilation but it's unused.
[ng] Add only entry points to the 'files' or 'include' properties in your tsconfig.
[ng] WARNING in C:\Windows\System32\my_app\practicals\tabs\src\environments\environment.prod.ts is part of the TypeScript compilation but it's unused.
[ng] Add only entry points to the 'files' or 'include' properties in your tsconfig.
[INFO] Development server running!

Local: http://localhost:8100

Use Ctrl+C to quit this process

```

Output:

Tab 1

Tab 1 page
Explore [UI Components](#)

▲
Tab 1

