ENGINEERING 4.0
UNIVERSITY OF PRETORIA

INF 354: Advanced Programming

LP 09:
Ionic II

Outline

- Install & Configure
- Ionic CLI
- Ionic Framework Components
- Ionic Service API Integration
- Ionic Tabs & Routing
- Ionic Framework Components Implementation
- Additional Mentions
- In-Class Practice

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Install & Configure

Install & Configure

- Node.js (website)
- npm install -g @ionic/cli
- ionic start testproject tabs --type=angular
- ionic serve -o

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Ionic CLI

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Ionic CLI

- https://ionicframework.com/docs/intro/cli

- ionic generate

```
PS D:\UP\Teaching\2023\INF354\Lecture09_Ionic_II\Ionic_II_app\hero> ionic generate
? What would you like to generate? (Use arrow keys)
> page
  component
  service
  module
  class
  directive
  guard
(Move up and down to reveal more choices)
```

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Ionic Framework Components

Ionic Framework Components

- https://ionicframework.com/docs/components

Button

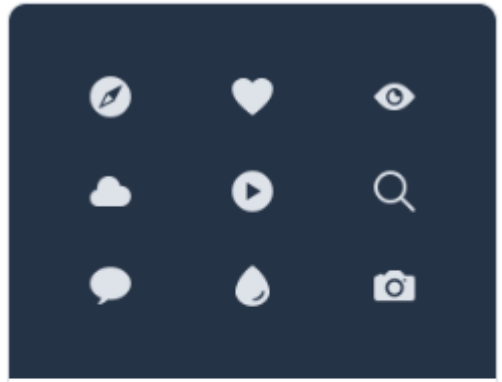
Buttons let your users take action. They're an essential way to interact with and navigate through an app.

Card

Cards are a great way to display an important piece of content, and can contain images, buttons, text, and more.

Chip

Chips are a compact way to display data or actions.



Icons

Beautifully designed icons for use in web, iOS, Android, and desktop apps.

Modal

Modals slide in and off screen to display a temporary UI and are often used for login or sign-up pages.

Toast

Toast is used to show a notification over the top of an app's content. It can be temporary or dismissable.

Refresher

Refresher provides pull-to-refresh functionality on a content component.

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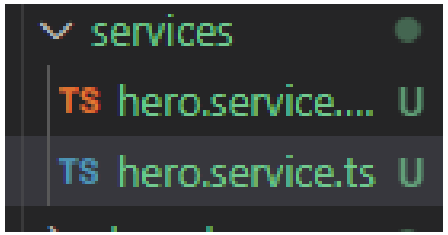
Ionic Service API Integration

Ionic Service API Integration

- ionic g s serviceName

```
import { Injectable } from '@angular/core';
import { HttpClient, HttpHeaders } from '@angular/common/http';
import { map, Observable, Subject } from 'rxjs';
import { Hero } from '../shared/hero';

@Injectable({
  providedIn: 'root'
})
export class HeroService {

  apiUrl = 'http://localhost:5116/api/'

  httpOptions ={
    headers: new HttpHeaders({
      ContentType: 'application/json'
    })
  }

  constructor(private _httpClient: HttpClient) { }

  getHeroes(): Observable<Hero[]>{
    return this._httpClient.get<Hero[]>(`${this.apiUrl}Hero/GetAllHeroes`)
    .pipe(map(result => result))
  }

  getHero(heroId: number) {
    return this._httpClient.get(`${this.apiUrl}Hero/GetHero` + "/" + heroId)
    .pipe(map(result => result))
  }
}
```



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Ionic Service API Integration continued…

HeroController.cs | HeroRepository.cs | IHeroRepository.cs | Hero.cs

Ionic_II | Ionic_II.Controllers.HeroController

```
18              _heroRepository = heroRepository;
19          }
20
21          [HttpGet]
22          [Route("GetAllHeroes")]
            0 references
23          public async Task<IActionResult> GetAllHeroes()
24          {
25              try
26              {
27                  var results = await _heroRepository.GetAllHeroesAsync();
28                  return Ok(results);
29              }
30              catch (Exception)
31              {
32                  return StatusCode(500,"Internal Server Error. Please contact support.");
33              }
34          }
35
36          [HttpGet]
37          [Route("GetHero/{heroId}")]
            0 references
38          public async Task<IActionResult> GetHero(int heroId)
39          {
40              try
41              {
42                  var result = await _heroRepository.GetHeroAsync(heroId);
43
44                  if (result == null) return NotFound("Hero does not exist. You need to create it first");
45
46                  return Ok(result);
47              }
48              catch (Exception)
49              {
50                  return StatusCode(500, "Internal Server Error. Please contact support");
51              }
52          }
53      }
```

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Ionic Service API Integration continued…

HeroRepository.cs | IHeroRepository.cs | Hero.cs

```
using System.ComponentModel.DataAnnotations;

namespace Ionic_II.Models
{
    19 references
    public class Hero
    {
        [Key]
        1 reference
        public int HeroId { get; set; }
        0 references
        public string Name { get; set; }
        0 references
        public int Age { get; set; }
        0 references
        public string Birthday { get; set; }
        0 references
        public string Height { get; set; }
        0 references
        public bool isAlive { get; set; }
        0 references
        public string FileName { get; set; }
        0 references
        public string ImageBase64 { get; set; }

    }
}
```

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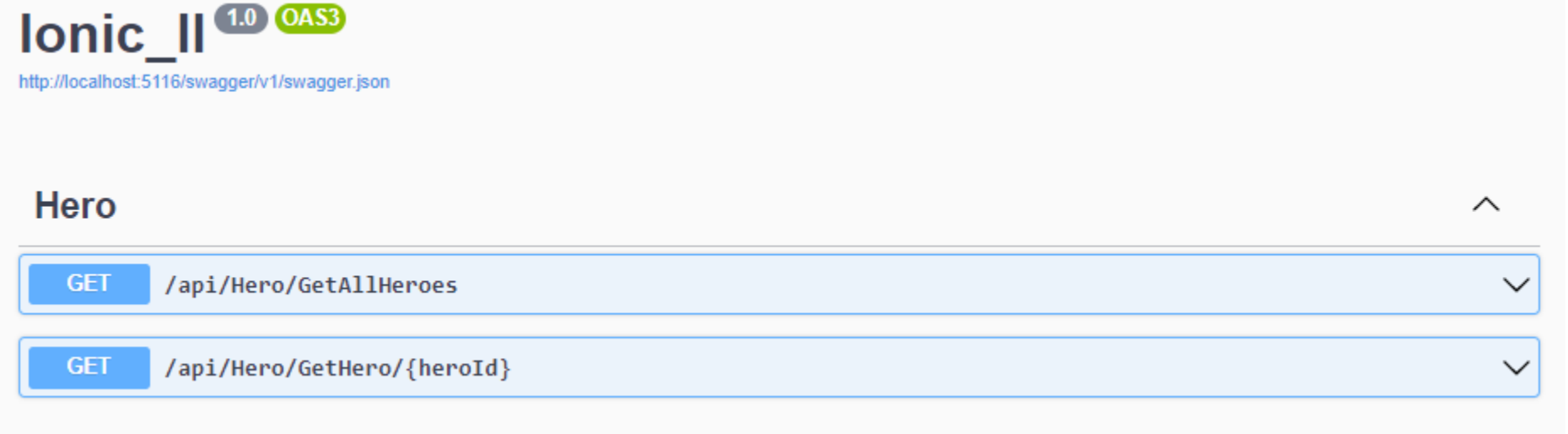
Ionic Service API Integration continued…

	Herold	Name	Age	Birthday	Height	isAlive	FileName	ImageBase64
1	1	Samuel Thomas 'Sam' Wilson (Falcon/Captain Ameri...	40	September 23	178cm	1	Anthony-Mackie-Captain-America-4.webp	...
2	2	Scott Lang (Ant-Man)	34		178cm	1	antman-and-the-wasp-marvel-4.webp	...
3	3	Natasha Romanoff (Black Widow)	39	December 3	164cm	1	black-widow-1.webp	...
4	4	Colonel James 'Rhodey' Rhodes (War Machine)	55	October 6	173cm	1	Don-cheadle-as-rhodey-Cropped.webp	...
5	5	Clint Barton (Hawkeye)	53	June 18	173cm	1	hawkeye.webp	...
6	6	Peter Parker (Spider-Man)	19	August 10	170cm	1	peter-parker-Cropped.webp	...
7	7	Steve Rogers (Captain America)	34	July 4	185cm	0	steve-rogers.webp	...
8	8	Bruce Banner (The Hulk)	54	December 18	250cm	1	The-Incredible-Hulk.webp	...
9	9	Thor	1059		192cm	1	thor-lightning.webp	...
10	10	Tony Stark (Iron Man)	53	May 29	185cm	0	tony-stark-iron-man.webp	...
11	11	Vision	3	May 29	178cm	1	Vision-Civil-War-Cropped.webp	...
12	12	Wanda Maximoff (Scarlet Witch)	30	February 10	168cm	1	Wanda-Scarlet-Witch-Cropped.webp	...

Ionic Service API Integration continued…



Ionic Service API Integration continued…

```
Heroes: Observable<Hero[]>;
constructor(private _toastController: ToastController, private _heroService: HeroService) {
  this.Heroes = this._heroService.getHeroes();
}
```

```
<ion-card button *ngFor="let hero of (Heroes | async)" [routerLink]="['hero-detail', hero.heroId]">
  <ion-img [src]="hero.imageBase64"></ion-img>
</ion-card>
```

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Ionic Service API Integration continued…

- Demo…

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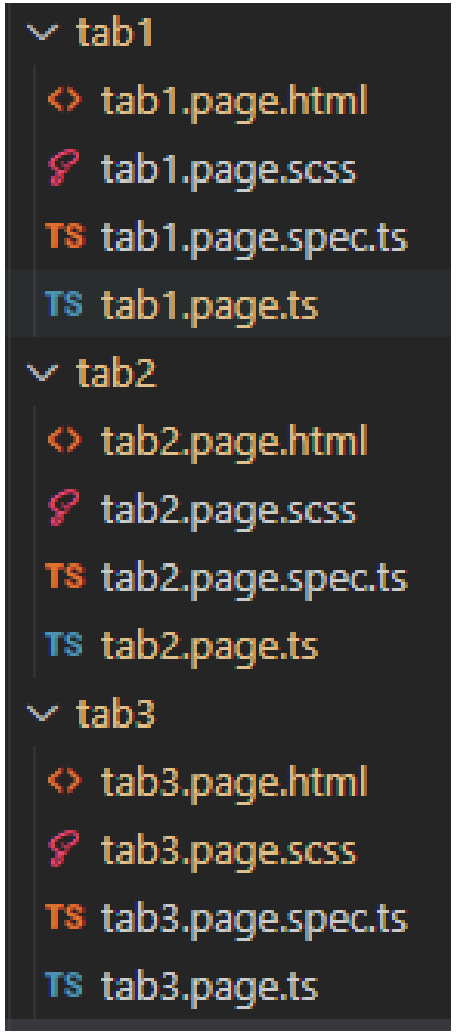
Ionic Tabs & Routing

Ionic Tabs & Routing

- 3 default tabs created with ionic start **--tabs** app.



tab3.page.ts

src > app > tab3 > tab3.page.ts > ...

```
You, 4 days ago | 1 author (You)
1  import { Component } from '@angular/core';
2  import { IonicModule } from '@ionic/angular';
3  import { ExploreContainerComponent } from '../explore-container/explore-container.component';
4
   You, 4 days ago | 1 author (You)
5  @Component({
6    selector: 'app-tab3',
7    templateUrl: 'tab3.page.html',
8    styleUrls: ['tab3.page.scss'],
9    standalone: true,
10   imports: [IonicModule, ExploreContainerComponent],
11 })
12 export class Tab3Page {
13   constructor() {}
14 }
```

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Ionic Tabs & Routing continued…

- default tabs folder created as well. Location for the tabs Routes.

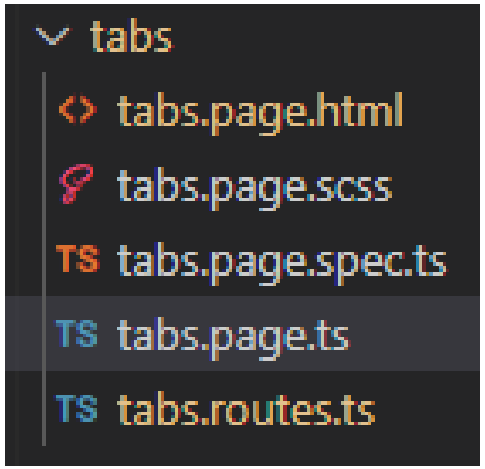
tabs.page.html M

src > app > tabs > tabs.page.html > ion-tabs > ion-tab-bar

Go to component | You, 1 second ago | 1 author (You)

```
<ion-tabs>
  <ion-tab-bar slot="bottom">
    <ion-tab-button tab="tab1">
      <ion-icon aria-hidden="true" name="people-sharp"></ion-icon>
      <ion-label>Heroes</ion-label>
    </ion-tab-button>

    <ion-tab-button tab="tab2">
      <ion-icon aria-hidden="true" name="information-circle-sharp"></ion-icon>
      <ion-label>Popover</ion-label>
    </ion-tab-button>
      You, 4 days ago • Initial commit …
    <ion-tab-button tab="tab3">
      <ion-icon aria-hidden="true" name="person-sharp"></ion-icon>
      <ion-label>Profile</ion-label>
    </ion-tab-button>
  </ion-tab-bar>
</ion-tabs>
```



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Ionic Tabs & Routing continued…

- tabs Routes

tabs.routes.ts M

app > tabs > TS tabs.routes.ts > routes

You, 2 minutes ago | 1 author (You)

```ts
import { Routes } from '@angular/router';
import { TabsPage } from './tabs.page';

export const routes: Routes = [
  {
    path: 'tabs',
    component: TabsPage,
    children: [
      {
        path: 'tab1',
        loadChildren: () => [
          {
          path: '',
          loadComponent: () =>
          import('../tab1/tab1.page').then((m) => m.Tab1Page),
          },
          {
            path: 'hero-detail/:heroId',
            loadComponent: () => import('../hero-detail/hero-detail.page').t
          },
        ]
      },
      {
        path: 'tab2',
        loadComponent: () =>
          import('../tab2/tab2.page').then((m) => m.Tab2Page),
      },
      {
        path: 'tab3',
        loadComponent: () =>
          import('../tab3/tab3.page').then((m) => m.Tab3Page),
```

```ts
      path: '',
      redirectTo: '/tabs/tab1',
      pathMatch: 'full',
    },
  ],
},
{
  path: '',
  redirectTo: '/tabs/tab1',
  pathMatch: 'full',
},
```

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Ionic Tabs & Routing continued…

- app Routes

app.routes.ts M

src > app > TS app.routes.ts > ...

You, 31 seconds ago | 1 author (You)

```typescript
import { Routes } from '@angular/router';

export const routes: Routes = [
  {
    path: '',
    loadChildren: () => import('./tabs/tabs.routes').then((m) => m.routes),
  },
  // {
  //   path: 'herostatus',
  //   loadComponent: () => import('./herostatus/herostatus.page').then( m => m.HerostatusPage)
  // },
  // {
  //   path: 'hero-detail',
  //   loadComponent: () => import('./hero-detail/hero-detail.page').then( m => m.HeroDetailPage)
  // },
];
```

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Ionic Tabs & Routing continued…

- Demo…

Ionic Framework Components Implementation

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Ionic Framework Components Implementation

- ion-avatar
- ion-card
- ion-button | ion-fab-button
- ion-list
- ion-skeleton-text
- ion-refresher
- Modal
- Popover

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Ionic Framework Components Implementation

- Demo…

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Additional Mentions

In-Class Practice

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