



## Display a Heroes List

In this page, you'll expand the Tour of Heroes app to display a list of heroes, and allow users to select a hero and display the hero's details.

### Create mock heroes

You'll need some heroes to display.

Eventually you'll get them from a remote data server. For now, you'll create some *mock heroes* and pretend they came from the server.

Create a file called `mock-heroes.ts` in the `src/app/` folder. Define a `HEROES` constant as an array of ten heroes and export it. The file should look like this.

src/app/mock-heroes.ts

```
import { Hero } from './hero';

export const HEROES: Hero[] = [
  { id: 11, name: 'Dr Nice' },
  { id: 12, name: 'Narco' },
  { id: 13, name: 'Bombasto' },
  { id: 14, name: 'Celeritas' },
  { id: 15, name: 'Magnetia' },
  { id: 16, name: 'RubberMan' },
  { id: 17, name: 'Dynamia' },
  { id: 18, name: 'Dr IQ' },
  { id: 19, name: 'Magma' },
  { id: 20, name: 'Tornado' }
];
```

### Displaying heroes

Open the `HeroesComponent` class file and import the mock `HEROES`.

src/app/heroes/heroes.component.ts (import HEROES)

```
import { HEROES } from '../mock-heroes';
```

In the same file (`HeroesComponent` class), define a component property called `heroes` to expose the `HEROES` array for binding.

src/app/heroes/heroes.component.ts

```
export class HeroesComponent implements OnInit {  
  
  heroes = HEROES;  
}
```

## List heroes with `*ngFor`

Open the `HeroesComponent` template file and make the following changes:

- Add an `<h2>` at the top,
- Below it add an HTML unordered list (`<ul>`)
- Insert an `<li>` within the `<ul>` that displays properties of a `hero`.
- Sprinkle some CSS classes for styling (you'll add the CSS styles shortly).

Make it look like this:

heroes.component.html (heroes template)

```
<h2>My Heroes</h2>  
<ul class="heroes">  
  <li>  
    <span class="badge">{{hero.id}}</span> {{hero.name}}  
  </li>  
</ul>
```

That shows one hero. To list them all, add an `*ngFor` to the `<li>` to iterate through the list of heroes:

```
<li *ngFor="let hero of heroes">
```

The `*ngFor` is Angular's *repeater* directive. It repeats the host element for each element in a list.

The syntax in this example is as follows:

- `<li>` is the host element.
- `heroes` holds the mock heroes list from the `HeroesComponent` class, the mock heroes list.
- `hero` holds the current hero object for each iteration through the list.

Don't forget the asterisk (\*) in front of `ngFor`. It's a critical part of the syntax.

After the browser refreshes, the list of heroes appears.

## Style the heroes

The heroes list should be attractive and should respond visually when users hover over and select a hero from the list.

In the [first tutorial](#), you set the basic styles for the entire application in `styles.css`. That stylesheet didn't include styles for this list of heroes.

You could add more styles to `styles.css` and keep growing that stylesheet as you add components.

You may prefer instead to define private styles for a specific component and keep everything a component needs— the code, the HTML, and the CSS —together in one place.

This approach makes it easier to re-use the component somewhere else and deliver the component's intended appearance even if the global styles are different.

You define private styles either inline in the `@Component.styles` array or as stylesheet file(s) identified in the `@Component.styleUrls` array.

When the CLI generated the `HeroesComponent`, it created an empty `heroes.component.css` stylesheet for the `HeroesComponent` and pointed to it in `@Component.styleUrls` like this.

src/app/heroes/heroes.component.ts (@Component)

```
@Component({  
  selector: 'app-heroes',  
  templateUrl: './heroes.component.html',  
  styleUrls: ['./heroes.component.css']  
})
```

Open the `heroes.component.css` file and paste in the private CSS styles for the `HeroesComponent`. You'll find them in the [final code review](#) at the bottom of this guide.

Styles and stylesheets identified in `@Component` metadata are scoped to that specific component. The `heroes.component.css` styles apply only to the `HeroesComponent` and don't affect the outer HTML or the HTML in any other component.

## Master/Detail

When the user clicks a hero in the **master** list, the component should display the selected hero's **details** at the bottom of the page.

In this section, you'll listen for the hero item click event and update the hero detail.

### Add a click event binding

Add a click event binding to the `<li>` like this:

heroes.component.html (template excerpt)

```
<li *ngFor="let hero of heroes" (click)="onSelect(hero)">
```

This is an example of Angular's [event binding](#) syntax.

The parentheses around `click` tell Angular to listen for the `<li>` element's `click` event. When the user clicks in the `<li>`, Angular executes the `onSelect(hero)` expression.

In the next section, define an `onSelect()` method in `HeroesComponent` to display the hero that was defined in the `*ngFor` expression.

## Add the click event handler

Rename the component's `hero` property to `selectedHero` but don't assign it. There is no *selected hero* when the application starts.

Add the following `onSelect()` method, which assigns the clicked hero from the template to the component's `selectedHero`.

src/app/heroes/heroes.component.ts (onSelect)

```
selectedHero: Hero;
onSelect(hero: Hero): void {
  this.selectedHero = hero;
}
```

## Add a details section

Currently, you have a list in the component template. To click on a hero on the list and reveal details about that hero, you need a section for the details to render in the template. Add the following to `heroes.component.html` beneath the list section:

heroes.component.html (selected hero details)

```
<h2>{{selectedHero.name | uppercase}} Details</h2>
<div><span>id: </span>{{selectedHero.id}}</div>
<div>
  <label>name:
    <input [(ngModel)]="selectedHero.name" placeholder="name"/>
  </label>
</div>
```

After the browser refreshes, the application is broken.

Open the browser developer tools and look in the console for an error message like this:

```
HeroesComponent.html:3 ERROR TypeError: Cannot read property 'name' of undefined
```

## What happened?

When the app starts, the `selectedHero` is `undefined` *by design*.

Binding expressions in the template that refer to properties of `selectedHero`—expressions like `{{selectedHero.name}}`—*must fail* because there is no selected hero.

## The fix - hide empty details with *\*ngIf*

The component should only display the selected hero details if the `selectedHero` exists.

Wrap the hero detail HTML in a `<div>`. Add Angular's `*ngIf` directive to the `<div>` and set it to `selectedHero`.

Don't forget the asterisk (\*) in front of `ngIf`. It's a critical part of the syntax.

src/app/heroes/heroes.component.html (\*ngIf)

```
<div *ngIf="selectedHero">

  <h2>{{selectedHero.name | uppercase}} Details</h2>
  <div><span>id: </span>{{selectedHero.id}}</div>
  <div>
    <label>name:
      <input [(ngModel)]="selectedHero.name" placeholder="name"/>
    </label>
  </div>

</div>
```

After the browser refreshes, the list of names reappears. The details area is blank. Click a hero in the list of heroes and its details appear. The app seems to be working again. The heroes appear in a list and details about the clicked hero appear at the bottom of the page.

## Why it works

When `selectedHero` is undefined, the `ngIf` removes the hero detail from the DOM. There are no `selectedHero` bindings to consider.

When the user picks a hero, `selectedHero` has a value and `ngIf` puts the hero detail into the DOM.

## Style the selected hero

It's difficult to identify the *selected hero* in the list when all `<li>` elements look alike.

If the user clicks "Magneta", that hero should render with a distinctive but subtle background color like this:



That *selected hero* coloring is the work of the `.selected` CSS class in the [styles you added earlier](#). You just have to apply the `.selected` class to the `<li>` when the user clicks it.

The Angular [class binding](#) makes it easy to add and remove a CSS class conditionally. Just add `[class.some-css-class]="some-condition"` to the element you want to style.

Add the following `[class.selected]` binding to the `<li>` in the `HeroesComponent` template:

heroes.component.html (toggle the 'selected' CSS class)

```
[class.selected]="hero === selectedHero"
```

When the current row hero is the same as the `selectedHero`, Angular adds the `selected` CSS class. When the two heroes are different, Angular removes the class.

The finished `<li>` looks like this:

heroes.component.html (list item hero)

```
<li *ngFor="let hero of heroes"
  [class.selected]="hero === selectedHero"
  (click)="onSelect(hero)">
  <span class="badge">{{hero.id}}</span> {{hero.name}}
</li>
```

## Final code review

Your app should look like this [live example](#) / [download example](#).

Here are the code files discussed on this page, including the `HeroesComponent` styles.

< `src/app/mock-heroes.ts` `src/app/heroes/heroes.component.ts` `src/app/heroes/` >

```
import { Hero } from './hero';

export const HEROES: Hero[] = [
  { id: 11, name: 'Dr Nice' },
  { id: 12, name: 'Narco' },
  { id: 13, name: 'Bombasto' },
  { id: 14, name: 'Celeritas' },
  { id: 15, name: 'Magneta' },
  { id: 16, name: 'RubberMan' },
  { id: 17, name: 'Dynamia' },
  { id: 18, name: 'Dr IQ' },
  { id: 19, name: 'Magma' },
  { id: 20, name: 'Tornado' }
];
```

## Summary

- The Tour of Heroes app displays a list of heroes in a Master/Detail view.
- The user can select a hero and see that hero's details.
- You used `*ngFor` to display a list.
- You used `*ngIf` to conditionally include or exclude a block of HTML.
- You can toggle a CSS style class with a `class` binding.