

The Many Adventures of Routing

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Deborah Kurata

@DeborahK



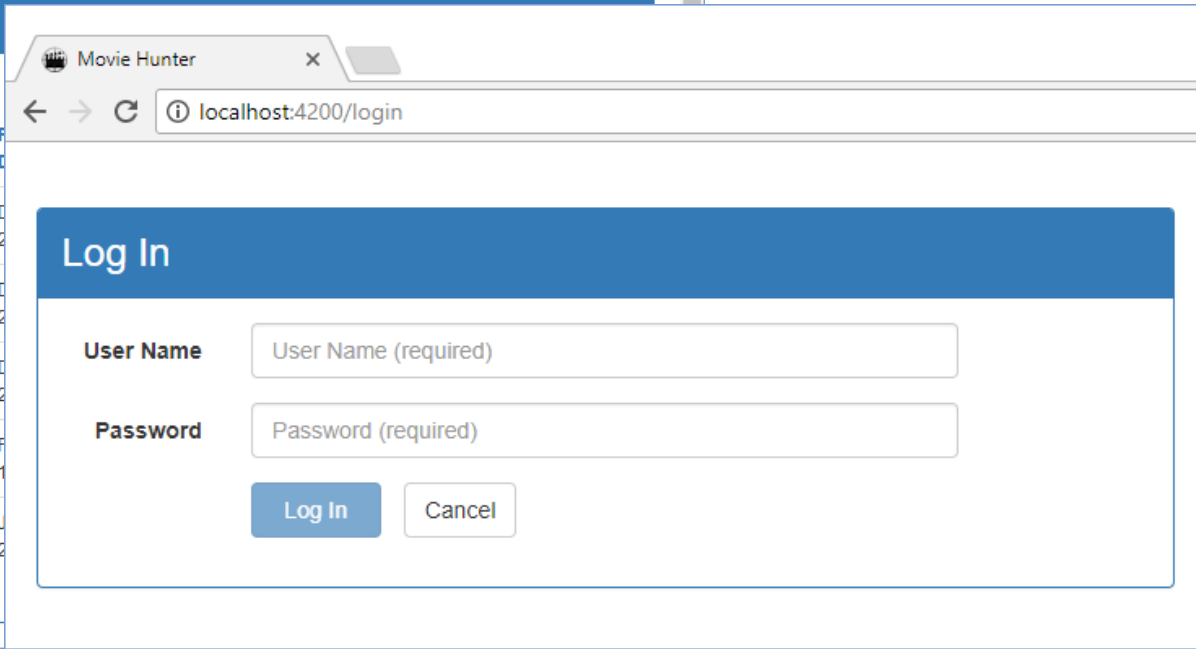
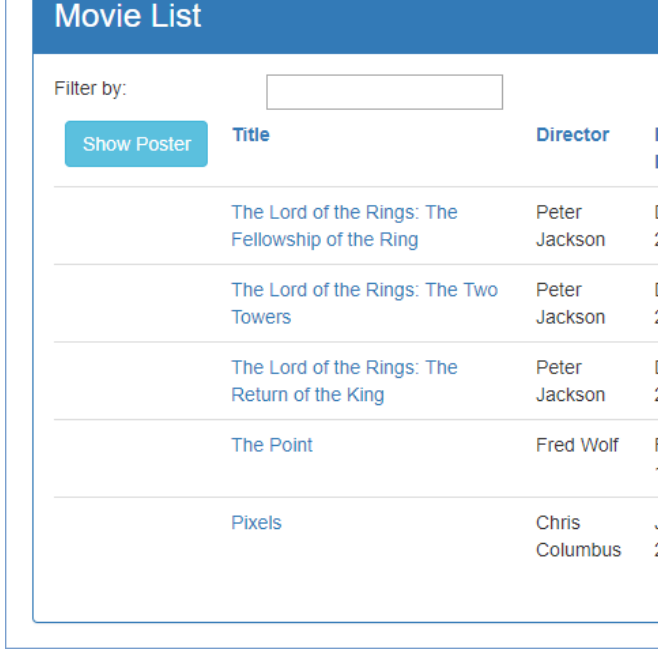
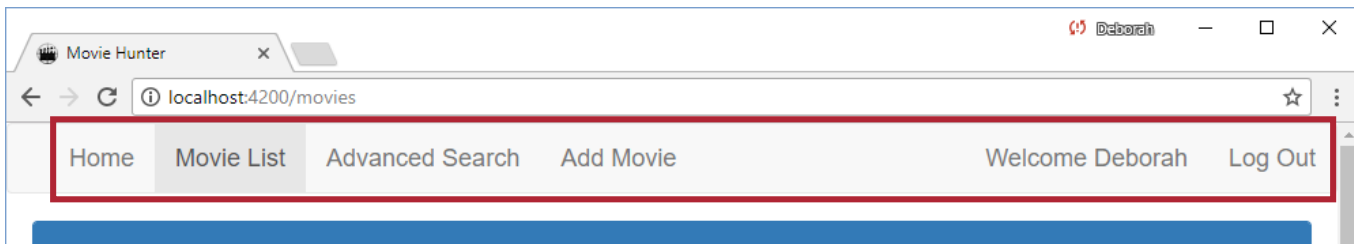
Deborah Kurata

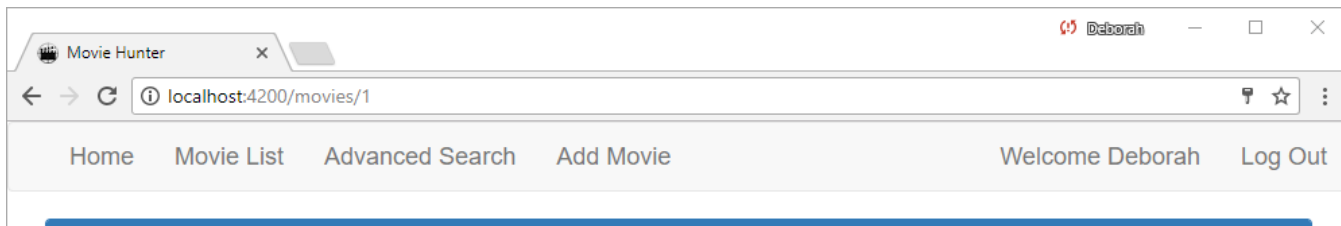
- Developer
- Angular Documentation Team Member (angular.io)
- **Pluralsight** Author
 - Angular Getting Started
 - Angular Reactive Forms
 - Angular Routing
- Microsoft Most Valuable Professional (**MVP**)
- Google Developer Expert (**GDE**)
- [@DeborahKurata](https://twitter.com/DeborahKurata)

Introduction

- **Overview of Routing**
- **Several Routing Adventures**
 - What routing can do!
- **Sample Application**
 - <https://github.com/DeborahK/MovieHunter-routing>

Menus





Movie Detail: The

Description: A me
dark l
Director: Peter
Release Date: Dec 1
MPAA Film Rating: PG-1
Category: action
Tags: action
Star Rating: ★ ★
Audience Approval: 97%
Average DVD Price: \$12.9

◀ Back

Edit

A screenshot of the 'Advanced Search' form in the Movie Hunter application. The form is titled 'Advanced Search' and contains several input fields for searching movies. The navigation bar at the top of the form includes links for 'InStep Movie Hunter', 'Home', 'Movie List', 'Advanced Search' (which is highlighted), and 'Add Movie'. On the right side of the navigation bar, it says 'Welcome Deborah' and 'Log Out'.

Advanced Search

Movie Title

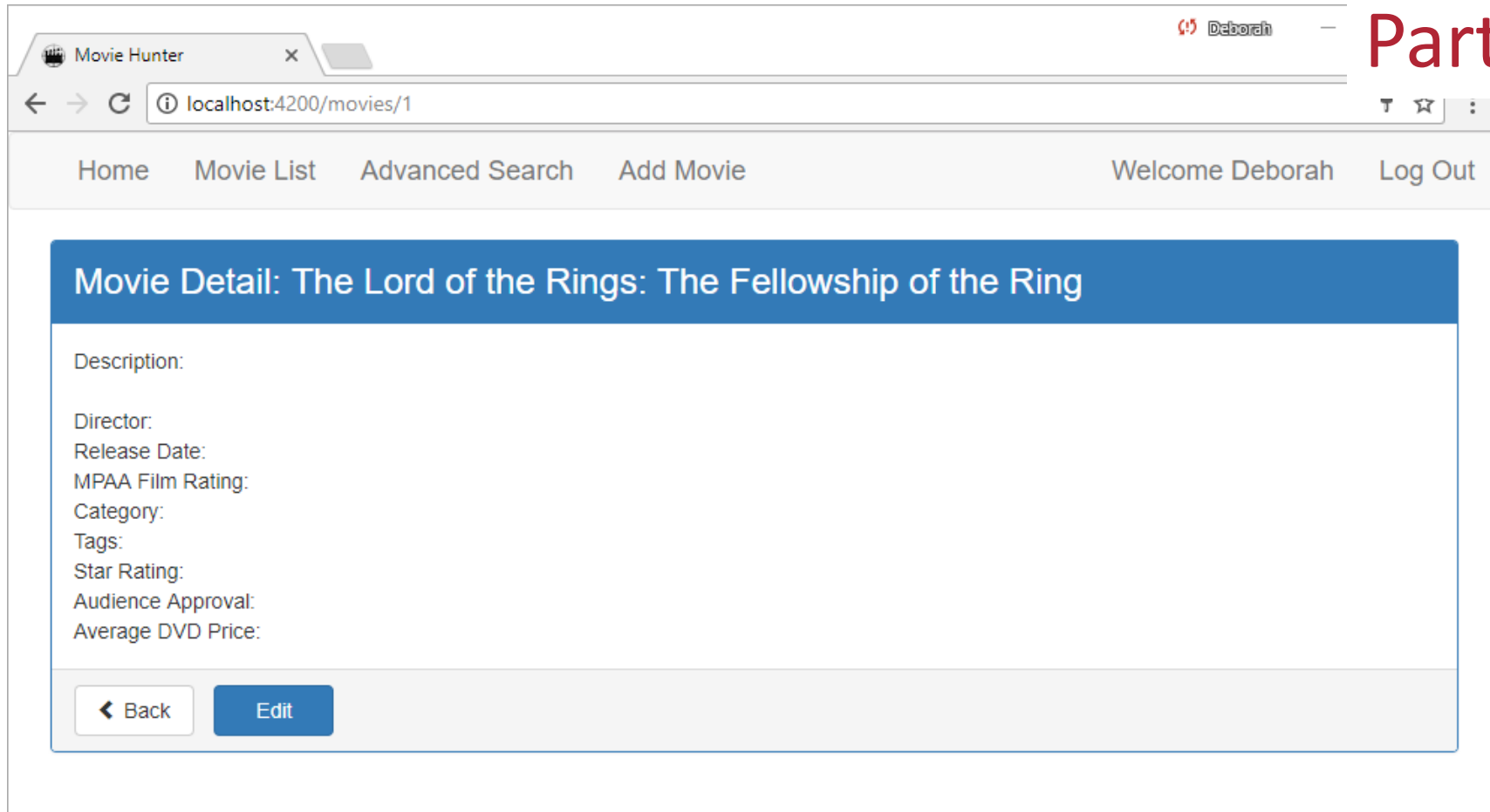
Director

Min Star Rating (1-5)

Max Star Rating (1-5)

Description

Search



Movie List

Filter by:

[Show Poster](#)

Title	Director	Release Date	MPAA Rating	DVD Price	5 Star Rating	Audience Approval	
The Lord of the Rings: The Fellowship of the Ring	Peter Jackson	Dec 19, 2001	PG 13	\$12.95	★★★★★	97%	Edit
The Lord of the Rings: The Two Towers	Peter Jackson	Dec 18, 2002	PG 13	\$14.95	★★★★★	94%	Edit
The Lord of the Rings: The Return of the King	Peter Jackson	Dec 17, 2003	PG 13	\$15.95	★★★★★	99%	Edit
The Point	Fred Wolf	Feb 2, 1971	NR	\$9.95	★★★★★	93%	Edit
Pixels	Chris Columbus	Jul 24, 2015	PG 13	\$5.59	★★★	17%	Edit

Guards

Log In

User Name

Password

InStep Movie Hunter Home Welcome Deborah Log Out

Edit Movie: The Point

localhost:4200 says:
Navigate away and lose all changes to The Point?

Basic Information **Search Tags**

Basic Movie Information

Movie Title

Director

Star Rating (1-5)

Description

Tabs

The screenshot shows a web browser window with the address bar at `localhost:4200/movies/1/edit/info`. The page has a navigation bar with links: Home, Movie List, Advanced Search, Add Movie, Welcome Deborah, and Log Out. The main content area is titled "Edit Movie: The Lord of the Rings: The Fellowship of the Ring". Below the title are two tabs: "Basic Information" (active) and "Search Tags". The "Basic Information" tab contains a form with the following fields:

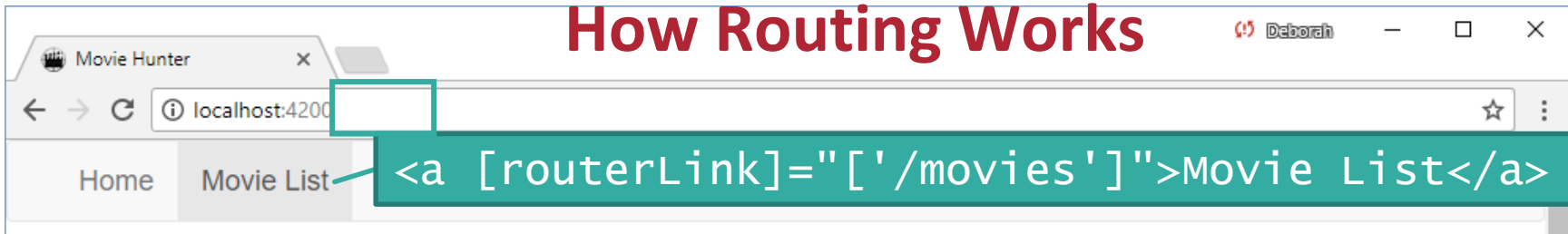
- Movie Title:** The Lord of the Rings: The Fellowship of the Ring
- Director:** Peter Jackson
- Star Rating (1-5):** 4.88
- Description:** A meek hobbit of the Shire and eight companions set out on a journey to Mount Doom to destroy the One Ring and the dark lord Sauron.

At the bottom of the form are three buttons: Save, Cancel, and Delete.

Lazy



How Routing Works



```
<a [routerLink]="['/movies']">Movie List</a>
```

```
{ path: 'movies', component: MovieListComponent }
```

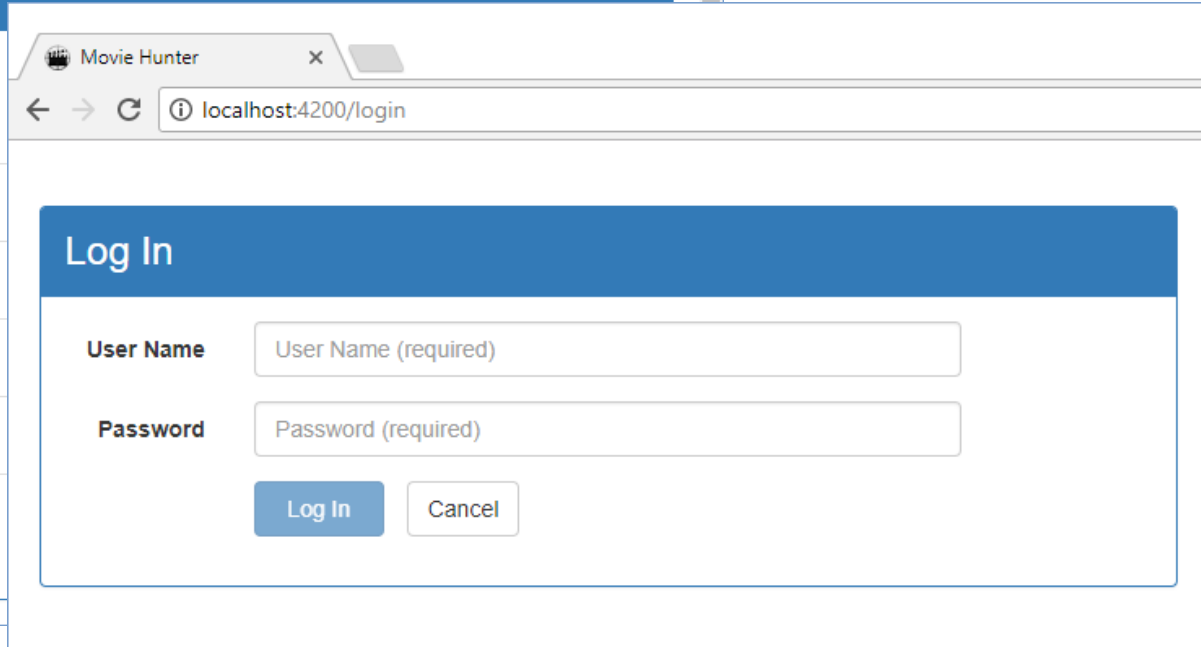
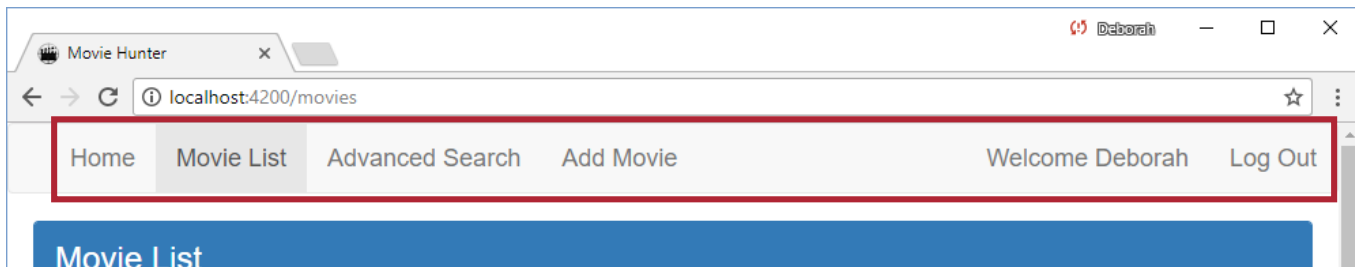
```
<router-outlet></router-outlet>
```

movie-list.component.ts

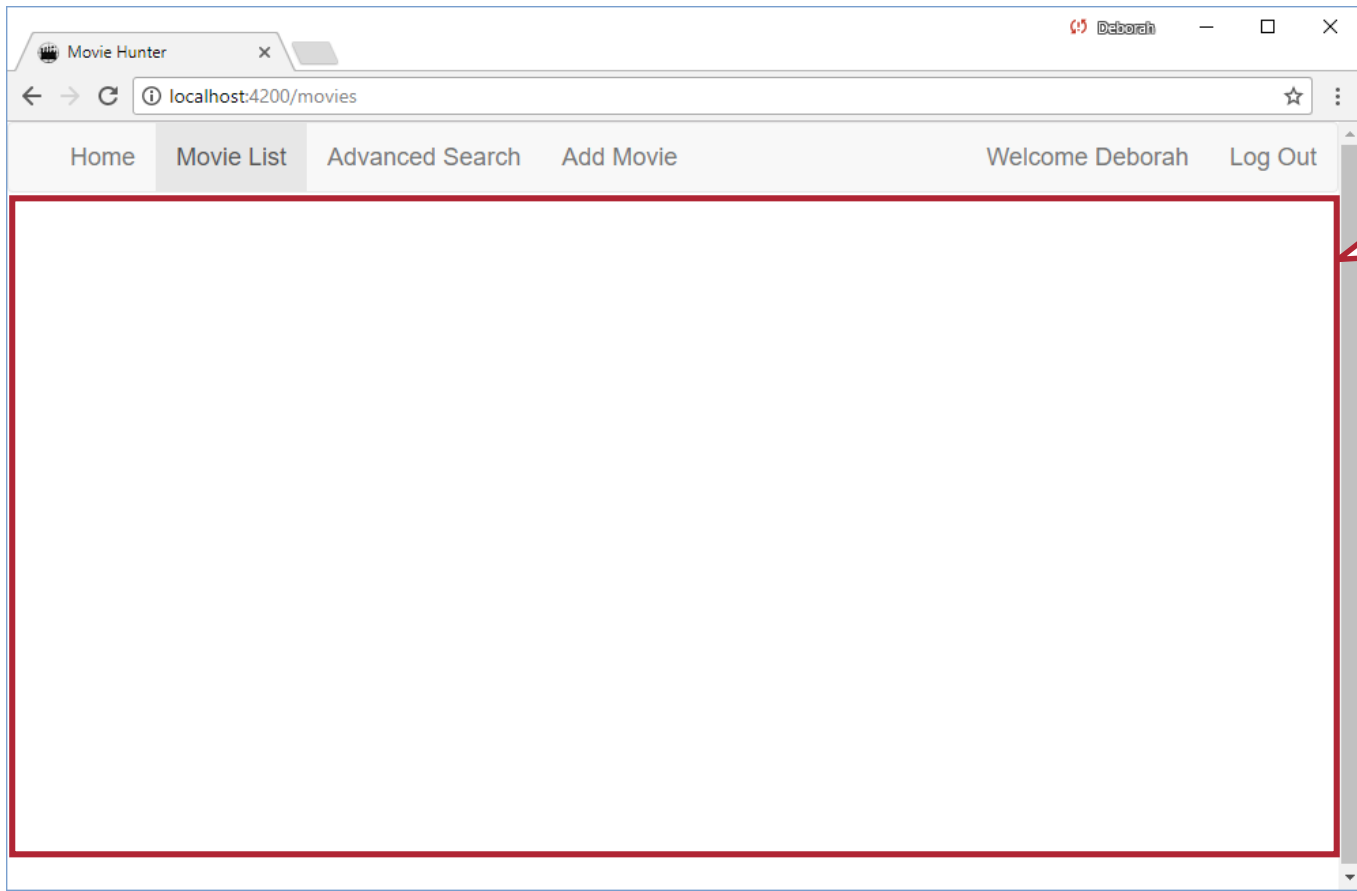
```
import { Component } from '@angular/core';

@Component({
  templateUrl: 'movie-list.component.html'
})
export class MovieListComponent { }
```

To Menu or Not To Menu



```
<div class="container">
  <nav class="navbar navbar-default">
    <div class="container-fluid">
      <a class="navbar-brand">{{pageTitle}}</a>
      <ul class="nav navbar-nav">
        <li><a [routerLink]="['/welcome']">Home</a></li>
        <li><a [routerLink]="['/movies']">Movie List</a></li>
      </ul>
    </div>
  </nav>
  <div class="container">
    <router-outlet></router-outlet>
  </div>
</div>
```

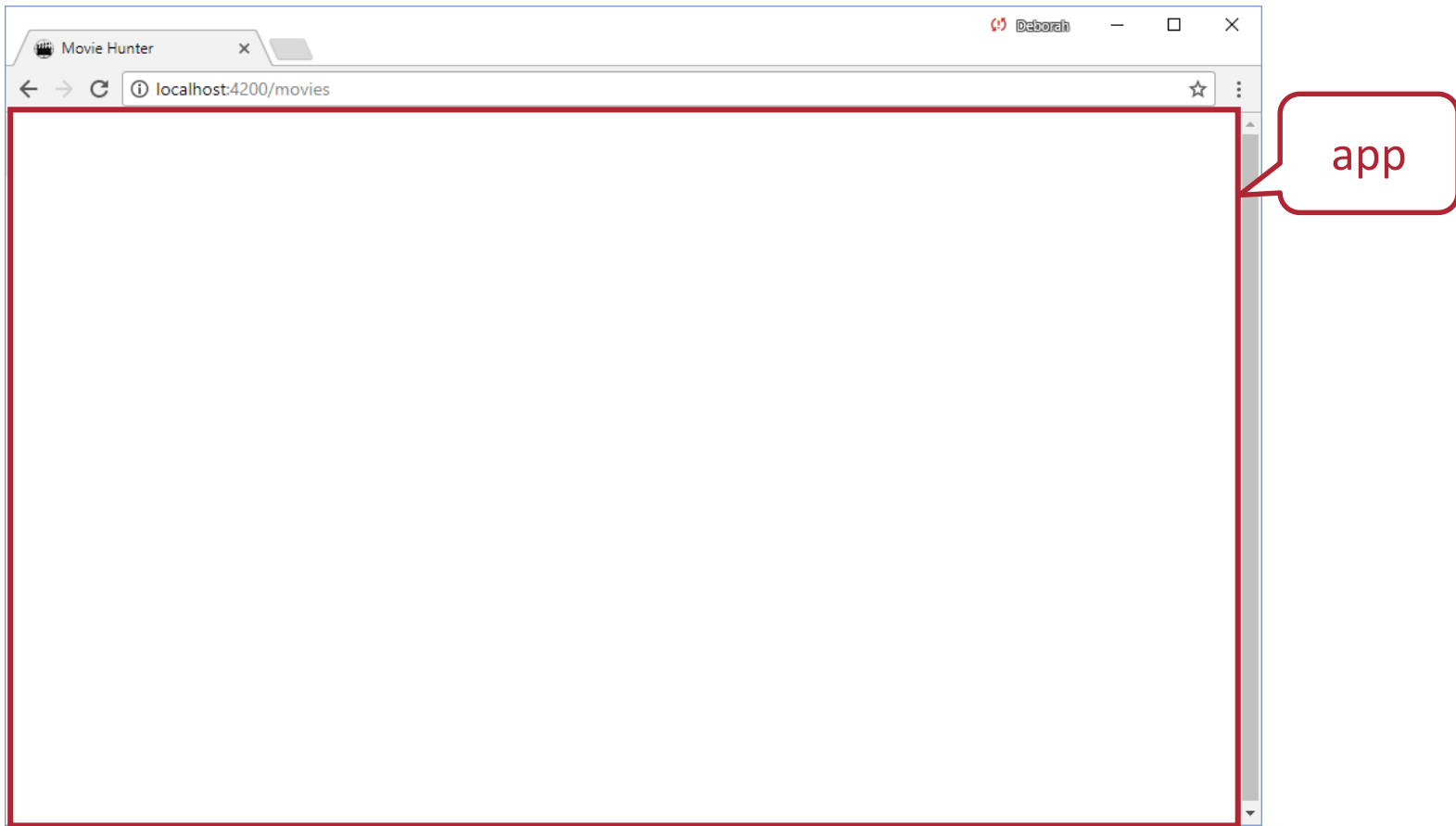


app

```
<div class="container">
  <nav class="navbar navbar-default" *ngIf="displayMenu">
    <div class="container-fluid">
      <a class="navbar-brand">{{pageTitle}}</a>
      <ul class="nav navbar-nav">
        <li><a [routerLink]="['/welcome']">Home</a></li>
        <li><a [routerLink]="['/movies']">Movie List</a></li>
      </ul>
    </div>
  </nav>
  <div class="container">
    <router-outlet></router-outlet>
  </div>
</div>
```


app.component.html

```
<router-outlet></router-outlet>
```



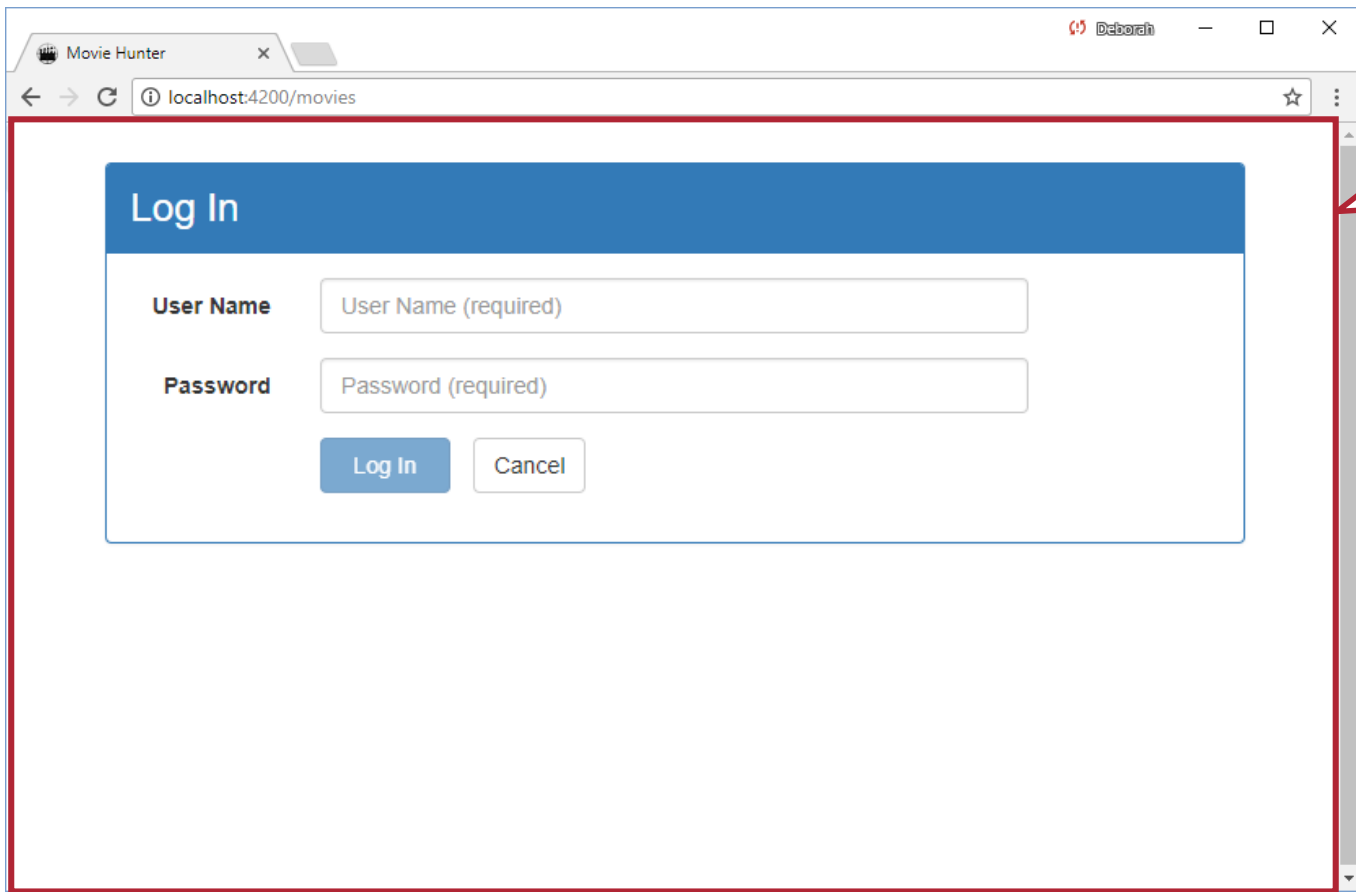
```
<div class="container">
  <nav class="navbar navbar-default">
    <div class="container-fluid">
      <a class="navbar-brand">{{pageTitle}}</a>
      <ul class="nav navbar-nav">
        <li><a [routerLink]="['/welcome']">Home</a></li>
        <li><a [routerLink]="['/movies']">Movie List</a></li>
      </ul>
    </div>
  </nav>
  <div class="container">
    <router-outlet></router-outlet>
  </div>
</div>
```

```
<mh-menu></mh-menu>
```

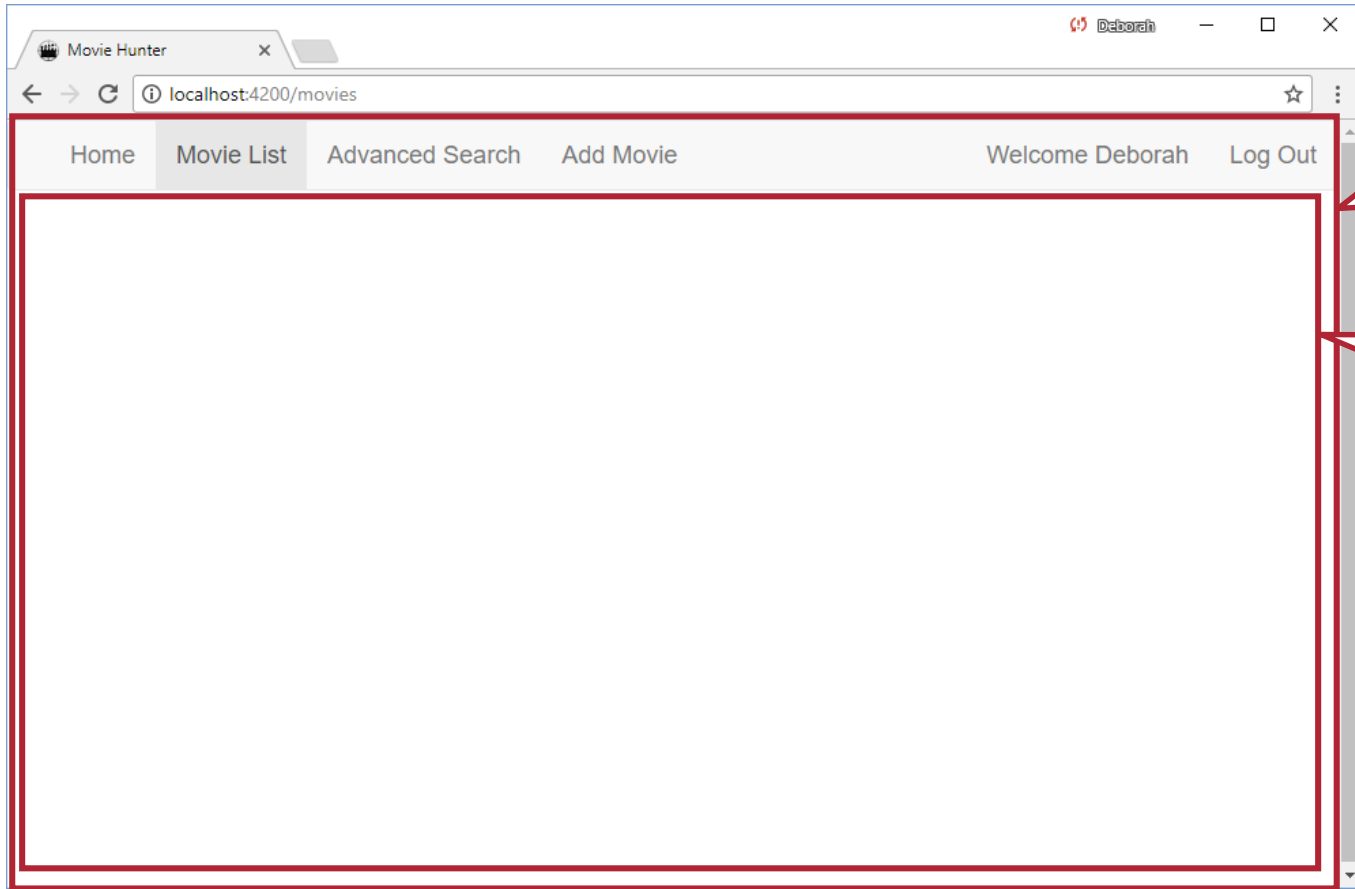
```
<div class='container'>
```

```
  <router-outlet></router-outlet>
```

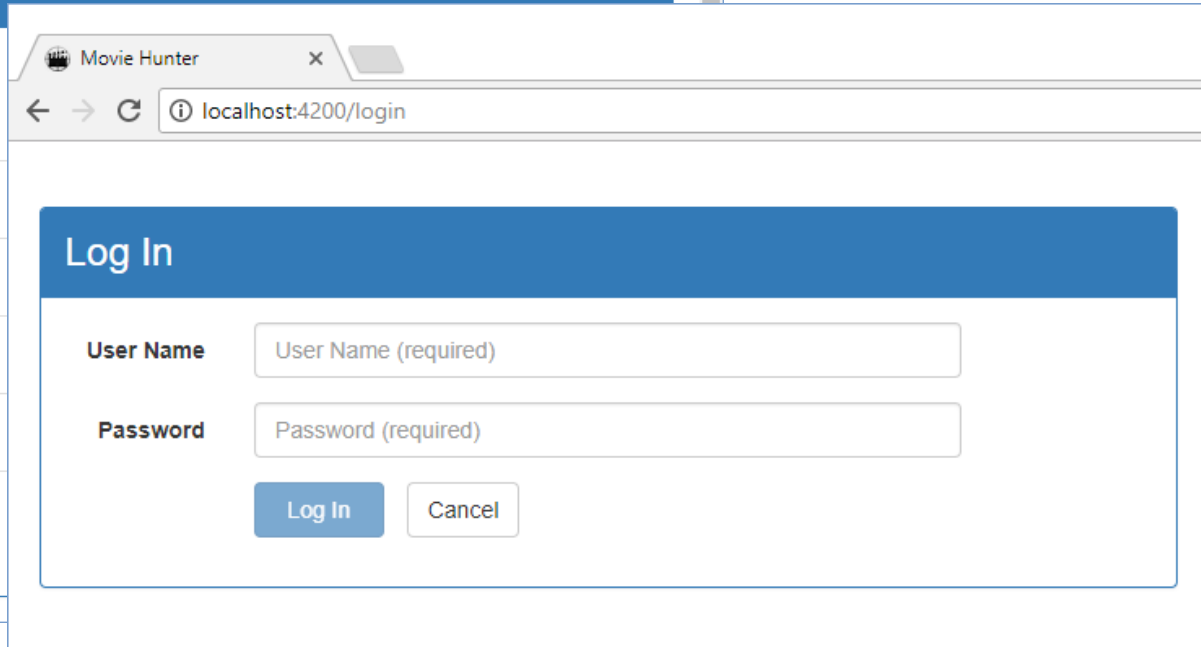
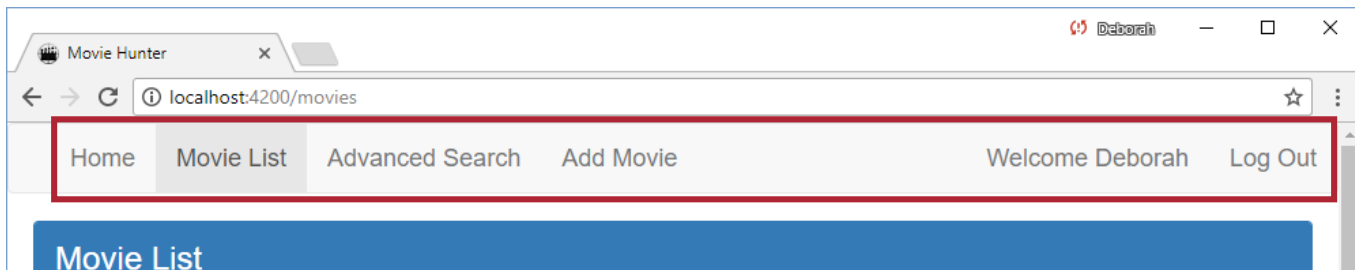
```
</div>
```



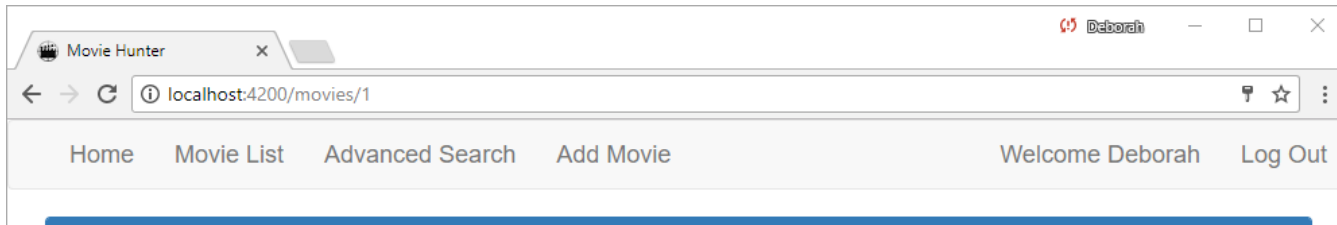
app



```
RouterModule.forRoot([
  {
    path: '',
    component: ShellComponent,
    children: [
      { path: 'welcome', component: WelcomeComponent },
      { path: 'movies', component: MovieListComponent },
      { path: '', redirectTo: 'welcome', pathMatch: 'full' },
    ]
  },
  { path: 'login', component: LoginComponent },
  { path: '**', component: PageNotFoundComponent }
])
```



Data, Data, Data



Movie Detail: The

Description: A me
dark l
Director: Peter
Release Date: Dec 1
MPAA Film Rating: PG-1
Category: action
Tags: action
Star Rating: ★ ★
Audience Approval: 97%
Average DVD Price: \$12.9

[< Back](#)[Edit](#)[InStep Movie Hunter](#)[Home](#)[Movie List](#)[Advanced Search](#)[Add Movie](#)[Welcome Deborah](#)[Log Out](#)

Advanced Search

Movie Title

Director

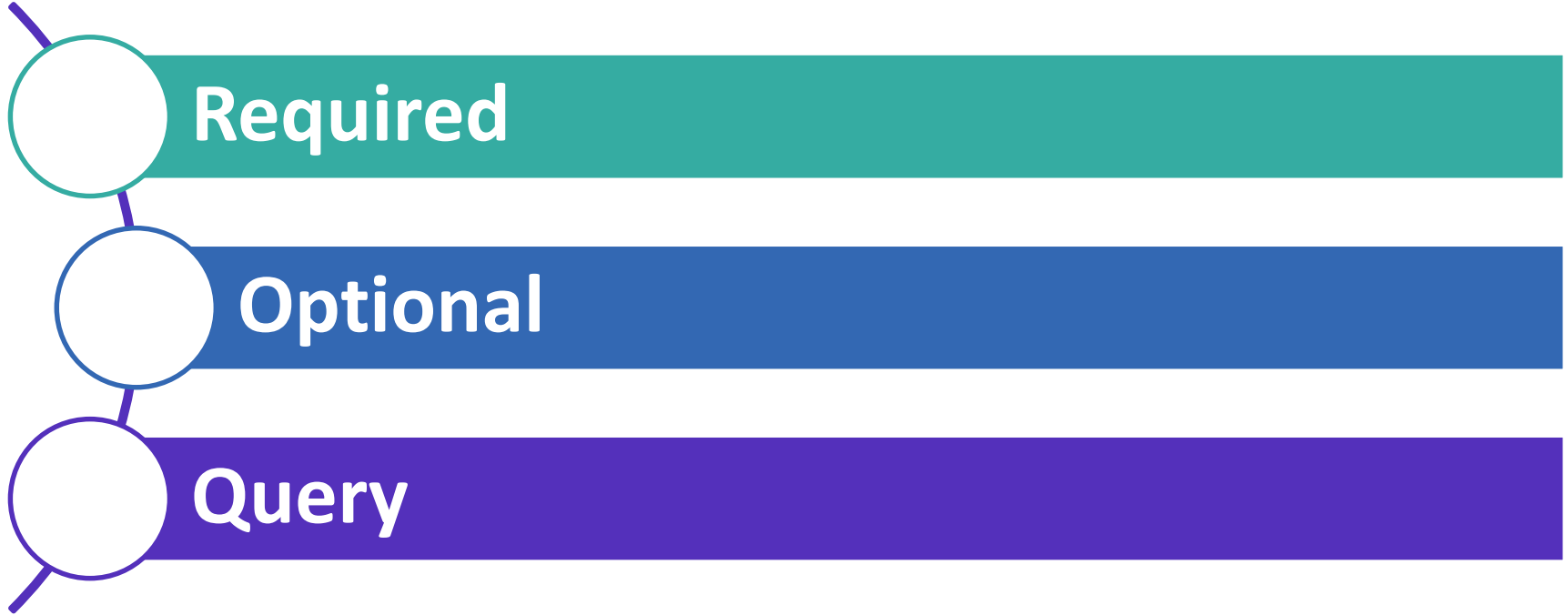
Min Star Rating (1-5)

Max Star Rating (1-5)

Description

[Search](#)

Routing Parameters



Required Parameters

Configure

```
{ path: 'movies/:id', component: MovieDetailComponent }
```

Activate

```
<a [routerLink]="['/movies', movie.id]">...</a>
```

```
this.router.navigate(['/movies', this.movie.id]);
```

Resulting Url

```
http://localhost:4200/movies/5
```

Read

```
this.route.snapshot.paramMap.get('id');
```

Optional Parameters

Configure

```
{ path: 'movies', component: MovieListComponent }
```

Activate

```
<a [routerLink]="['/movies',{title:ring,si: true}]">...</a>
```

```
this.router.navigate([' /movies', {title: ring, si:true}]);
```

Resulting Url

```
http://localhost:4200/movies;title=ring;si=true
```

Read

```
this.route.snapshot paramMap.get('title');
```

Query Parameters

Configure

```
{ path: 'movies', component: MovieListComponent }
```

Activate

```
<a [routerLink]="['/movies']"  
  [queryParams]="{title: ring, si: true}">...</a>
```

```
this.router.navigate(['movies'],  
  {queryParams: {title: 'ring', si:true}});
```

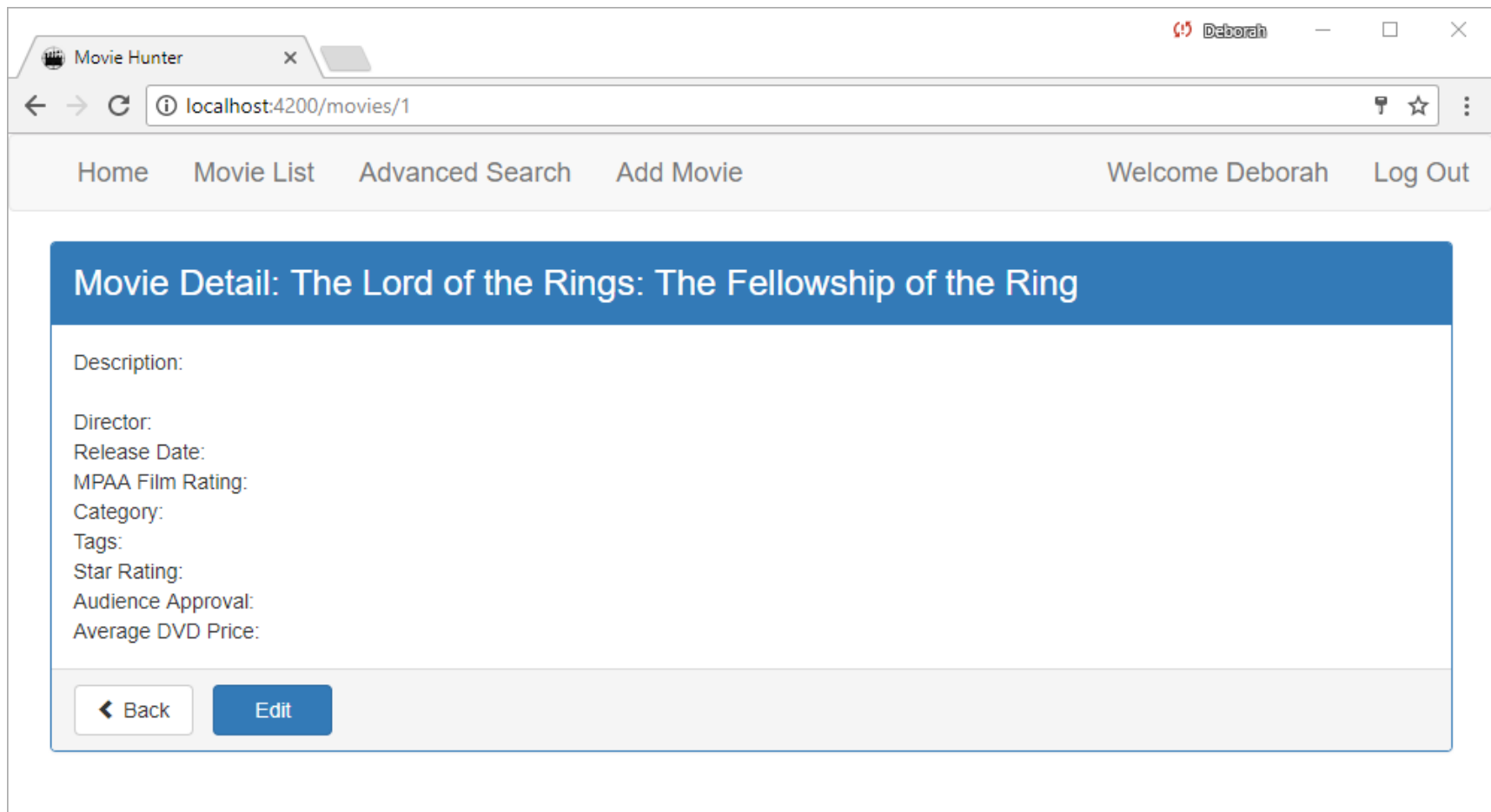
Resulting Url

```
http://localhost:4200/movies?title=ring&si=true
```

Read

```
this.route.snapshot.queryParamMap.get('title');
```

Preventing Partial Page Display



Build a Resolver Service

movie-resolver.service.ts

```
@Injectable()
export class MovieResolver implements Resolve<IMovie> {

  constructor(private movieService: MovieService) { }

  resolve(route: ActivatedRouteSnapshot,
          state: RouterStateSnapshot): Observable<IMovie> {
    const id = route.paramMap.get('id');
    return this.movieService.getMovie(+id);
  }
}
```

Register the Resolver

movie.module.ts

```
providers: [  
  MovieService,  
  MovieResolver  
]
```

Add Resolver to Route

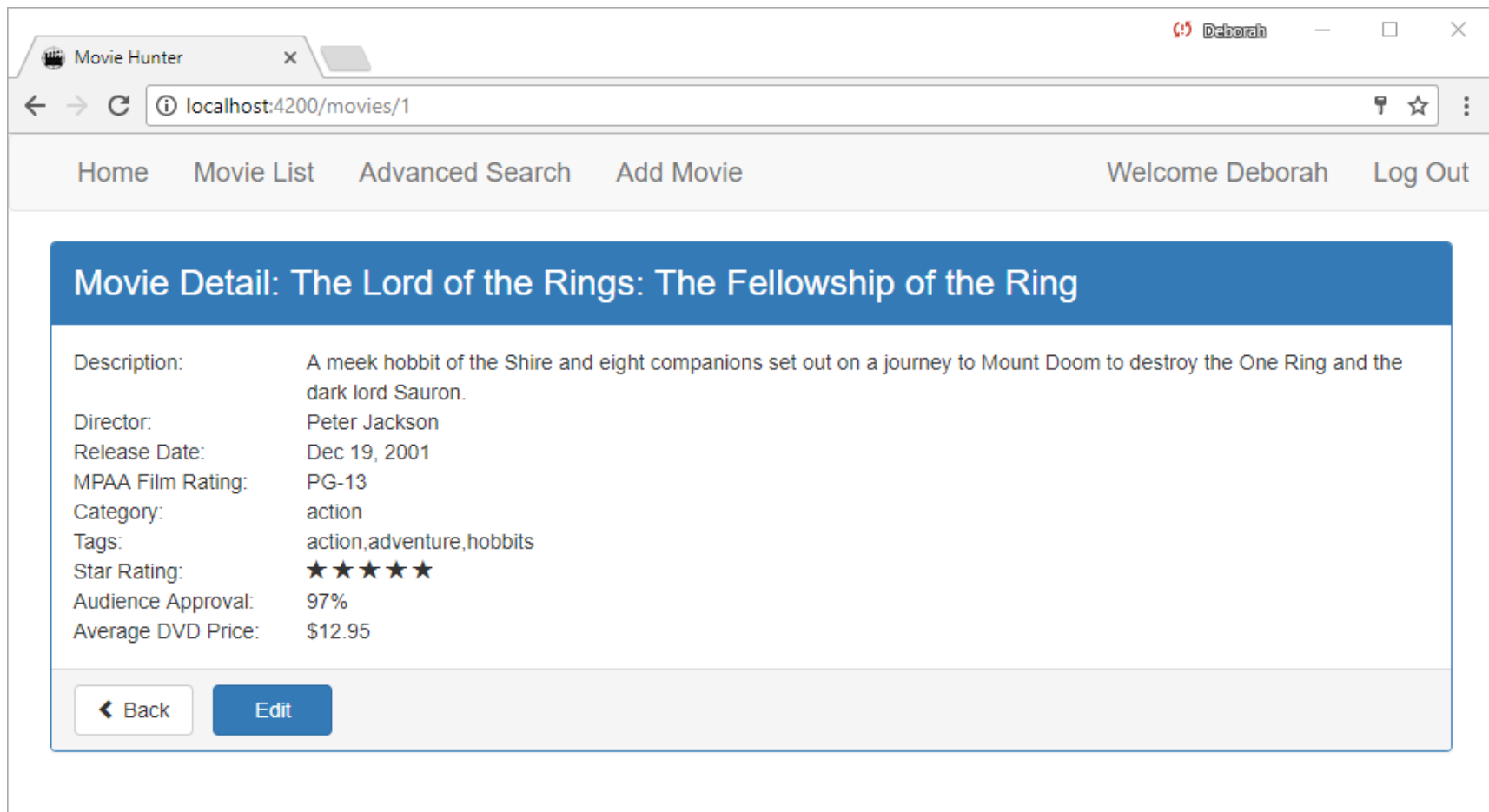
movie.module.ts

```
{  
  path: 'movies/:id',  
  resolve: { movie: MovieResolver },  
  component: MovieDetailComponent  
},
```

Read Resolver Data

movie-detail.component.ts

```
ngOnInit(): void {  
  this.movie = this.route.snapshot.data['movie'];  
}
```



I'm Waiting ...

Movie List

Filter by:

[Show Poster](#)

Title	Director	Release Date	MPAA Rating	DVD Price	5 Star Rating	Audience Approval	
The Lord of the Rings: The Fellowship of the Ring	Peter Jackson	Dec 19, 2001	PG 13	\$12.95	★★★★★	97%	Edit
The Lord of the Rings: The Two Towers	Peter Jackson	Dec 18, 2002	PG 13	\$14.95	★★★★★	94%	Edit
The Lord of the Rings: The Return of the King	Peter Jackson	Dec 17, 2003	PG 13	\$15.95	★★★★★	99%	Edit
The Point	Fred Wolf	Feb 2, 1971	NR	\$9.95	★★★★★	93%	Edit
Pixels	Chris Columbus	Jul 24, 2015	PG 13	\$5.59	★★★	17%	Edit

Check Router Events

app.component.ts

```
checkRouterEvent(routerEvent: Event): void {  
  if (routerEvent instanceof NavigationStart) {  
    this.loading = true;  
  }  
  
  if (routerEvent instanceof NavigationEnd ||  
      routerEvent instanceof NavigationCancel ||  
      routerEvent instanceof NavigationError) {  
    this.loading = false;  
  }  
}
```


Display the Spinner

app.component.html

```
<span class="glyphicon glyphicon-refresh glyphicon-spin spinner"  
      *ngIf="loading"></span>  
<router-outlet></router-outlet>
```

Movie List

Filter by:

[Show Poster](#)

Title	Director	Release Date	MPAA Rating	DVD Price	5 Star Rating	Audience Approval	
The Lord of the Rings: The Fellowship of the Ring	Peter Jackson	Dec 19, 2001	PG 13	\$12.95	★★★★★	97%	Edit
The Lord of the Rings: The Two Towers	Peter Jackson	Dec 18, 2002	PG 13	\$14.95	★★★★★	94%	Edit
The Lord of the Rings: The Return of the King	Peter Jackson	Dec 17, 2003	PG 13	\$15.95	★★★★★	99%	Edit
The Point	Fred Wolf	Feb 2, 1971	NR	\$9.95	★★★★★	93%	Edit
Pixels	Chris Columbus	Jul 24, 2015	PG 13	\$5.59	★★★	17%	Edit

Guards at the Ready

Log In

User Name

Password

Log In

InStep Movie Hunter Home>Welcome Deborah Log Out

Edit Movie: The Point

Basic InformationSearch Tags

Basic Movie Information

Movie Title

Director

Star Rating (1-5)

Description

Save **Cancel** **Delete**

localhost:4200 says:

Navigate away and lose all changes to The Point?

OK **Cancel**

Build a Guard Service

movie-edit-guard.service.ts

```
@Injectable()
export class MovieEditGuard implements
    CanDeactivate<MovieEditComponent> {

    canDeactivate(component: MovieEditComponent): boolean {
        if (component.isDirty) {
            const title = component.movie.title || 'New Movie';
            return confirm(`Lose all changes to ${title}?`);
        }
        return true;
    }
}
```

Register the Guard

movie.module.ts

```
providers: [  
  MovieService,  
  MovieResolver,  
  MovieEditGuard  
]
```

Add Guard to Route

movie.module.ts

```
{  
  path: 'movies/:id/edit',  
  resolve: { movie: MovieResolver },  
  canActivate: [ MovieEditGuard ],  
  component: MovieEditComponent  
}
```

Log In

User Name

Password

Log In

InStep Movie Hunter Home>Welcome Deborah Log Out

Edit Movie: The Point

Basic InformationSearch Tags

Basic Movie Information

Movie Title

Director

Star Rating (1-5)

Description

An animated story of an unusual kingdom in which everything and everybody is pointed - except for a young boy named Oblio. Despite his round head, Oblio has many friends. But an evil count, jealous that Oblio is more popular than his own son,

SaveCancelDelete

localhost:4200 says:

Navigate away and lose all changes to The Point?

OKCancel

Keep Tabs

The screenshot shows a web browser window with the address bar displaying `localhost:4200/movies/1/edit/info`. The page has a navigation bar with links: Home, Movie List, Advanced Search, Add Movie, Welcome Deborah, and Log Out. The main content area is titled "Edit Movie: The Lord of the Rings: The Fellowship of the Ring". Below the title, there are two tabs: "Basic Information" (active) and "Search Tags". The "Basic Information" tab contains a form with the following fields:

- Movie Title:** The Lord of the Rings: The Fellowship of the Ring
- Director:** Peter Jackson
- Star Rating (1-5):** 4.88
- Description:** A meek hobbit of the Shire and eight companions set out on a journey to Mount Doom to destroy the One Ring and the dark lord Sauron.

At the bottom of the form, there are three buttons: Save, Cancel, and Delete. Red boxes and callouts are used to highlight specific parts of the interface:

- A red box labeled "app" encompasses the entire browser window.
- A red box labeled "shell" encompasses the navigation bar and the main content area.
- A red box labeled "edit" encompasses the "Basic Information" tab and its form.

```
RouterModule.forRoot([
  {
    path: '', component: ShellComponent,
    children: [
      { path: 'welcome', component: WelcomeComponent },
      { path: 'movies', component: MovieListComponent },
      { path: '', redirectTo: 'welcome', pathMatch: 'full' },
    ]
  },
  { path: 'login', component: LoginComponent },
  { path: '**', component: PageNotFoundComponent }
])
```

```
{
  path: '', component: ShellComponent,
  children: [
    { path: 'welcome', component: WelcomeComponent },
    { path: 'movies', component: MovieListComponent },
    { path: 'movies/:id/edit', component: MovieEditComponent,
      children: [
        { path: '', redirectTo: 'info', pathMatch: 'full' },
        { path: 'info', component: MovieEditInfoComponent },
        { path: 'tags', component: MovieEditTagsComponent }
      ]
    }
  ]
}, ...
```

Edit View

movie-edit.component.html

```
<div class="panel-body">
  <div class="wizard">
    <a [routerLink]="['info']" routerLinkActive="active">
      Basic Information</a>
    <a [routerLink]="['tags']" routerLinkActive="active">
      Search Tags</a>
  </div>

  <router-outlet></router-outlet>
</div>
```

Movie Hunter x

localhost:4200/movies/1/edit/info

Home Movie List Advanced Search Add Movie Welcome Deborah Log Out

Edit Movie: The Lord of the Rings: The Fellowship of the Ring

Basic Information Search Tags

Basic Movie Information

Movie Title	<input type="text" value="The Lord of the Rings: The Fellowship of the Ring"/>
Director	<input type="text" value="Peter Jackson"/>
Star Rating (1-5)	<input type="text" value="4.88"/>
Description	<input type="text" value="A meek hobbit of the Shire and eight companions set out on a journey to Mount Doom to destroy the One Ring and the dark lord Sauron."/>

Save Cancel Delete

edit

```
{
  path: '', component: ShellComponent,
  children: [
    { path: 'welcome', component: WelcomeComponent },
    { path: 'movies', component: MovieListComponent },
    { path: ':id', component: MovieDetailComponent },
    { path: 'movies/:id/edit', component: MovieEditComponent,
      children: [
        { path: '', redirectTo: 'info', pathMatch: 'full' },
        { path: 'info', component: MovieEditInfoComponent },
        { path: 'tags', component: MovieEditTagsComponent }
      ]
    }
  ]
}, ...
```

What About Paths in Feature Modules?

movie.module.ts

```
{ path: '', component: MovieListComponent } ,  
{ path: ':id', component: MovieDetailComponent },  
{ path: ':id/edit', component: MovieEditComponent,  
  children: [  
    { path: '', redirectTo: 'info', pathMatch: 'full' },  
    { path: 'info', component: MovieEditInfoComponent },  
    { path: 'tags', component: MovieEditTagsComponent }  
  ]  
}, ...
```


Use loadChildren

app-routing.module.ts

```
{
  path: '', component: ShellComponent,
  children: [
    { path: 'welcome', component: WelcomeComponent },
    { path: 'movies', loadChildren: () => MovieModule }
  ]
}, ...
```

But for AOT ...

app-routing.module.ts

```
export function _movieModuleLoader() {  
  return MovieModule;  
}  
...  
{  
  path: '', component: ShellComponent,  
  children: [  
    { path: 'welcome', component: WelcomeComponent },  
    { path: 'movies', loadChildren: _movieModuleLoader }  
  ],  
}, ...
```

Movie Hunter x Deborah

localhost:4200/movies/1/edit/info

Home Movie List Advanced Search Add Movie Welcome Deborah Log Out

Edit Movie: The Lord of the Rings: The Fellowship of the Ring

Basic Information Search Tags

Basic Movie Information

Movie Title	<input type="text" value="The Lord of the Rings: The Fellowship of the Ring"/>
Director	<input type="text" value="Peter Jackson"/>
Star Rating (1-5)	<input type="text" value="4.88"/>
Description	<input type="text" value="A meek hobbit of the Shire and eight companions set out on a journey to Mount Doom to destroy the One Ring and the dark lord Sauron."/>

Save Cancel Delete

app

shell

edit

Lazy Loading



Preparing for Lazy Loading

Use a feature module

movie.module.ts

```
@NgModule({
  imports: [
    SharedModule,
    RouterModule.forChild([...])
  ],
  declarations: [
    MovieListComponent,
    MovieDetailComponent,
    MovieEditComponent, ...
  ],
  providers: [ MovieService, ... ]
})
export class MovieModule {}
```

Preparing for Lazy Loading

Use a feature module

Do not import the feature module in another module

app.module.ts

```
@NgModule({
  imports: [
    BrowserModule,
    HttpClientModule,
    MovieModule,
    RouterModule.forRoot([...])
  ],
  declarations: [
    AppComponent,
    WelcomeComponent,
    PageNotFoundComponent
  ],
  bootstrap: [ AppComponent ]
})
export class AppModule { }
```

Preparing for Lazy Loading

Use a feature module

Do not import the feature module in another module

Group routes under a single parent

product.module.ts

```
RouterModule.forChild([
  {
    path: 'movies',
    children: [
      {
        path: '',
        component: MovieListComponent
      },
      {
        path: ':id',
        component: MovieDetailComponent
      }
    ]
  }
])
```


Preparing for Lazy Loading

Use a feature module

Do not import the feature module in another module

Group routes under a single parent

Remove the parent **path** and **children**

product.module.ts

```
RouterModule.forChild([
  {
    path: 'movies',
    children: [
      {
        path: '',
        component: MovieListComponent
      },
      {
        path: ':id',
        component: MovieDetailComponent
      }
    ]
  }
])
```

Resulting Feature Module

movie.module.ts

```
{ path: '', component: MovieListComponent },
{ path: ':id', component: MovieDetailComponent },
{ path: ':id/edit', component: MovieEditComponent,
  children: [
    { path: '', redirectTo: 'info', pathMatch: 'full' },
    { path: 'info', component: MovieEditInfoComponent },
    { path: 'tags', component: MovieEditTagsComponent }
  ]
}, ...
```

Use loadChildren

app-routing.module.ts

```
{
  path: '', component: ShellComponent,
  children: [
    { path: 'welcome', component: WelcomeComponent },
    { path: 'movies',
      loadChildren: () => MovieModule
    }
  ]
}, ...
```

Use loadChildren

app-routing.module.ts

```
{
  path: '', component: ShellComponent,
  children: [
    { path: 'welcome', component: WelcomeComponent },
    { path: 'movies',
      loadChildren: './movies/movie.module#MovieModule'
    }
  ]
}, ...
```

Guarding all Feature Routes

app-routing.module.ts

```
{
  path: '', component: ShellComponent,
  children: [
    { path: 'welcome', component: WelcomeComponent },
    { path: 'movies',
      canActivate: [AuthGuard],
      loadChildren: './movies/movie.module#MovieModule'
    }
  ]
}, ...
```

Demo

Routing Adventures

- To menu or not to menu
- Data, data, data
- Preventing partial page display
- I'm waiting ...
- Guards at the ready
- Keeping tabs
- Lazy loading

<https://app.pluralsight.com/library/courses/angular-routing>

Please use EventsXD to fill out a session evaluation.

Thank you!