

Building Custom Pipes:

1. Add product-filter.pipe.ts file under products folder. Include the PipeTransform implementation for custom pipe.

product-filter.pipe.ts

```
import { PipeTransform, Pipe } from 'angular2/core';
import { IProduct } from './product';

@Pipe({
  name: 'productFilter'
})
export class ProductFilterPipe implements PipeTransform {

  transform(value: IProduct[], args: string[]): IProduct[] {
    let filter: string = args[0] ? args[0].toLocaleLowerCase() : null;
    return filter ? value.filter((product: IProduct) =>
      product.productName.toLocaleLowerCase().indexOf(filter) != -1) :
    value;
  }
}
```

2. Once PipeTransform implementation is ready add this in your product-list.component.ts file as mentioned below:

product-list.component.ts

```
import { Component, OnInit } from 'angular2/core';
import { IProduct } from './product';
import { ProductFilterPipe } from './product-filter.pipe';
@Component({
  selector: 'pm-products',
  templateUrl: 'app/products/product-list.component.html',
  styleUrls: ['app/products/product-list.component.css'],
  pipes: [ProductFilterPipe]
})
export class ProductListComponent implements OnInit{
  pageTitle: string = 'Product List';
  imageWidth: number = 50;
  imageMargin: number = 2;
  showImage: boolean = false;
  listFilter: string = 'cart';
  products: IProduct[] = [
```

```
{
  "productId": 2,
  "productName": "Garden Cart",
  "productCode": "GDN-0023",
  "releaseDate": "March 18, 2016",
  "description": "15 gallon capacity rolling garden cart",
  "price": 32.99,
  "starRating": 4.2,
  "imageUrl": "https://encrypted-
tbn0.gstatic.com/images?q=tbn:ANd9GcRZhmstt7Kkdk5kyMv9mxJyh9sPUBvY9poTrxc1-
SCAUa3WmUVZQA"
},
{
  "productId": 5,
  "productName": "Hammer",
  "productCode": "TBX-0048",
  "releaseDate": "May 21, 2016",
  "description": "Curved claw steel hammer",
  "price": 8.9,
  "starRating": 4.8,
  "imageUrl": "https://encrypted-
tbn0.gstatic.com/images?q=tbn:ANd9GcSlXJd0iLq-d9v2-
UDfTlQFF3IuhdNMoE1ok1pAgwqubZaZqQJ9"
}
];

toggleImage(): void{
  this.showImage = !this.showImage;
}

ngOnInit(): void{
  console.log('Init Invoked!')
}
}
```

3. Use the custom pipe which we have created in product-list.component.html file along with ngFor directives to filter products.

product-list.component.html

```
<div class='panel panel-primary'>
  <div class='panel-heading'>
    {{pageTitle}}
```

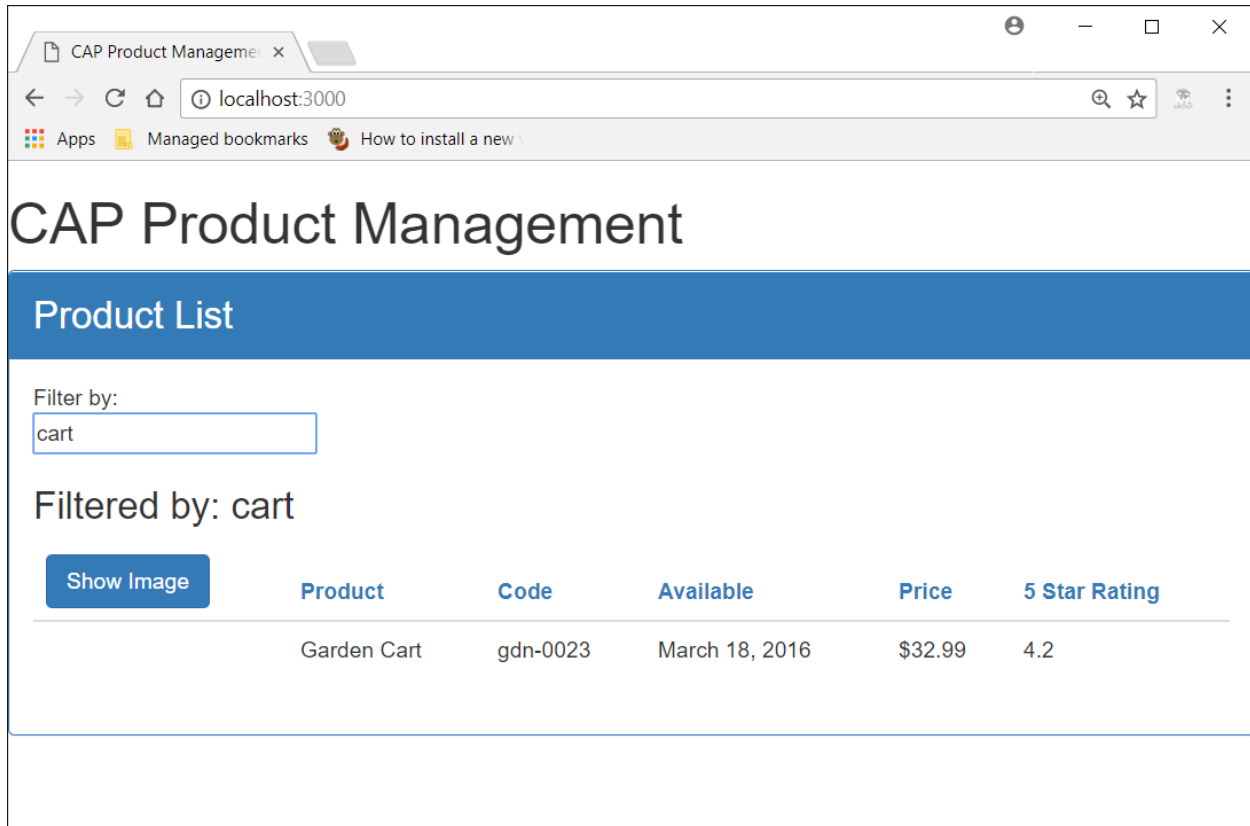
```

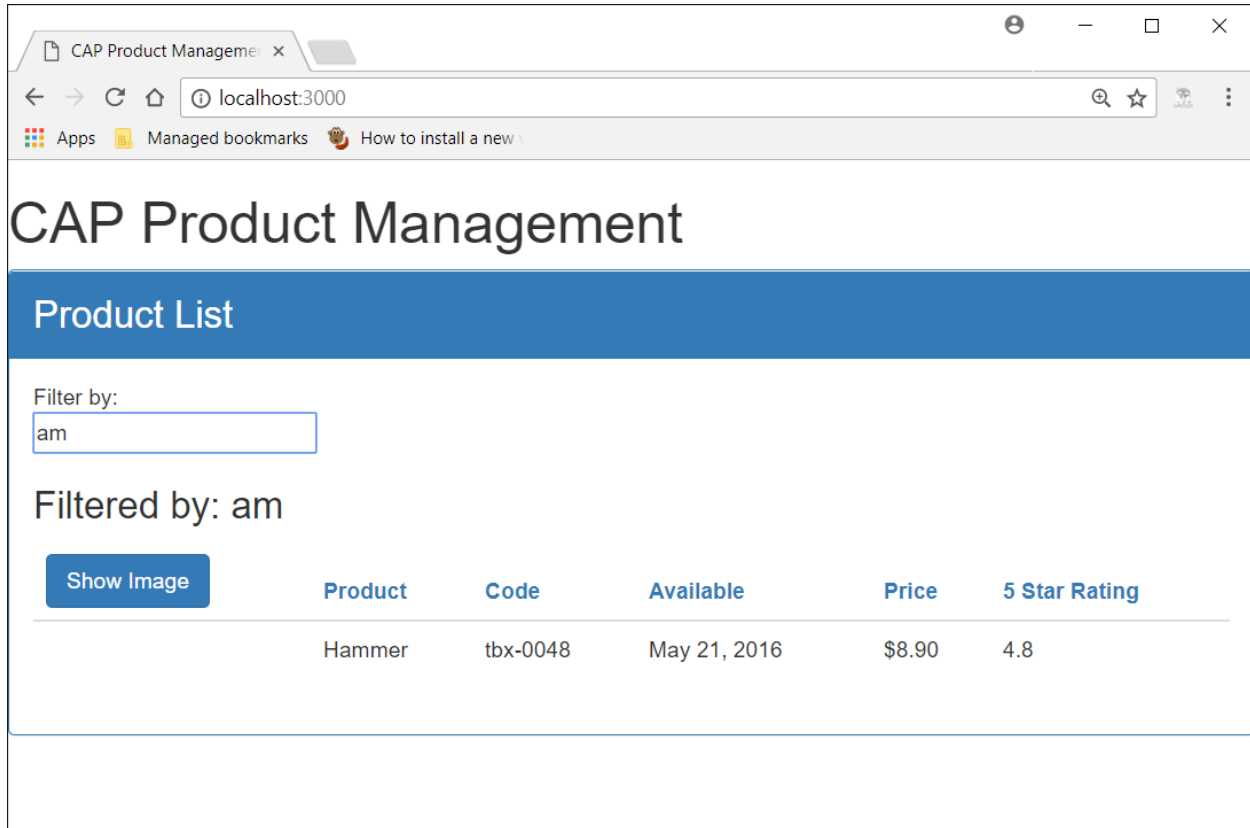
</div>
<div class='panel-body'>
  <div class='row'>
    <div class='col-md-2'>Filter by:</div>
    <div class='col-md-4'>
      <input type='text' [(ngModel)]='listFilter'/>
    </div>
  </div>
  <div class='row'>
    <div class='col-md-6'>
      <h3>Filtered by: {{listFilter}} </h3>
    </div>
  </div>
  <div class='table-responsive'>
    <table class='table' *ngIf='products && products.length'>
      <thead>
        <tr>
          <th>
            <button class='btn btn-primary'
              (click) = 'toggleImage()'>
              {{showImage ? 'Hide' : 'Show'}} Image
            </button>
          </th>
          <th>Product</th>
          <th>Code</th>
          <th>Available</th>
          <th>Price</th>
          <th>5 Star Rating</th>
        </tr>
      </thead>
      <tbody>
        <tr *ngFor='#product of products | productFilter:listFilter'>
          <td>
            <img *ngIf='showImage'
              [src]='product.imageUrl'
              [title]='product.productName'
              [style.width.px]='imageWidth'
              [style.margin.px]='imageMargin'>
          </td>
          <td>{{product.productName}}</td>
          <td>{{product.productCode | lowercase }}</td>
          <td>{{product.releaseDate}}</td>
          <td>{{product.price | currency:'USD':true:'1.2-2'}}</td>
          <td>{{product.starRating}}</td>
        </tr>
      </tbody>
    </table>
  </div>

```

```
        </tr>
      </tbody>
    </table>
  </div>
</div>
</div>
```

Now you can check your browser





Building Nested Component

1. Add star.component.ts file under shared folder under app/shared directory. And include the below content.

star.component.ts

```
import { Component, OnChanges } from 'angular2/core';

@Component({
  selector: 'ai-star',
  templateUrl: 'app/shared/star.component.html',
  styleUrls: ['app/shared/star.component.css']
})
export class StarComponent implements OnChanges {

  starWidth: number;
  rating: number = 4;

  ngOnChanges(): void {
    this.starWidth = this.rating * 86 / 5;
  }
}
```

```
}
```

2. Add below html content in your star.component.css file under shared folder.

```
.crop {
  overflow: hidden;
}
div {
  cursor: pointer;
}
```

3. Add below html content in your star.component.html file under shared folder.

star.component.html

```
<div class="crop"
  [style.width.px]="starWidth"
  [title]="rating">
  <div style="width: 86px">
    <span class="glyphicon glyphicon-star"></span>
    <span class="glyphicon glyphicon-star"></span>
    <span class="glyphicon glyphicon-star"></span>
    <span class="glyphicon glyphicon-star"></span>
    <span class="glyphicon glyphicon-star"></span>
  </div>
</div>
```

4. Do the below changes in your product-list.component.ts file

```
import { Component, OnInit } from 'angular2/core';
import { IProduct } from './product';
import { ProductFilterPipe } from './product-filter.pipe';
import { StarComponent } from '../shared/star.component';
@Component({
  selector: 'pm-products',
  templateUrl: 'app/products/product-list.component.html',
  styleUrls: ['app/products/product-list.component.css'],
  pipes: [ProductFilterPipe],
  directives: [StarComponent]
})
```

```
export class ProductListComponent implements OnInit{
  pageTitle: string = 'Product List';
  imageWidth: number = 50;
  imageMargin: number = 2;
  showImage: boolean = false;
  listFilter: string = 'cart';
  products: IProduct[] = [
    {
      "productId": 2,
      "productName": "Garden Cart",
      "productCode": "GDN-0023",
      "releaseDate": "March 18, 2016",
      "description": "15 gallon capacity rolling garden cart",
      "price": 32.99,
      "starRating": 4.2,
      "imageUrl": "https://encrypted-
tbn0.gstatic.com/images?q=tbn:ANd9GcRZhmstt7Kkdk5kyMv9mxJyh9sPUBvY9poTrxc1-
SCAUa3WmUVZQA"
    },
    {
      "productId": 5,
      "productName": "Hammer",
      "productCode": "TBX-0048",
      "releaseDate": "May 21, 2016",
      "description": "Curved claw steel hammer",
      "price": 8.9,
      "starRating": 4.8,
      "imageUrl": "https://encrypted-
tbn0.gstatic.com/images?q=tbn:ANd9GcSlXJd0iLq-d9v2-
UDfTlQFF3IuhdNMoE1ok1pAgwqubZaZqQJ9"
    }
  ];

  toggleImage(): void{
    this.showImage = !this.showImage;
  }

  ngOnInit(): void{
    console.log('Init Invoked!')
  }
}
```

5. Include <ai-star> tag in your product-list.component.html file.

product-list.component.html

```
<div class='panel panel-primary'>
  <div class='panel-heading'>
    {{pageTitle}}
  </div>
  <div class='panel-body'>
    <div class='row'>
      <div class='col-md-2'>Filter by:</div>
      <div class='col-md-4'>
        <input type='text' [(ngModel)]='listFilter'/>
      </div>
    </div>
    <div class='row'>
      <div class='col-md-6'>
        <h3>Filtered by: {{listFilter}} </h3>
      </div>
    </div>
    <div class='table-responsive'>
      <table class='table' *ngIf='products && products.length'>
        <thead>
          <tr>
            <th>
              <button class='btn btn-primary'
                (click) = 'toggleImage()'>
                {{showImage ? 'Hide' : 'Show'}} Image
              </button>
            </th>
            <th>Product</th>
            <th>Code</th>
            <th>Available</th>
            <th>Price</th>
            <th>5 Star Rating</th>
          </tr>
        </thead>
        <tbody>
          <tr *ngFor='#product of products | productFilter:listFilter'>
            <td>
              <img *ngIf='showImage'
                [src]='product.imageUrl'
                [title]='product.productName'
                [style.width.px]='imageWidth'
                [style.margin.px]='imageMargin'>
```

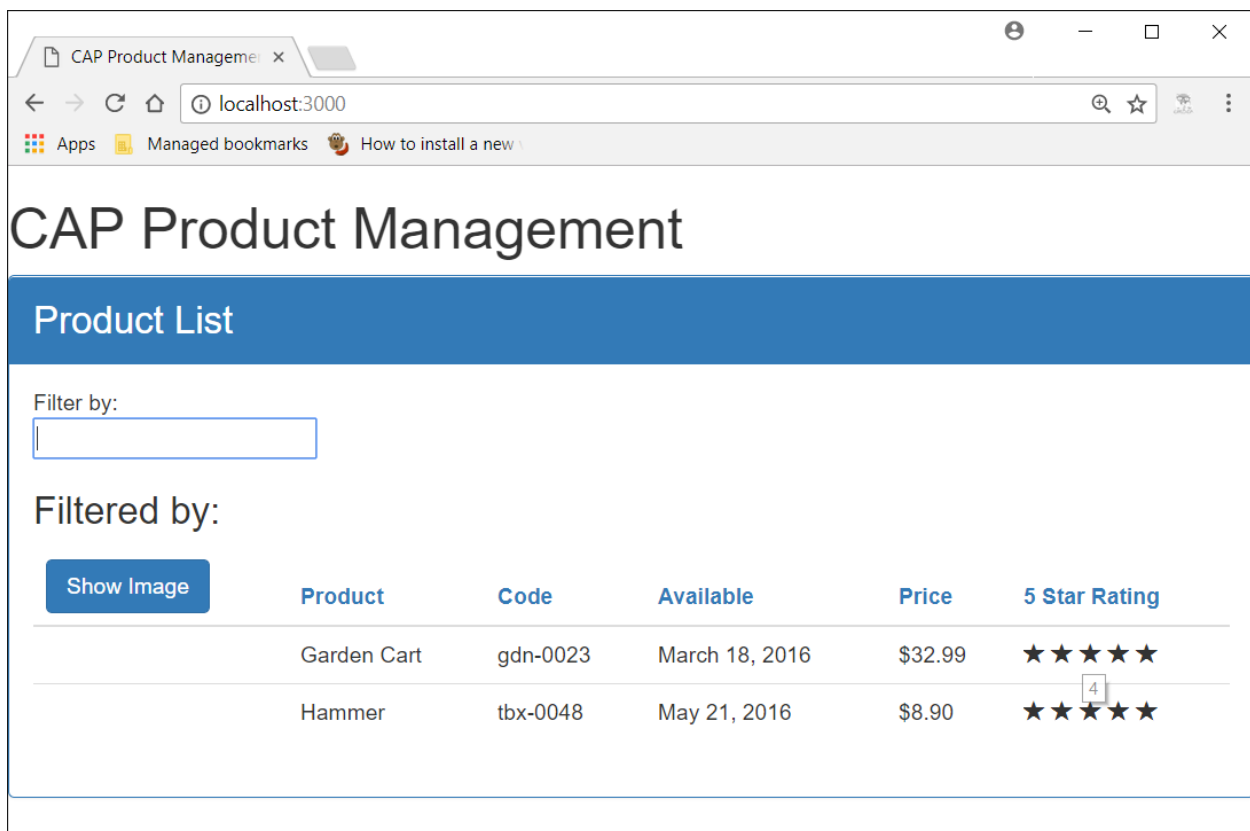


```

        </td>
        <td>{{product.productName}}</td>
        <td>{{product.productCode | lowercase }}</td>
        <td>{{product.releaseDate}}</td>
        <td>{{product.price | currency:'USD':true:'1.2-2'}}</td>
        <td>
            <ai-star></ai-star>
        </td>
    </tr>
</tbody>
</table>
</div>
</div>
</div>

```

You can see star in your browser in place of ratings.



Passing Data to the Nested Components:

6. Include @Input and @Output decorator in your star.component.ts file under shared folder.

star.component.ts

```

import { Component, OnChanges, Input,
        Output, EventEmitter } from 'angular2/core';

@Component({
  selector: 'ai-star',
  templateUrl: 'app/shared/star.component.html',
  styleUrls: ['app/shared/star.component.css']
})
export class StarComponent implements OnChanges {

  starWidth: number;
  @Input() rating: number ;
  @Output() ratingClicked: EventEmitter<string>
    = new EventEmitter<string>();

  ngOnChanges(): void {
    this.starWidth = this.rating * 86 / 5;
  }
  onClick() {
    this.ratingClicked.emit(`The rating ${this.rating} was clicked!`);
  }
}

```

7. Also modify star template as mentioned below.

star.component.html

```

<div class="crop"
  [style.width.px]="starWidth"
  [title]="rating"
  (click) = 'onClick()'>
  <div style="width: 86px">
    <span class="glyphicon glyphicon-star"></span>
    <span class="glyphicon glyphicon-star"></span>
    <span class="glyphicon glyphicon-star"></span>
    <span class="glyphicon glyphicon-star"></span>
    <span class="glyphicon glyphicon-star"></span>
  </div>
</div>

```

8. Add one more method in your product-list.component.ts file.

product-list.component.ts

```
import { Component, OnInit } from 'angular2/core';
import { IProduct } from './product';
import { ProductFilterPipe } from './product-filter.pipe';
import { StarComponent } from '../shared/star.component';
@Component({
  selector: 'pm-products',
  templateUrl: 'app/products/product-list.component.html',
  styleUrls: ['app/products/product-list.component.css'],
  pipes: [ProductFilterPipe],
  directives: [StarComponent]
})
export class ProductListComponent implements OnInit{
  pageTitle: string = 'Product List';
  imageWidth: number = 50;
  imageMargin: number = 2;
  showImage: boolean = false;
  listFilter: string = 'cart';
  products: IProduct[] = [
    {
      "productId": 2,
      "productName": "Garden Cart",
      "productCode": "GDN-0023",
      "releaseDate": "March 18, 2016",
      "description": "15 gallon capacity rolling garden cart",
      "price": 32.99,
      "starRating": 4.2,
      "imageUrl": "https://encrypted-
tbm0.gstatic.com/images?q=tbn:ANd9GcRZhmstt7Kkdk5kyMv9mxJyh9sPUBvY9poTrxc1-
SCAUa3WmUVZQA"
    },
    {
      "productId": 5,
      "productName": "Hammer",
      "productCode": "TBX-0048",
      "releaseDate": "May 21, 2016",
      "description": "Curved claw steel hammer",
      "price": 8.9,
      "starRating": 4.8,
```

```

        "imageUrl": "https://encrypted-
        tbn0.gstatic.com/images?q=tbn:ANd9GcSlXJd0iLq-d9v2-
        UDFtLQFF3IuhdNMoE1ok1pAgwqubZaZqQJ9"
    }
  ];

  toggleImage(): void{
    this.showImage = !this.showImage;
  }

  ngOnInit(): void{
    console.log('Init Invoked!')
  }

  onRatingClicked(message: string): void{
    this.pageTitle = 'Product List: ' + message;
  }
}

```

9. Now you can add event in your product-list.component.html file.

product-list.component.html

```

<div class='panel panel-primary'>
  <div class='panel-heading'>
    {{pageTitle}}
  </div>
  <div class='panel-body'>
    <div class='row'>
      <div class='col-md-2'>Filter by:</div>
      <div class='col-md-4'>
        <input type='text' [(ngModel)]='listFilter'/>
      </div>
    </div>
    <div class='row'>
      <div class='col-md-6'>
        <h3>Filtered by: {{listFilter}} </h3>
      </div>
    </div>
    <div class='table-responsive'>
      <table class='table' *ngIf='products && products.length'>
        <thead>

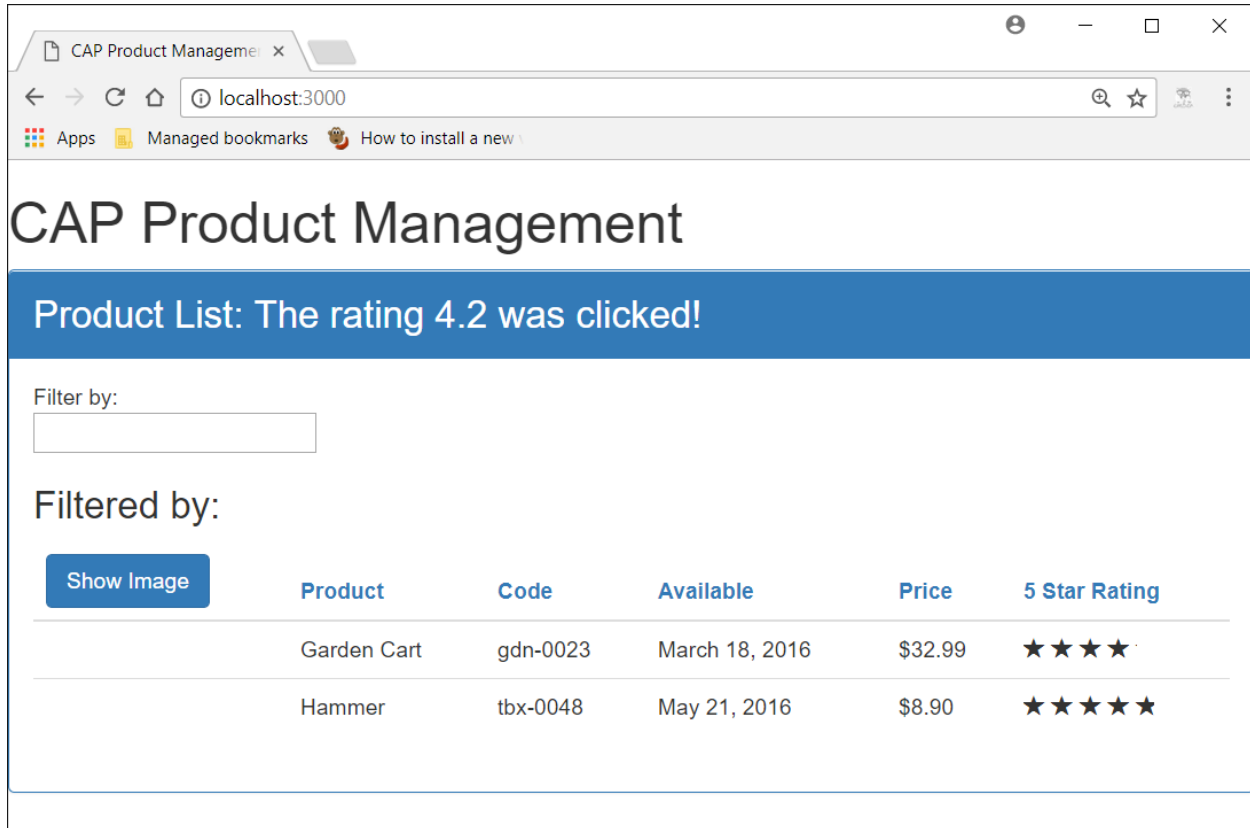
```

```

        <tr>
          <th>
            <button class='btn btn-primary'
              (click) = 'toggleImage()'>
              {{showImage ? 'Hide' : 'Show'}} Image
            </button>
          </th>
          <th>Product</th>
          <th>Code</th>
          <th>Available</th>
          <th>Price</th>
          <th>5 Star Rating</th>
        </tr>
      </thead>
      <tbody>
        <tr *ngFor='#product of products | productFilter:listFilter'>
          <td>
            <img *ngIf='showImage'
              [src]='product.imageUrl'
              [title]='product.productName'
              [style.width.px]='imageWidth'
              [style.margin.px]='imageMargin'>
            </td>
            <td>{{product.productName}}</td>
            <td>{{product.productCode | lowercase }}</td>
            <td>{{product.releaseDate}}</td>
            <td>{{product.price | currency:'USD':true:'1.2-2'}}</td>
            <td>
              <ai-star [rating]='product.starRating'
                (ratingClicked)='onRatingClicked($event)'></ai-star>
            </td>
          </tr>
        </tbody>
      </table>
    </div>
  </div>
</div>

```

Now you can see the below output in your browser with correct start rating and appropriate message when you click ratings.



Services and Dependency Injections:

10. Add file called product.service.ts under products folder. And include the below content within it.

product.service.ts

```
import {Injectable} from 'angular2/core';
import {IProduct} from './product';

@Injectable()
export class ProductService{
  getProducts(): IProduct[]{
    return[
      {
        "productId": 2,
        "productName": "Garden Cart",
        "productCode": "GDN-0023",
        "releaseDate": "March 18, 2016",
        "description": "15 gallon capacity rolling garden cart",
        "price": 32.99,
        "starRating": 4.2,
```

```
        "imageUrl": "https://encrypted-
tbn0.gstatic.com/images?q=tbn:ANd9GcRZhmstt7Kkdk5kyMv9mxJyh9sPUBvY9poTrxc1-
SCAUa3WmUVZQA"
      },
      {
        "productId": 5,
        "productName": "Hammer",
        "productCode": "TBX-0048",
        "releaseDate": "May 21, 2016",
        "description": "Curved claw steel hammer",
        "price": 8.9,
        "starRating": 4.8,
        "imageUrl": "https://encrypted-
tbn0.gstatic.com/images?q=tbn:ANd9GcSlXJd0iLq-d9v2-
UDfTlQFF3IuhdNMoE1ok1pAgwqubZaZqQJ9"
      }
    ]
  }
}
```

11. Register this ProductService in your app.component.ts file.

app.component.ts

```
import { Component } from 'angular2/core';
import { ProductListComponent } from './products/product-list.component';
import { ProductService } from './products/product.service';

@Component({
  selector: 'pm-app',
  template: `
    <div>
      <h1>{{pageTitle}}</h1>
      <pm-products></pm-products>
    </div>
  `,
  directives: [ProductListComponent],
  providers: [ProductService]
})

export class AppComponent{
  pageTitle: string= 'CAP Product Management';
}
```

Injecting Service to product.component.ts

12. Now inject the service which we have created into product.component.ts file.

product.component.ts

```
import { Component, OnInit } from 'angular2/core';
import { IProduct } from './product';
import { ProductFilterPipe } from './product-filter.pipe';
import { StarComponent } from '../shared/star.component';
import { ProductService } from './product.service';
@Component({
  selector: 'pm-products',
  templateUrl: 'app/products/product-list.component.html',
  styleUrls: ['app/products/product-list.component.css'],
  pipes: [ProductFilterPipe],
  directives: [StarComponent]
})
export class ProductListComponent implements OnInit{
  pageTitle: string = 'Product List';
  imageWidth: number = 50;
  imageMargin: number = 2;
  showImage: boolean = false;
  listFilter: string ;
  products: IProduct[];

  constructor(private _productService: ProductService){

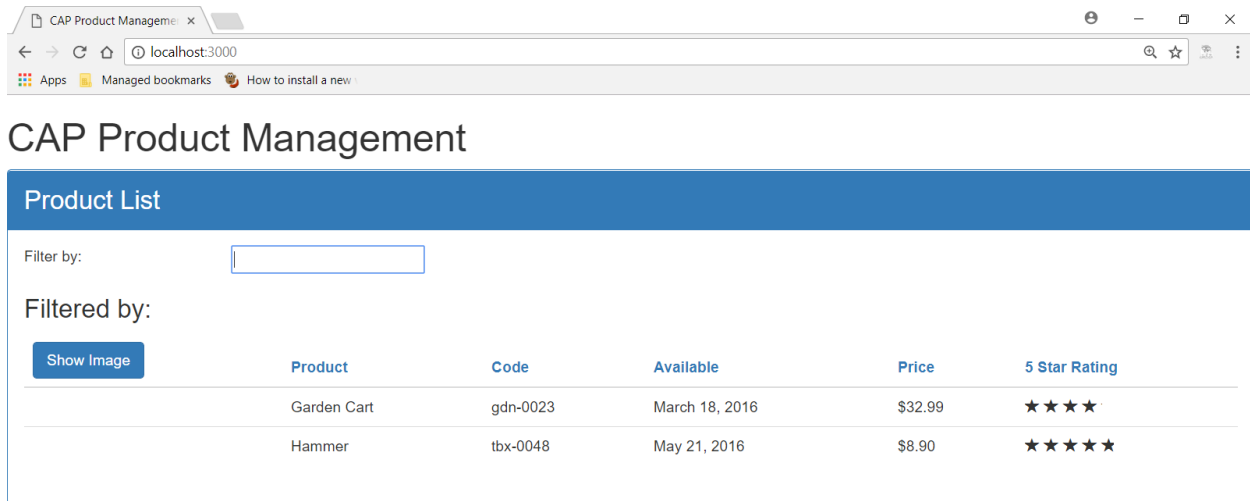
  }

  toggleImage(): void{
    this.showImage = !this.showImage;
  }

  ngOnInit(): void{
    this.products = this._productService.getProducts();
  }

  onRatingClicked(message: string): void{
    this.pageTitle = 'Product List: ' + message;
  }
}
```


Now you can see the output in your browser.



Retrieving Data Using http:

13. Add http library in your index.html file, this file already included with rxJs library so no need to include that.

index.html

```
<!DOCTYPE html>
<html>

<head>
  <title>CAP Product Management</title>
  <meta name="viewport" content="width=device-width, initial-scale=1">

  <link href="node_modules/bootstrap/dist/css/bootstrap.css" rel="stylesheet"
/>
  <link href="app/app.component.css" rel="stylesheet" />

  <!-- 1. Load libraries -->
  <!-- IE required polyfills, in this exact order -->
  <script
src="node_modules/angular2/es6/dev/src/testing/shims_for_IE.js"></script>
  <script src="node_modules/es6-shim/es6-shim.min.js"></script>
```

```
<script src="node_modules/systemjs/dist/system-polyfills.js"></script>

<script src="node_modules/angular2/bundles/angular2-polyfills.js"></script>
<script src="node_modules/systemjs/dist/system.src.js"></script>
<script src="node_modules/rxjs/bundles/Rx.js"></script>
<script src="node_modules/angular2/bundles/angular2.dev.js"></script>

<!-- required for http -->
<script src="node_modules/angular2/bundles/http.dev.js"></script>

<!-- 2. Configure SystemJS -->
<script>
  System.config({
    packages: {
      app: {
        format: 'register',
        defaultExtension: 'js'
      }
    }
  });
  System.import('app/main')
    .then(null, console.error.bind(console));
</script>
</head>

<body>
  <pm-app>Loading App..</pm-app>

</body>

</html>
```

14. Include HTTP_PROVIDERS service in your app.component.ts file as mentioned below:

app.component.ts

```
import { Component } from 'angular2/core';
import { ProductListComponent } from './products/product-list.component';
import { ProductService } from './products/product.service';
import { HTTP_PROVIDERS } from 'angular2/http';
import 'rxjs/Rx'; //Load all features

@Component({
  selector: 'pm-app',
  template: `
```

```

        <div>
            <h1>{{pageTitle}}</h1>
            <pm-products></pm-products>
        </div>
    `
    ,
    directives: [ProductListComponent],
    providers: [ProductService, HTTP_PROVIDERS]
})

export class AppComponent{
    pageTitle: string= 'CAP Product Management';
}

```

15. Sending an Http Request

- a. Now you can remove hard coded product list from product.service.ts file. And replace that with http request.

product.service.ts

```

import {Injectable} from 'angular2/core';
import {IProduct} from './product';
import {Http, Response} from 'angular2/http';
import {Observable} from 'rxjs/Observable';

@Injectable()
export class ProductService{
    private _productUrl = 'api/products/products.json';

    constructor(private _http : Http){

    }

    getProducts(): Observable<IProduct[]>{
        return this._http.get(this._productUrl)
            .map((response:Response) => <IProduct[]>response.json())
            .do( data => console.log("All: " +JSON.stringify(data)))
            .catch(this.handleError);
    }

    private handleError(error:Response){
        console.error(error);
        return Observable.throw(error.json().error || 'Server Error');
    }
}

```

```
}
}
```

16. Subscribe your product in your product-list.component.ts file as mentioned below.

```
import { Component, OnInit } from 'angular2/core';
import { IProduct } from './product';
import { ProductFilterPipe } from './product-filter.pipe';
import { StarComponent } from '../shared/star.component';
import { ProductService } from './product.service';
@Component({
  selector: 'pm-products',
  templateUrl: 'app/products/product-list.component.html',
  styleUrls: ['app/products/product-list.component.css'],
  pipes: [ProductFilterPipe],
  directives: [StarComponent]
})
export class ProductListComponent implements OnInit{
  pageTitle: string = 'Product List';
  imageWidth: number = 50;
  imageMargin: number = 2;
  showImage: boolean = false;
  listFilter: string ;
  products: IProduct[];
  errorMessage: string;

  constructor(private _productService: ProductService){

  }

  toggleImage(): void{
    this.showImage = !this.showImage;
  }

  ngOnInit(): void{
    this._productService.getProducts()
      .subscribe(
        products => this.products= products,
        error => this.errorMessage = <any>error);
  }

  onRatingClicked(message: string): void{
```

```

    this.pageTitle = 'Product List: ' + message;
  }
}

```

17. Check whether products.json file has been include in your api/products directory.
Now you can see the below output





CAP Product Management

Product List

Filter by:

Filtered by:

[Hide Image](#)

	Product	Code	Available	Price	5 Star Rating
	Leaf Rake	gdn-0011	March 19, 2016	\$19.95	★★★★
	Garden Cart	gdn-0023	March 18, 2016	\$32.99	★★★★
	Hammer	tbx-0048	May 21, 2016	\$8.90	★★★★★
	Saw	tbx-0022	May 15, 2016	\$11.55	★★★★

Also check your console window in the browser:

CAP Product Management

Product List

Filter by:

Filtered by:

Angular 2 is running in the development mode. Call enableProdMode() to enable the production mode.

All: [{"productId":1,"productName":"Leaf Rake","productCode":"GDN-0011","releaseDate":"March 19, 2016","description":"Leaf rake with 48-inch wooden handle.", "price":19.95, "starRating":3.2, "imageUrl":"http://openclipart.org/image/300px/svg_to_png/26215/Anonymous_Leaf_Rake.png"}, {"productId":2,"productName":"Garden Cart", "productCode":"GDN-0023", "releaseDate":"March 18, 2016", "description":"15 gallon capacity rolling garden cart", "price":32.99, "starRating":4.2, "imageUrl":"http://openclipart.org/image/300px/svg_to_png/584711/garden_cart.png"}, {"productId":5,"productName":"Hammer", "productCode":"TBX-0048", "releaseDate":"May 21, 2016", "description":"Curved claw steel hammer", "price":8.9, "starRating":4.8, "imageUrl":"http://openclipart.org/image/300px/svg_to_png/73/rejon_Hammer.png"}, {"productId":8,"productName":"Saw", "productCode":"TBX-0022", "releaseDate":"May 15, 2016", "description":"15-inch steel blade hand saw", "price":11.55, "starRating":3.7, "imageUrl":"http://openclipart.org/image/300px/svg_to_png/27070/egore911_saw.png"}, {"productId":10,"productName":"Video Game Controller", "productCode":"GNG-0042", "releaseDate":"October 15, 2015", "description":"Standard two-button video game controller", "price":35.95, "starRating":4.6, "imageUrl":"http://openclipart.org/image/300px/svg_to_png/120337/xbox-controller_01.png"}]

Console | What's New

Highlights from the Chrome 61 update