Using Angular Async Pipe with ngIf & ngFor

4 Comments / 5 minutes of reading / March 9, 2023

← Date Pipe Angular Tutorial KeyValue Pipe →

The async pipe allows us to subscribe to an Observable or Promise from the template and returns the value emitted. The async pipes subscribe to the observable when the component loads. It unsubscribes when the component gets destroyed. In this tutorial we will show you how to use async pipe. Its Syntax & example using observable, Also we will show you how to use it with ngIf & ngFor. How to make use of the ShareReplay to share the subscription. Use the as operator to store the result. using it with the httpclient & HTTP get request etc.

Table of Contents

Syntax of Async Pipe

The following is the syntax of the `async` pipe. `expression` must return an observable or promise. It is followed by | (pipe character) and the keyword `async`. We are using the async pipe with interpolation syntax.

```
{{expression | async}}
```

Async Pipe Example with Observables

The following example creates an observable. It returns `1000` after an delay. The `obsValue` variable stores the observable.

```
 obsValue = new Observable((observer) => {
   console.log("Observable starts")
   setTimeout(() => { observer.next("90000") }, 1000);
 })
```

We can use it in the template as shown below.

```
{{ obsValue | async}}
```

When the components load, the angular automatically subscribes to the `obsValue` observable.

The observable returns the value 1000 after a delay. When the value arrives, `async` pipe automatically triggers change detection. Hence you will see the return value on the screen.

The observable is automatically unsubscribed when the component is destroyed. Thus avoiding any potential memory leaks

Use the async pipe with ngIf

We above example uses the async pipe with interpolation. We can also use it with the ngIf or ngFor etc.

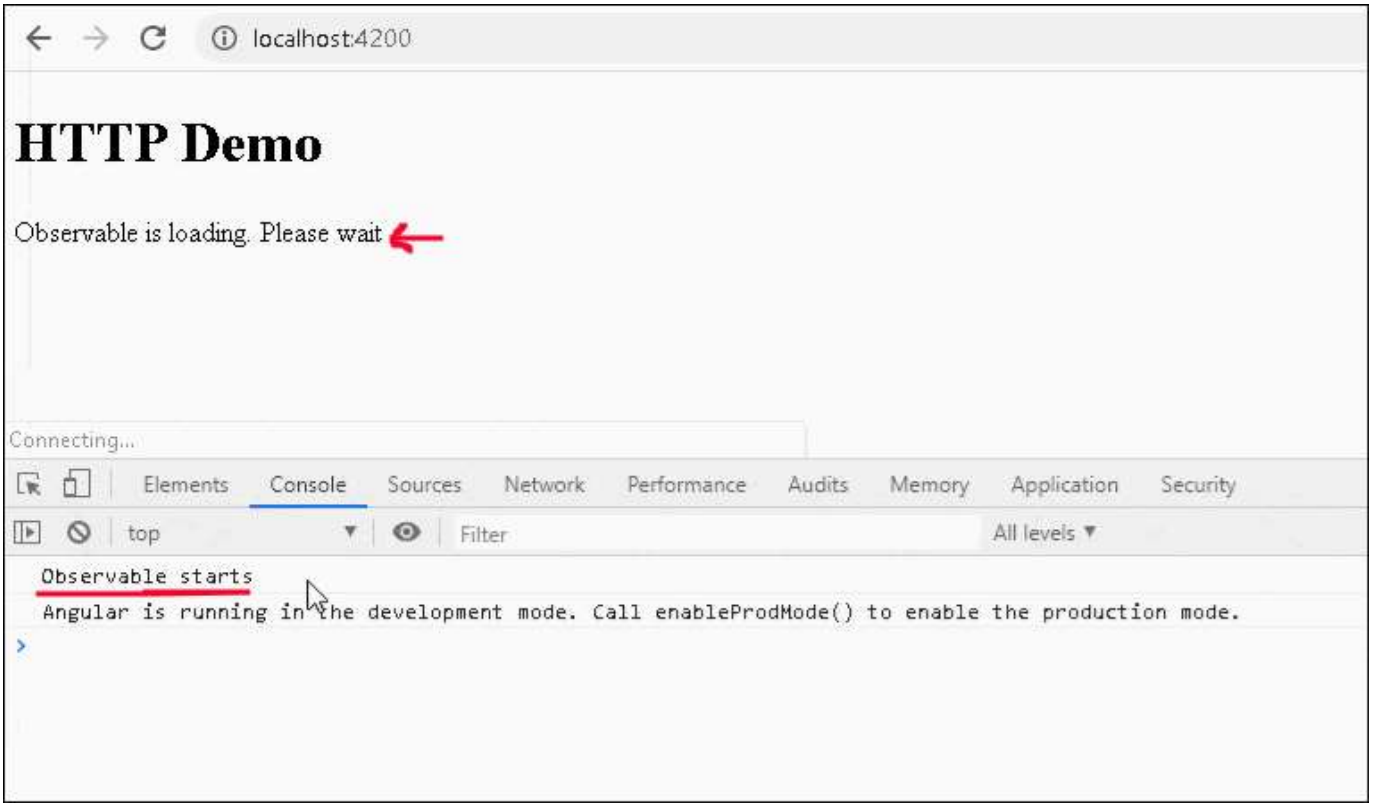
The following example shows how **NOT** to use the observable with ngIf directive.

The condition (obsValue | async) becomes true , when the observable returns a value. Until then the elseBlock is shown, which we use to display the loading indicator. In the example, it displays the message Observable is loading. Please wait .

```
1
2 <div *ngIf="(obsValue | async); else elseBlock">
3   {{ obsValue | async}}
4 </div>
5
6 <ng-template #elseBlock>
7   Observable is loading. Please wait
8 </ng-template>
9
```

When the observable returns with a value the ngIf condition becomes true and the pipe displays the returned value.

You can see it from the following image.



As you can see from the above image, you can see that the observable fires twice.

i.e because we are using the `async` pipe twice. one in `if condition` and the other inside the `if block`

```
1
2 <div *ngIf="(obsValue | async); else elseBlock">       //obsValue  Subscribed here
3  {{ obsValue | async}}                    //obsValue  Subscribed here again
4 </div>
5
```

There are two ways in whcih you can solve this problem. One is using the `ShareReplay` `rxjs` operator

ShareReplay

We use the `shareReplay` when you want subscribers to share the observable and access previously emitted values. i.e. the observable is subscribed only once and for every subsequent subscription, the previously received value is used.

The updated observable, with `shareReplay` is as shown below. We need to use the `pipe` operator

```

obsValue = new Observable((observer) => {
  console.log("Observable starts")
  setTimeout(() => {
    console.log("Returns value")
    observer.next("1000")
  }, 5000);
}).pipe(shareReplay());

```

There is no need to make any changes in component code. But for this example, we have one more `if` block. making the total `async` pipe to three

```

<div *ngIf="(obsValue | async); else elseBlock">
  {{ obsValue | async}}
</div>

<ng-template #elseBlock>
  Observable is loading. Please wait
</ng-template>

<div *ngIf="(obsValue | async);">
  observable has recevied data
</div>

```

As you can see from the following, in spite of having three subscriptions, the observable is subscribed only once.

Using ngIf “as” syntax

We can use the `as` keyword to store the result in a template local variable. Once we assign the result to a variable, then we can use it anywhere inside the `ngIf` block as shown below.

```
<div *ngIf="(obsValue | async) as value; else elseBlock">
 {{ value}}     //works only inside the If Block
</div>

<ng-template #elseBlock>
 Observable is loading. Please wait
</ng-template>

{{ value}}  // will not work
```

Remove the `shareReplay` from the `observable` and check it.

```
  obsValue = new Observable((observer) => {
```

```
    console.log("Observable starts")
    setTimeout(() => {
      console.log("Returns value")
      observer.next("1000")
    }, 5000);
  });

```

Use the async pipe with ngfor

Now we will see how to use the async pipe with ngFor. For this example, we will make use of httpclient library to make HTTP get request and display the results using the ngFor

For this example, let use the free HTTP end point https://dog.ceo/dog-api/documentation/. It returns the array of hound breeds as shown below (in the message array)

```

{"message":["afghan","basset","blood","english","ibizan","plott","walker"],"status":"success"

```

```

hounds: Observable<any> = this.getHoundList();

getHoundList(): Observable<any> {
  return this.http.get<any>("https://dog.ceo/api/breed/hound/list")
}

```

In the template use the (hounds | async) to subscribe to the hounds observable. We are using a safe navigation operator ? before the property name message. i.e because initially, it is null until the result arrives and without ? you will see errors in your console

```
<ul>
  <li *ngFor="let breed of (hounds | async)?.message">{{breed}}</li>
</ul>
```

async pipe example using ngFor

You can also make use of combination of ngIf & ngFor and using the as to store the result in breeds .

```
<div *ngIf="(hounds | async) as breeds">
  <ul>
    <li *ngFor="let breed of breeds.message">{{breed}}</li>
  </ul>
</div>
```

The following code displays the a random image of the dog using ngIf

```
//component

randomPic: Observable<any> = this.getRandom();

getRandom(): Observable<any> {
  return this.http.get<any>("https://dog.ceo/api/breeds/image/random")
}
```