Component Communication & Lifecycle Hooks

523419

(Advanced Web Application Development)

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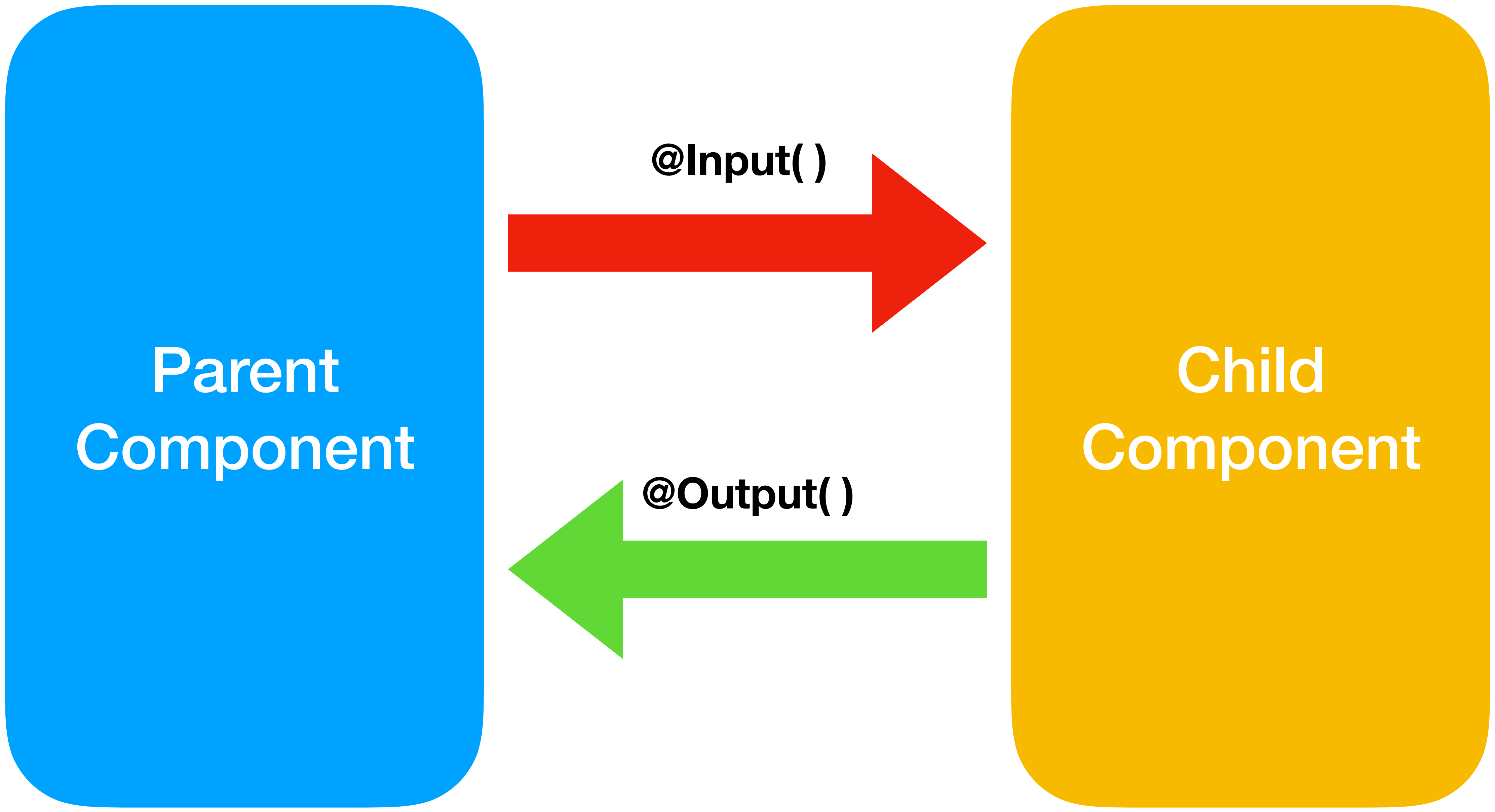
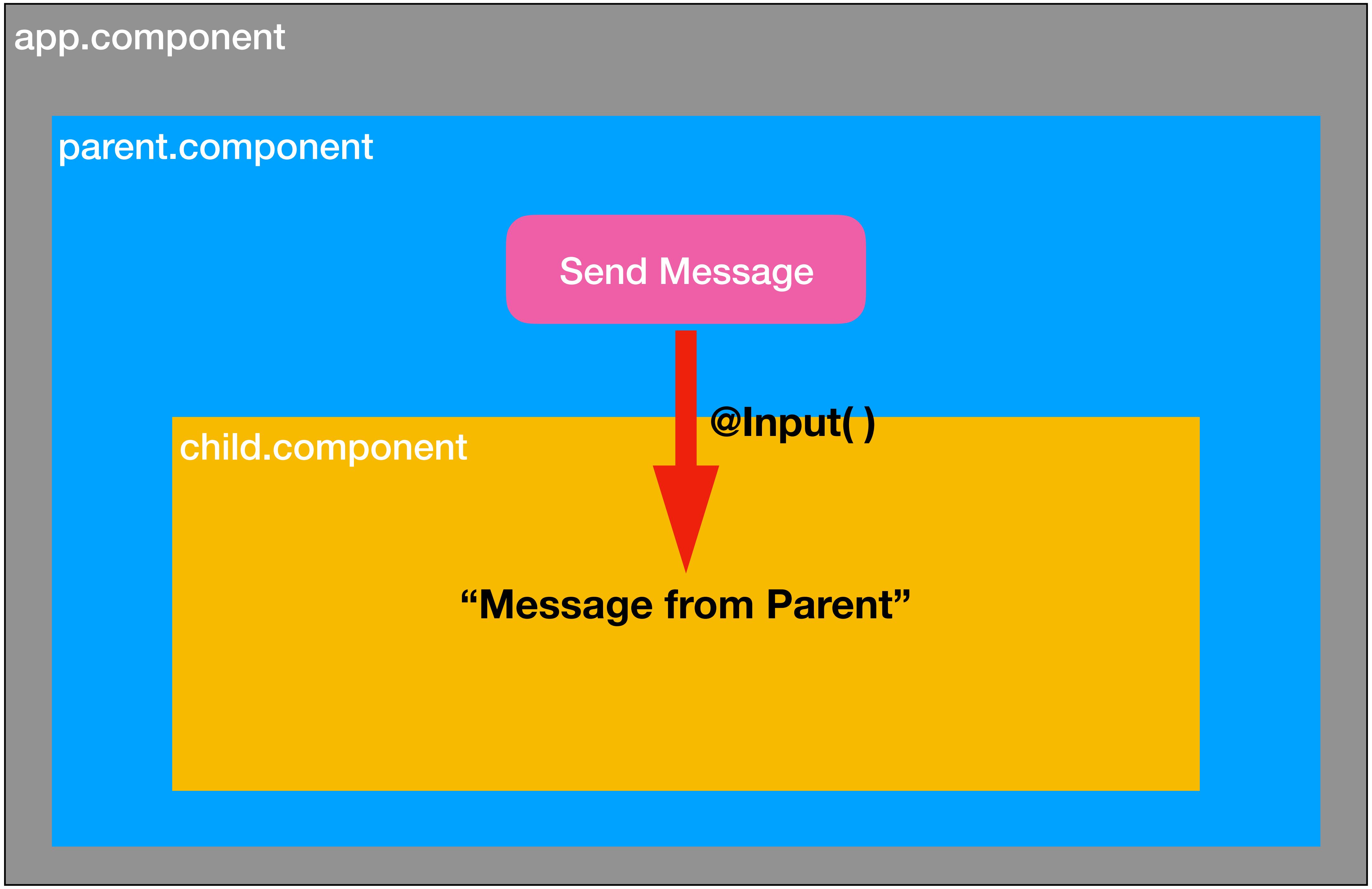
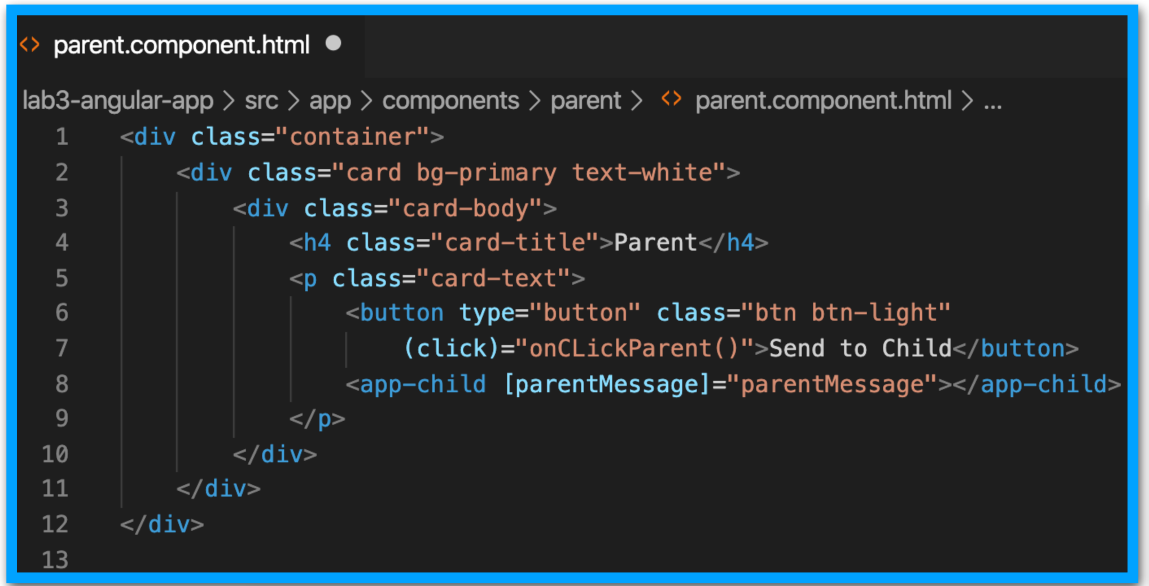
Component Communication



Parent to Child



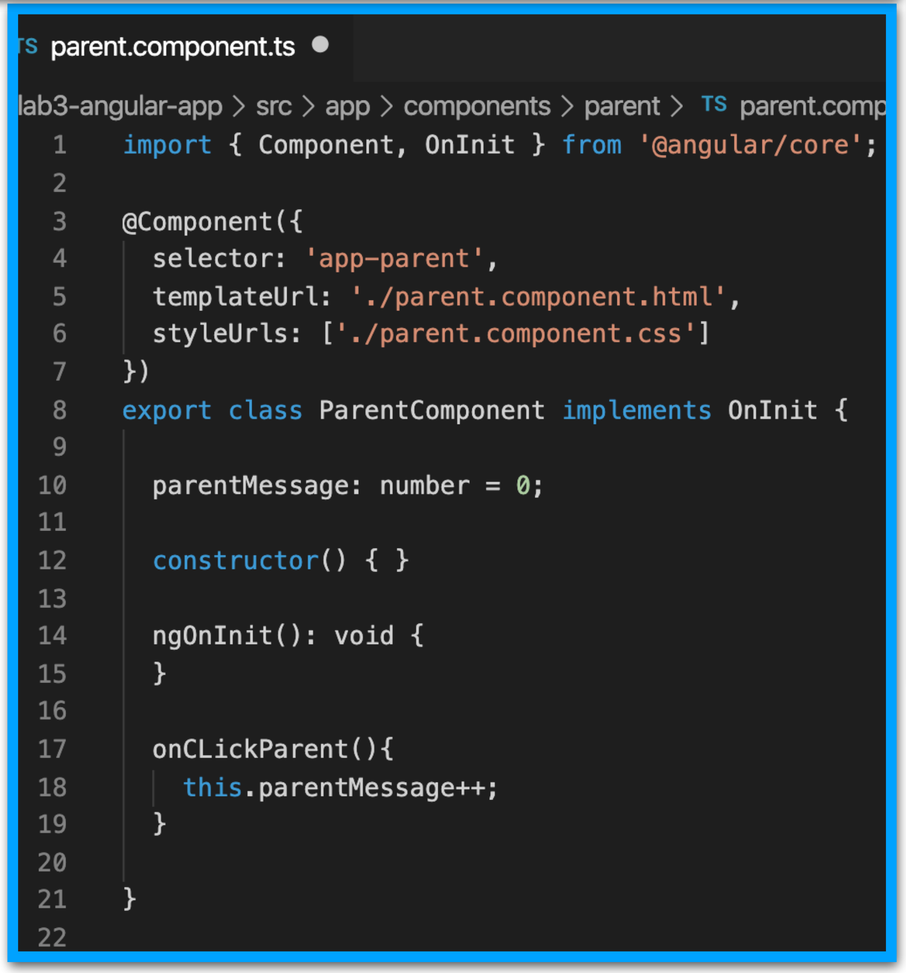
Parent to Child : Example



parent.component.html ●

lab3-angular-app > src > app > components > parent > parent.component.html > ...

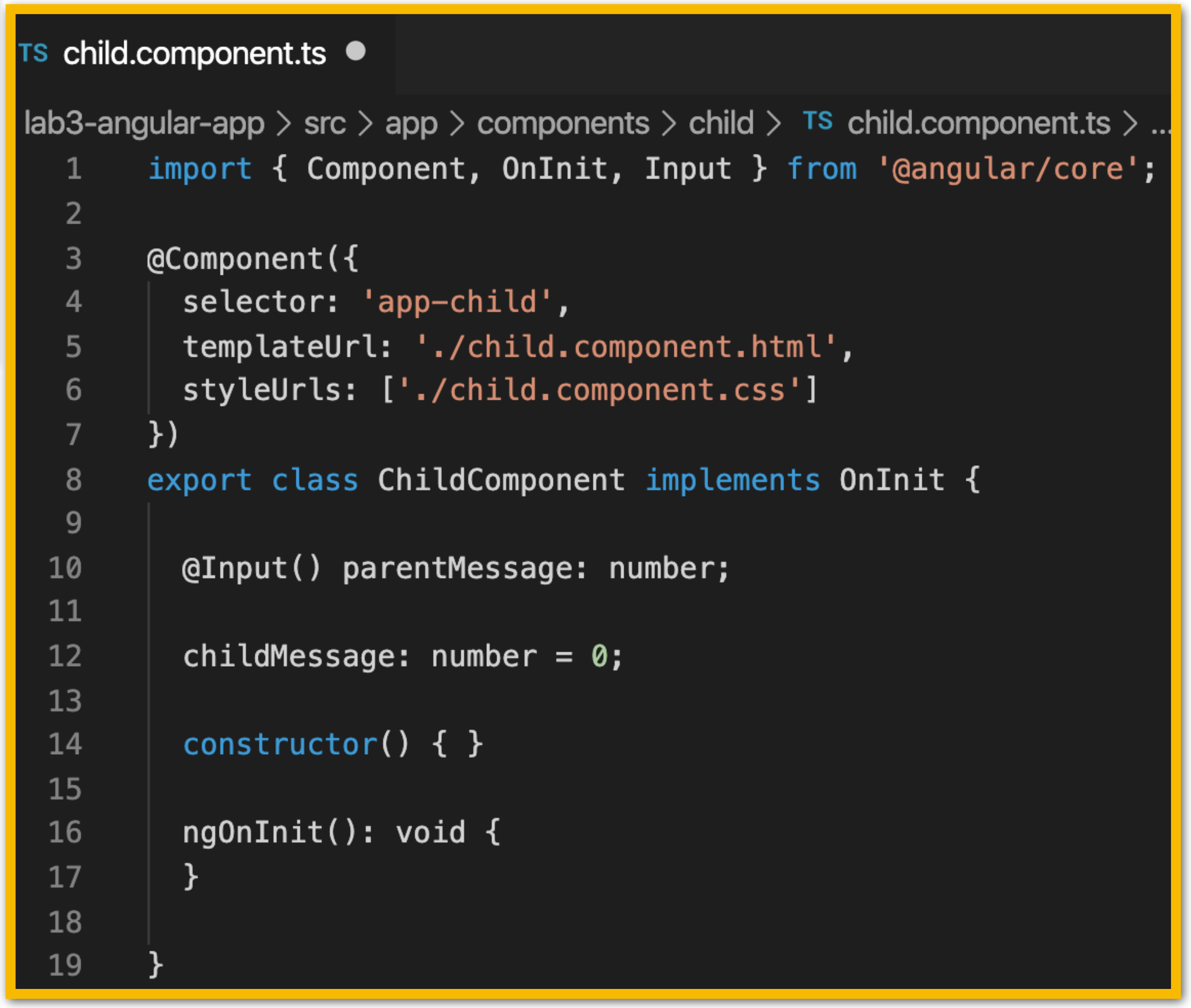
```html
<div class="container">
    <div class="card bg-primary text-white">
        <div class="card-body">
            <h4 class="card-title">Parent</h4>
            <p class="card-text">
                <button type="button" class="btn btn-light"
                    (click)="onCLickParent()">Send to Child</button>
                <app-child [parentMessage]="parentMessage"></app-child>
            </p>
        </div>
    </div>
</div>

```



parent.component.ts ●

lab3-angular-app > src > app > components > parent > TS parent.comp

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

@Component({
  selector: 'app-parent',
  templateUrl: './parent.component.html',
  styleUrls: ['./parent.component.css']
})
export class ParentComponent implements OnInit {

  parentMessage: number = 0;

  constructor() { }

  ngOnInit(): void {
  }

  onCLickParent(){
    this.parentMessage++;
  }

}

```

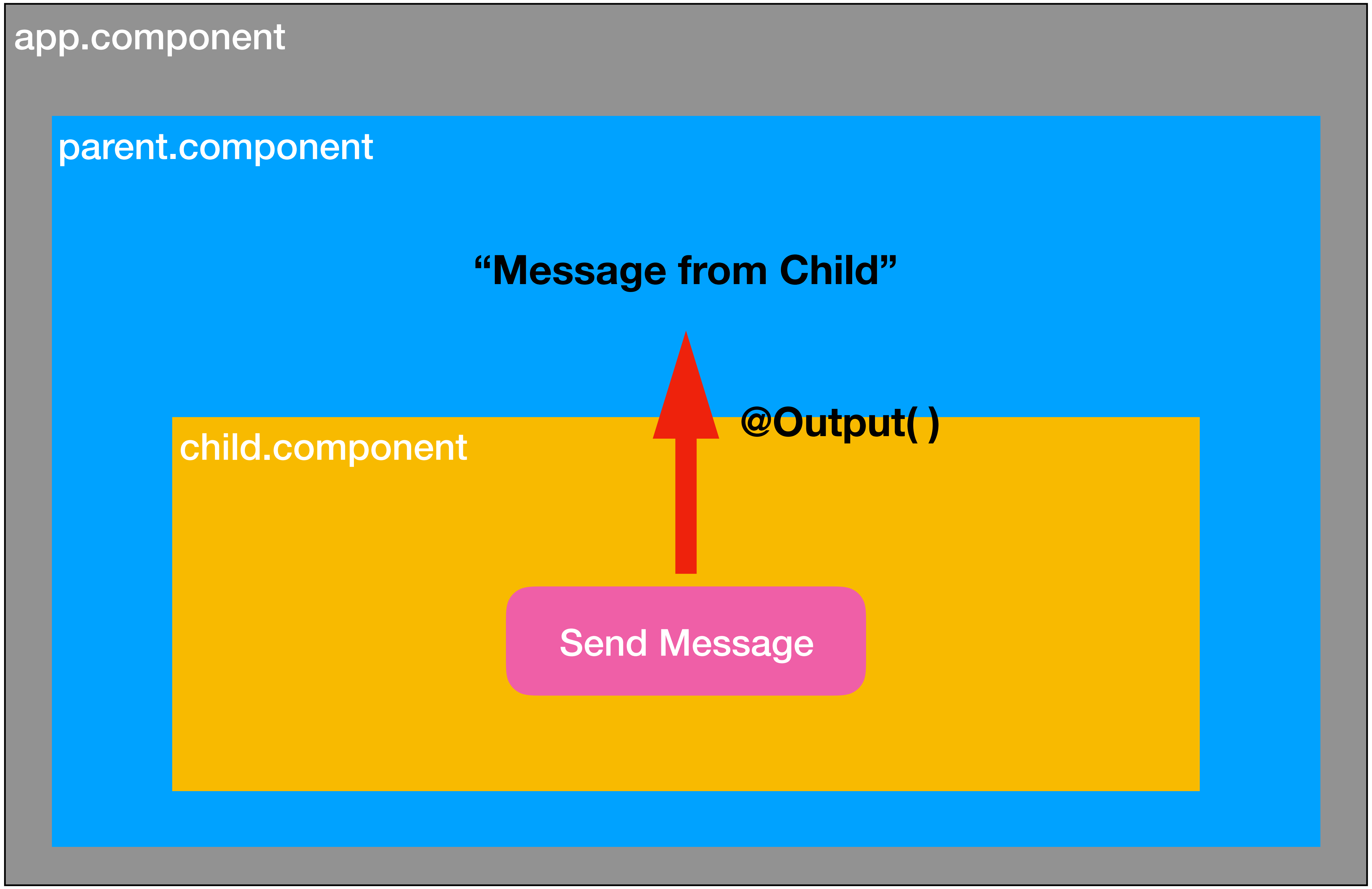


child.component.ts ●

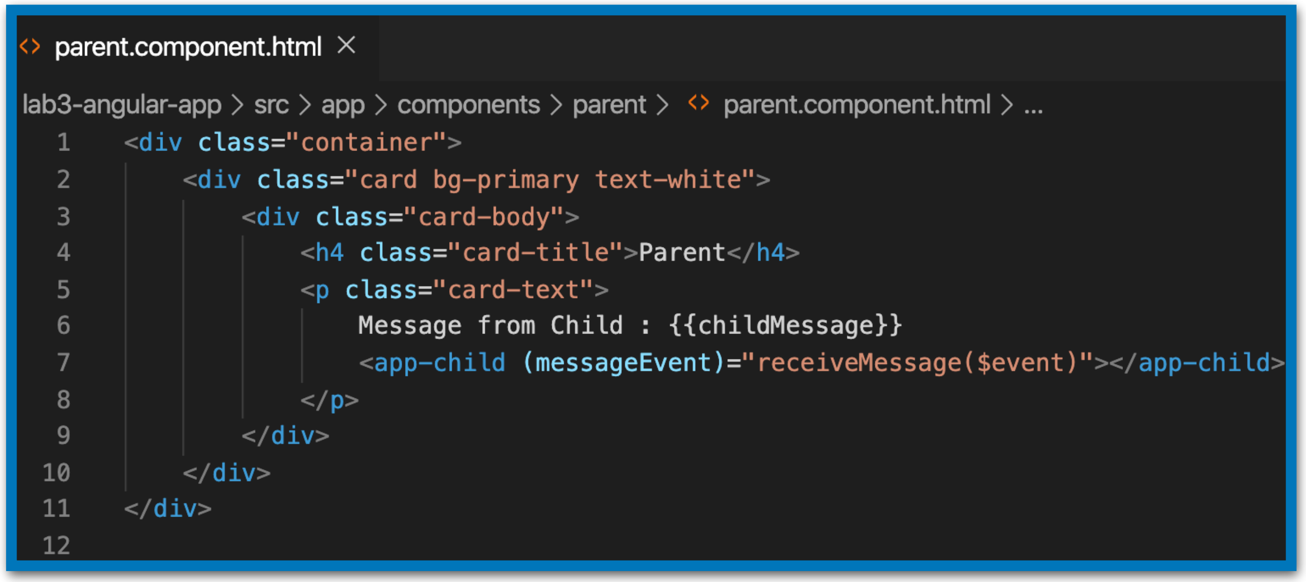
lab3-angular-app > src > app > components > child > TS child.component.ts > ...

```typescript
import { Component, OnInit, Input } from '@angular/core';

@Component({
  selector: 'app-child',
  templateUrl: './child.component.html',
  styleUrls: ['./child.component.css']
})
export class ChildComponent implements OnInit {

  @Input() parentMessage: number;

  childMessage: number = 0;

  constructor() { }

  ngOnInit(): void {
  }

}
```

Child to Parent



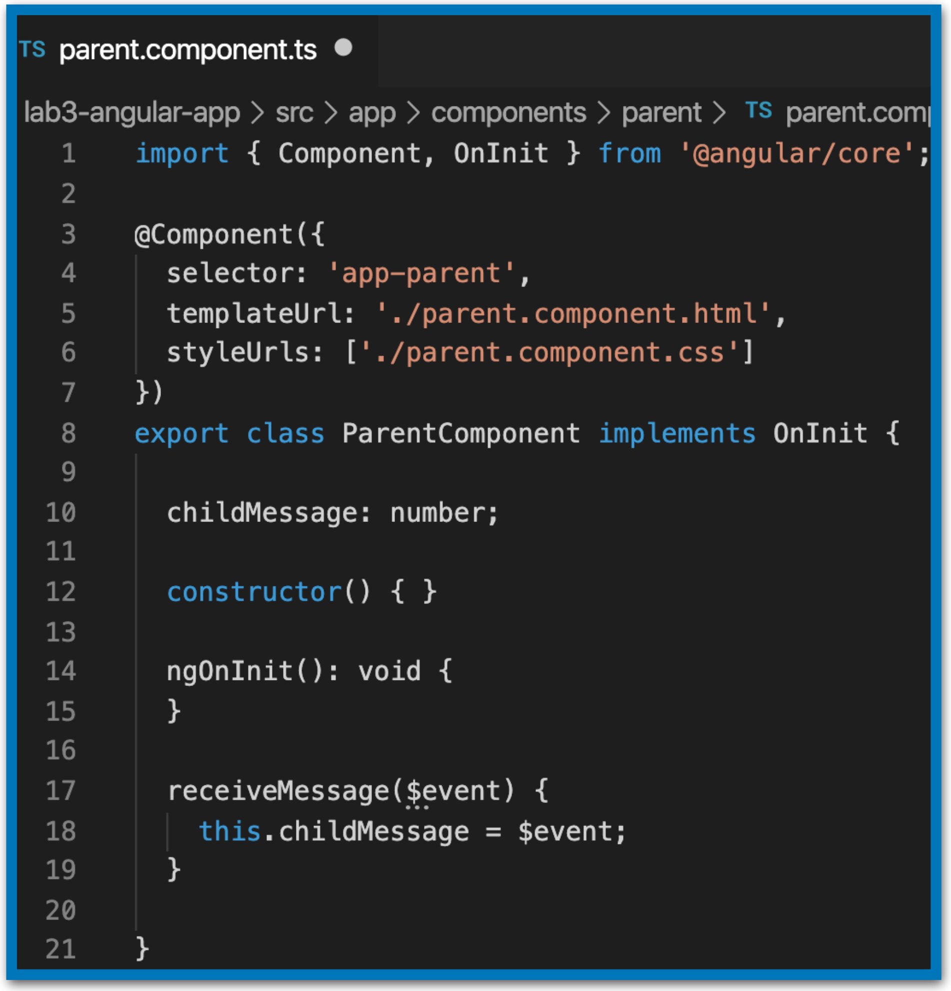
Child to Parent : Example



parent.component.html ×

lab3-angular-app > src > app > components > parent > parent.component.html > ...

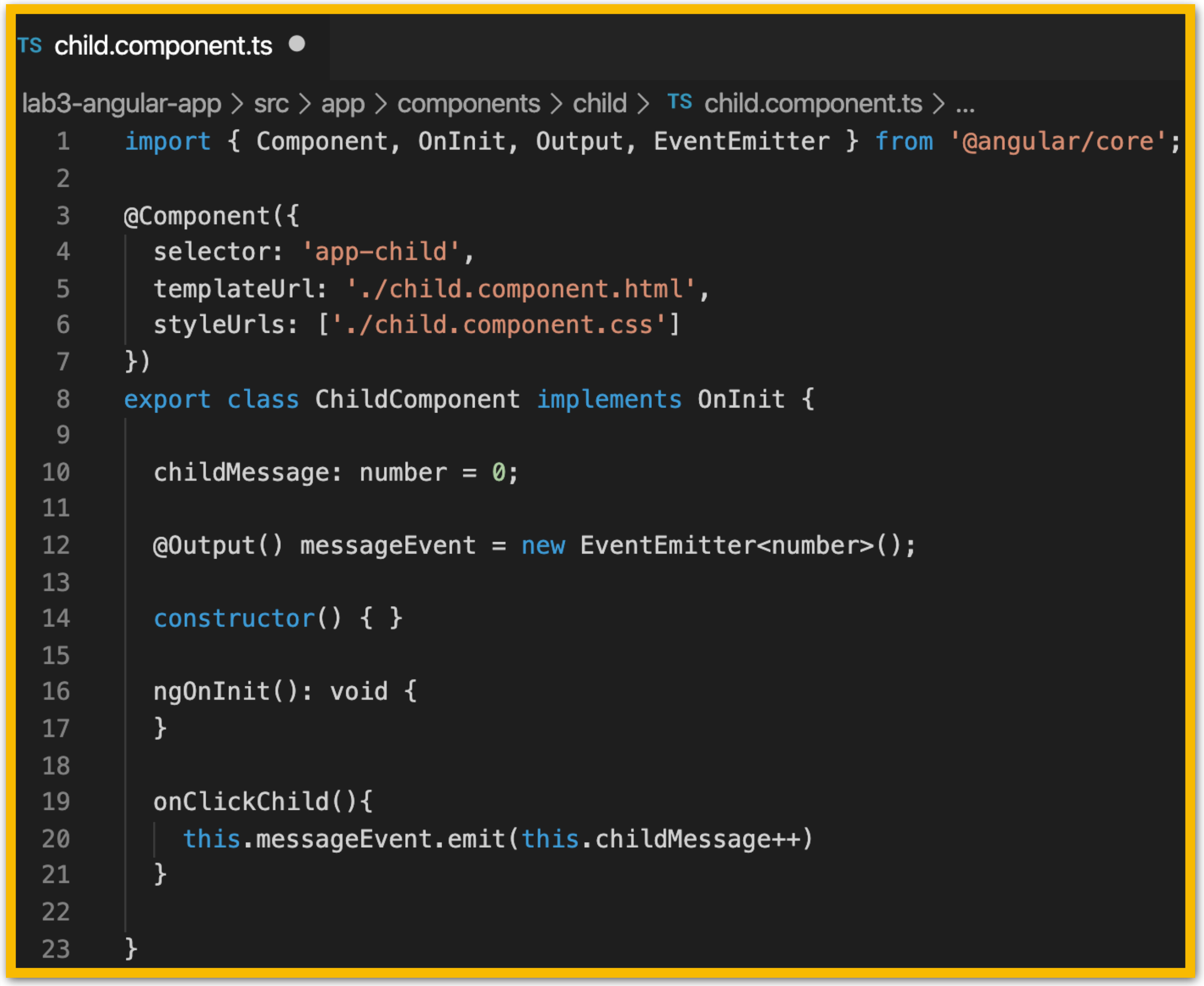
```html
<div class="container">
    <div class="card bg-primary text-white">
        <div class="card-body">
            <h4 class="card-title">Parent</h4>
            <p class="card-text">
                Message from Child : {{childMessage}}
                <app-child (messageEvent)="receiveMessage($event)"></app-child>
            </p>
        </div>
    </div>
</div>
```



parent.component.ts ●

lab3-angular-app > src > app > components > parent > TS parent.comp

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

@Component({
  selector: 'app-parent',
  templateUrl: './parent.component.html',
  styleUrls: ['./parent.component.css']
})
export class ParentComponent implements OnInit {

  childMessage: number;

  constructor() { }

  ngOnInit(): void {
  }

  receiveMessage($event) {
    this.childMessage = $event;
  }

}
```



child.component.ts ●

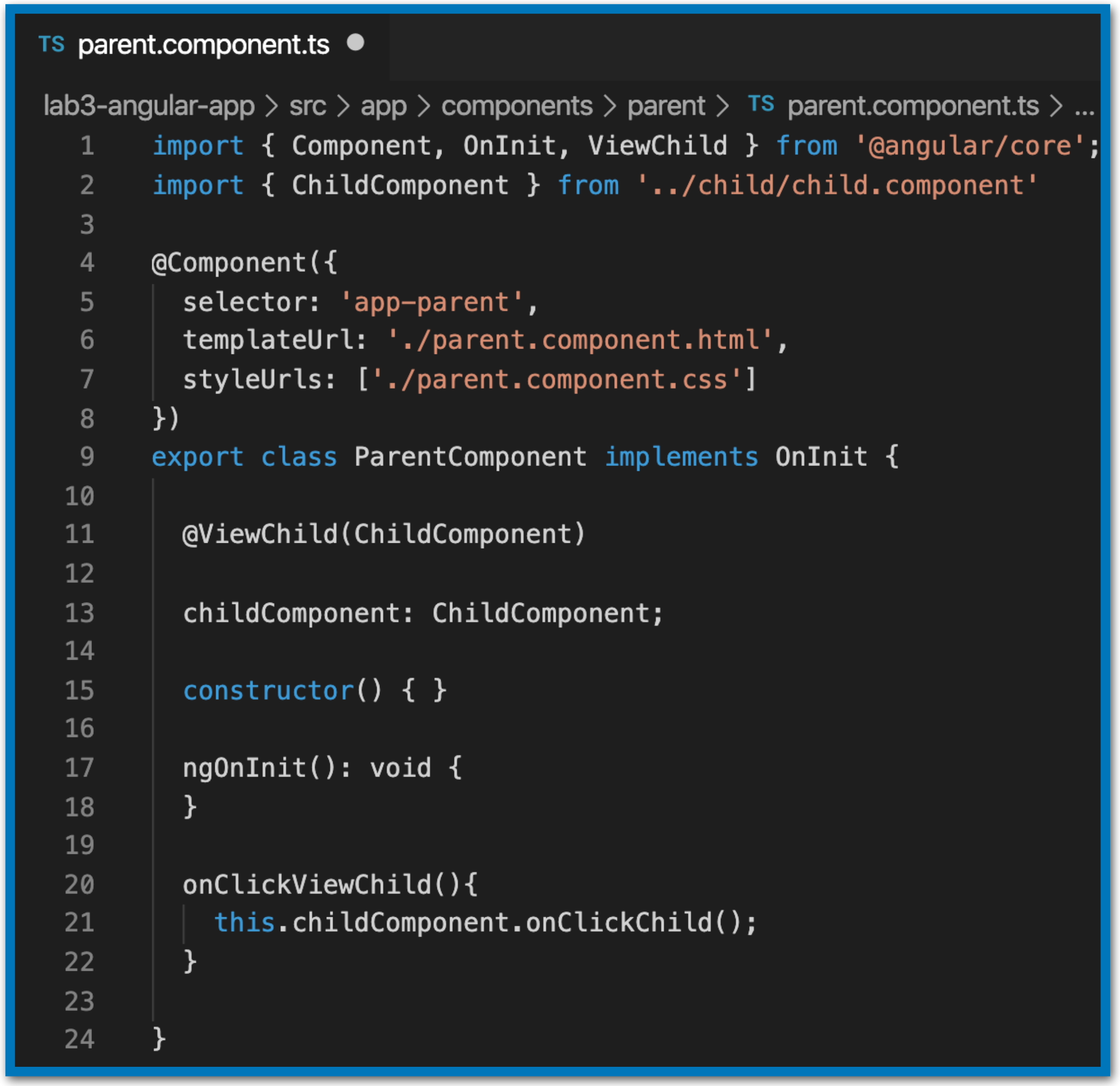
lab3-angular-app > src > app > components > child > TS child.component.ts > ...

```typescript
import { Component, OnInit, Output, EventEmitter } from '@angular/core';

@Component({
  selector: 'app-child',
  templateUrl: './child.component.html',
  styleUrls: ['./child.component.css']
})
export class ChildComponent implements OnInit {

  childMessage: number = 0;

  @Output() messageEvent = new EventEmitter<number>();

  constructor() { }

  ngOnInit(): void {
  }

  onClickChild(){
    this.messageEvent.emit(this.childMessage++)
  }

}
```

Child to Parent via @ViewChild

- ViewChild allows a one component to be injected into another, giving the parent access to its attributes and functions.
- One caveat, however, is that child won’t be available until after the view has been initialized.
- This means we need to implement the AfterViewInit lifecycle hook to receive the data from the child.

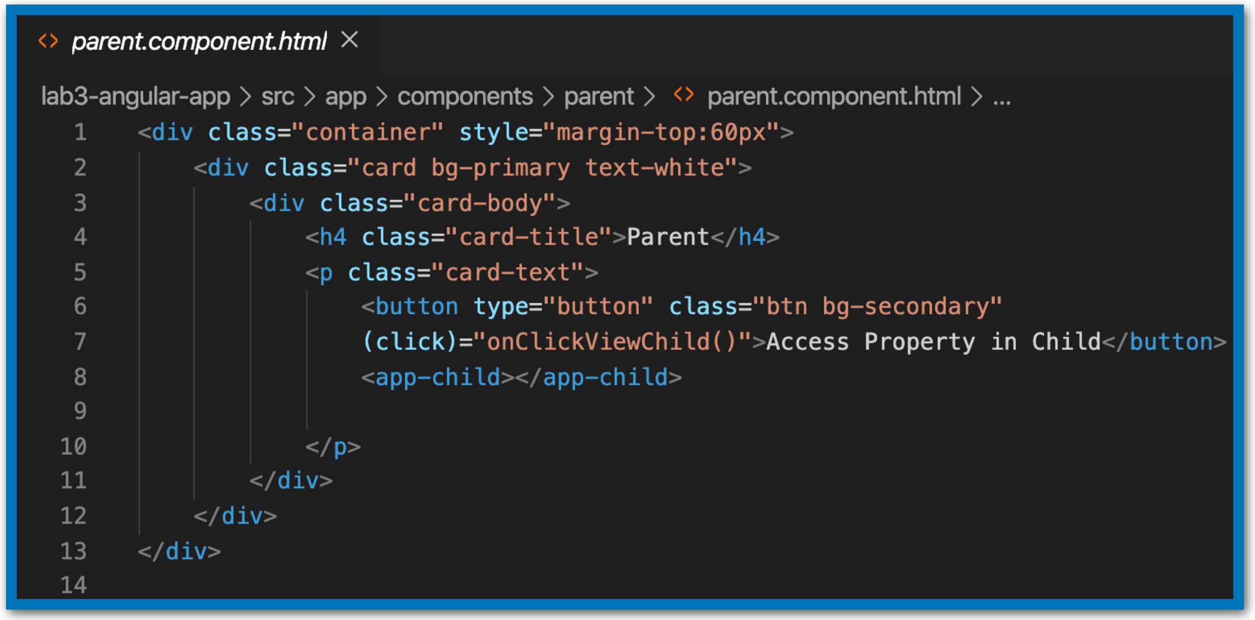
ViewChild : Example



TS parent.component.ts ●

lab3-angular-app > src > app > components > parent > TS parent.component.ts > ...

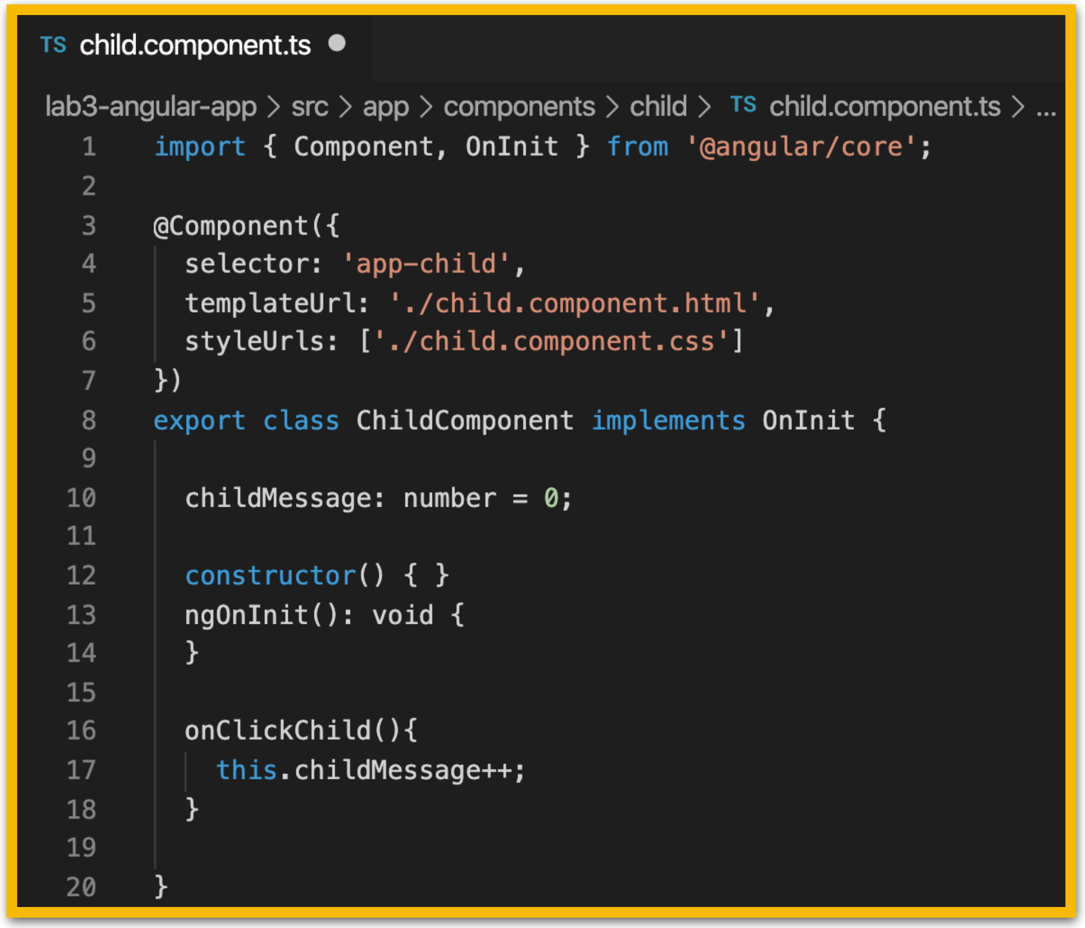
```
import { Component, OnInit, ViewChild } from '@angular/core';
import { ChildComponent } from '../child/child.component'

@Component({
  selector: 'app-parent',
  templateUrl: './parent.component.html',
  styleUrls: ['./parent.component.css']
})
export class ParentComponent implements OnInit {

  @ViewChild(ChildComponent)

  childComponent: ChildComponent;

  constructor() { }

  ngOnInit(): void {
  }

  onClickViewChild(){
    this.childComponent.onClickChild();
  }

}
```



<> parent.component.html ×

lab3-angular-app > src > app > components > parent > <> parent.component.html > ...

```
<div class="container" style="margin-top:60px">
    <div class="card bg-primary text-white">
        <div class="card-body">
            <h4 class="card-title">Parent</h4>
            <p class="card-text">
                <button type="button" class="btn bg-secondary"
                (click)="onClickViewChild()">Access Property in Child</button>
                <app-child></app-child>

            </p>
        </div>
    </div>
</div>

```



TS child.component.ts ●

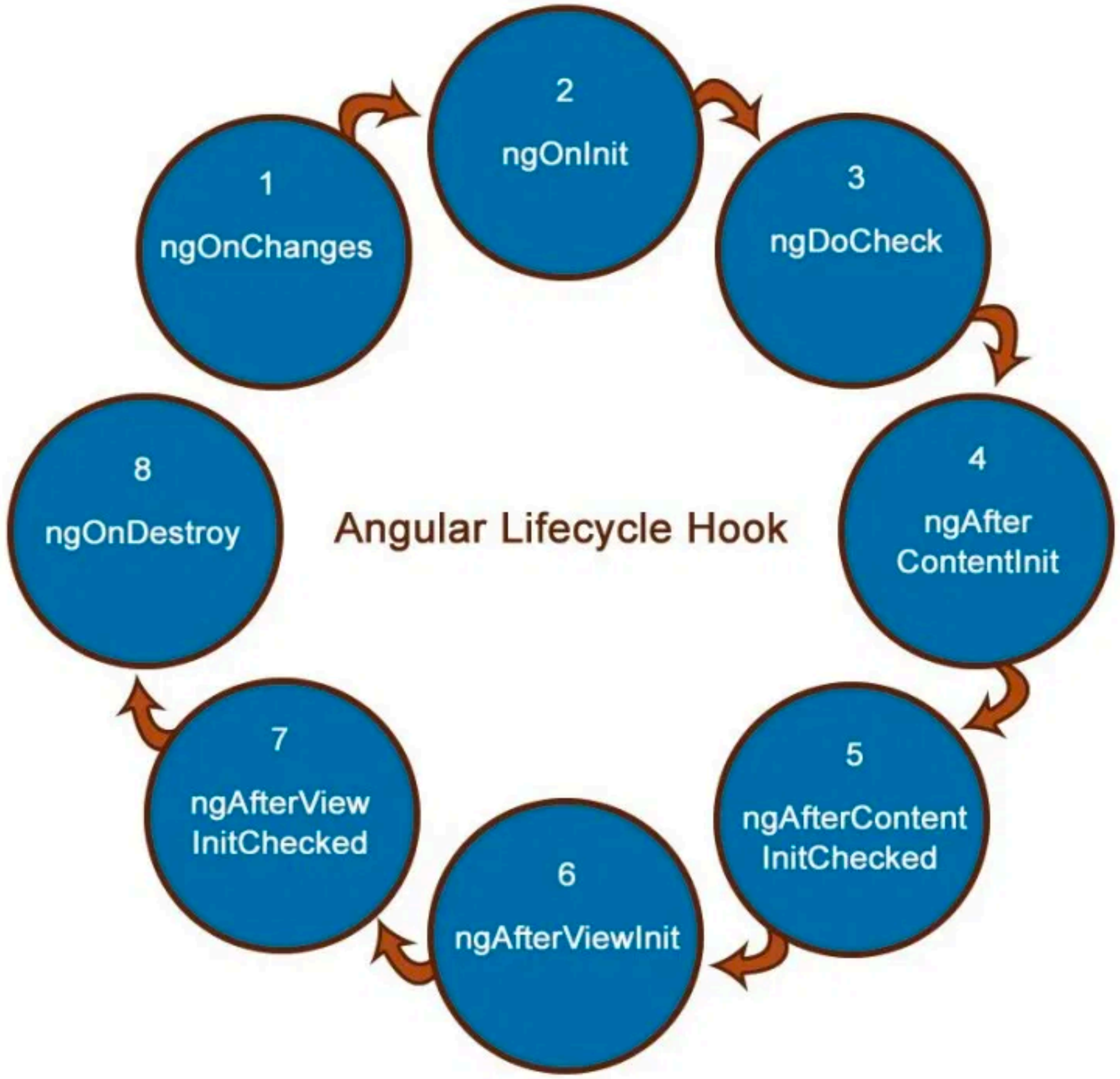
lab3-angular-app > src > app > components > child > TS child.component.ts > ...

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

@Component({
  selector: 'app-child',
  templateUrl: './child.component.html',
  styleUrls: ['./child.component.css']
})
export class ChildComponent implements OnInit {

  childMessage: number = 0;

  constructor() { }
  ngOnInit(): void {
  }

  onClickChild(){
    this.childMessage++;
  }

}
```

Lifecycle hooks

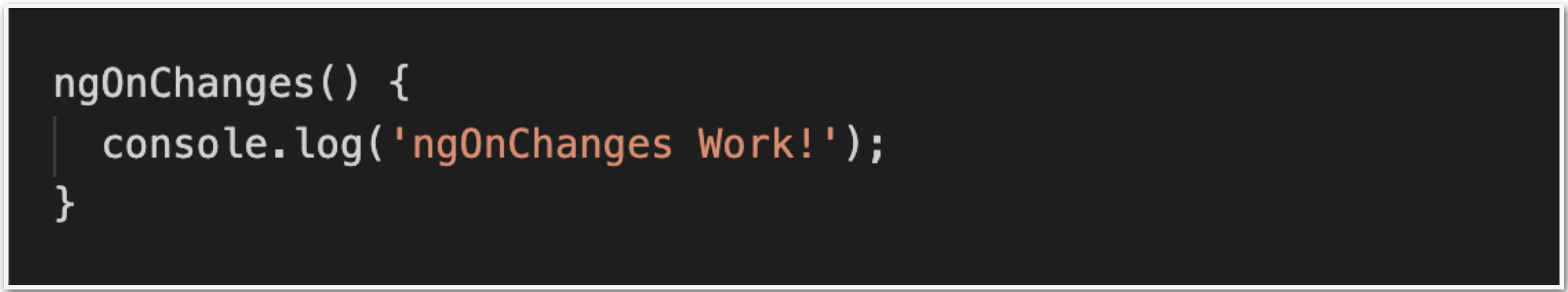
- A component has a lifecycle managed by Angular.
- Angular creates and renders components along with their children, checks when their data-bound properties change, and destroys them before removing them from the DOM.
- Angular offers lifecycle hooks that provide visibility into these key life moments and the ability to act when they occur.
- A directive has the same set of lifecycle hooks.

Lifecycle Sequence



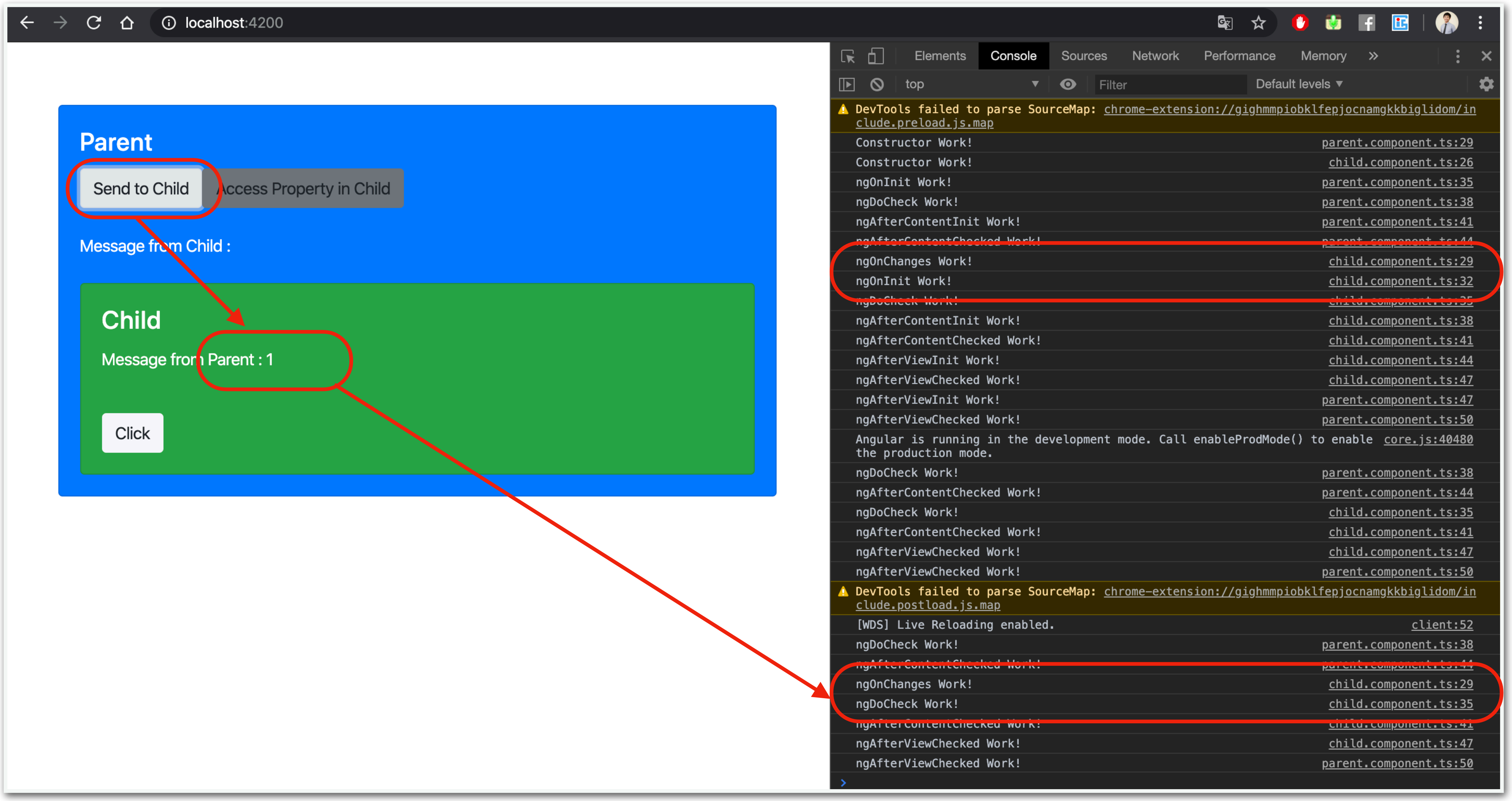
ngOnChanges( )

- Respond when Angular (re)sets data-bound input properties.
- The method receives a SimpleChanges object of current and previous property values.
- Called before ngOnInit( ) and whenever one or more data-bound input properties change.



```
ngOnChanges() {
  console.log('ngOnChanges Work!');
}
```

ngOnChanges( ) : Example

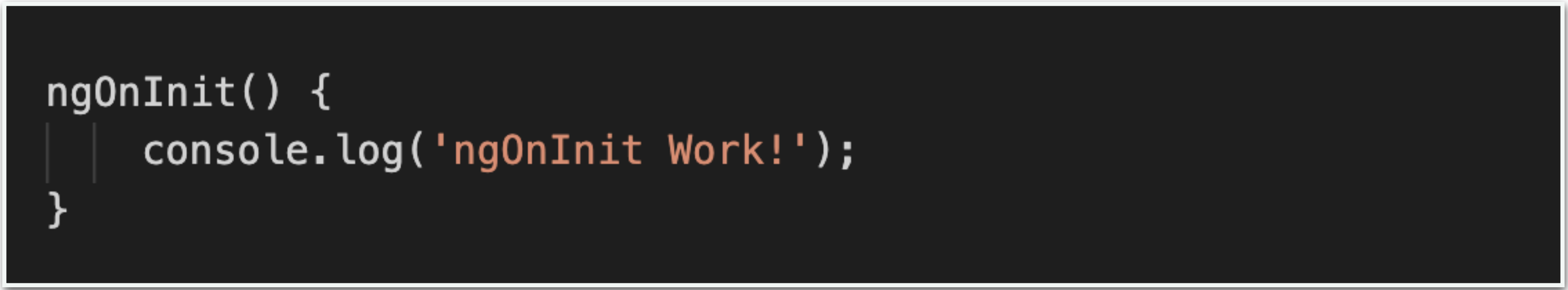


```
DevTools failed to parse SourceMap: chrome-extension://gighmmpiobklfepjocnamgkkbiglidom/include.preload.js.map
Constructor Work!                                              parent.component.ts:29
Constructor Work!                                               child.component.ts:26
ngOnInit Work!                                                 parent.component.ts:35
ngDoCheck Work!                                                parent.component.ts:38
ngAfterContentInit Work!                                       parent.component.ts:41
ngAfterContentChecked Work!                                    parent.component.ts:44
ngOnChanges Work!                                               child.component.ts:29
ngOnInit Work!                                                  child.component.ts:32
ngDoCheck Work!                                                 child.component.ts:35
ngAfterContentInit Work!                                        child.component.ts:38
ngAfterContentChecked Work!                                     child.component.ts:41
ngAfterViewInit Work!                                           child.component.ts:44
ngAfterViewChecked Work!                                        child.component.ts:47
ngAfterViewInit Work!                                          parent.component.ts:47
ngAfterViewChecked Work!                                       parent.component.ts:50
Angular is running in the development mode. Call enableProdMode() to enable core.js:40480
the production mode.
ngDoCheck Work!                                                parent.component.ts:38
ngAfterContentChecked Work!                                    parent.component.ts:44
ngDoCheck Work!                                                 child.component.ts:35
ngAfterContentChecked Work!                                     child.component.ts:41
ngAfterViewChecked Work!                                        child.component.ts:47
ngAfterViewChecked Work!                                       parent.component.ts:50
DevTools failed to parse SourceMap: chrome-extension://gighmmpiobklfepjocnamgkkbiglidom/include.postload.js.map
[WDS] Live Reloading enabled.                                             client:52
ngDoCheck Work!                                                parent.component.ts:38
ngAfterContentChecked Work!                                    parent.component.ts:44
ngOnChanges Work!                                               child.component.ts:29
ngDoCheck Work!                                                 child.component.ts:35
ngAfterContentChecked Work!                                     child.component.ts:41
ngAfterViewChecked Work!                                        child.component.ts:47
ngAfterViewChecked Work!                                       parent.component.ts:50
```

ngOnInit( )

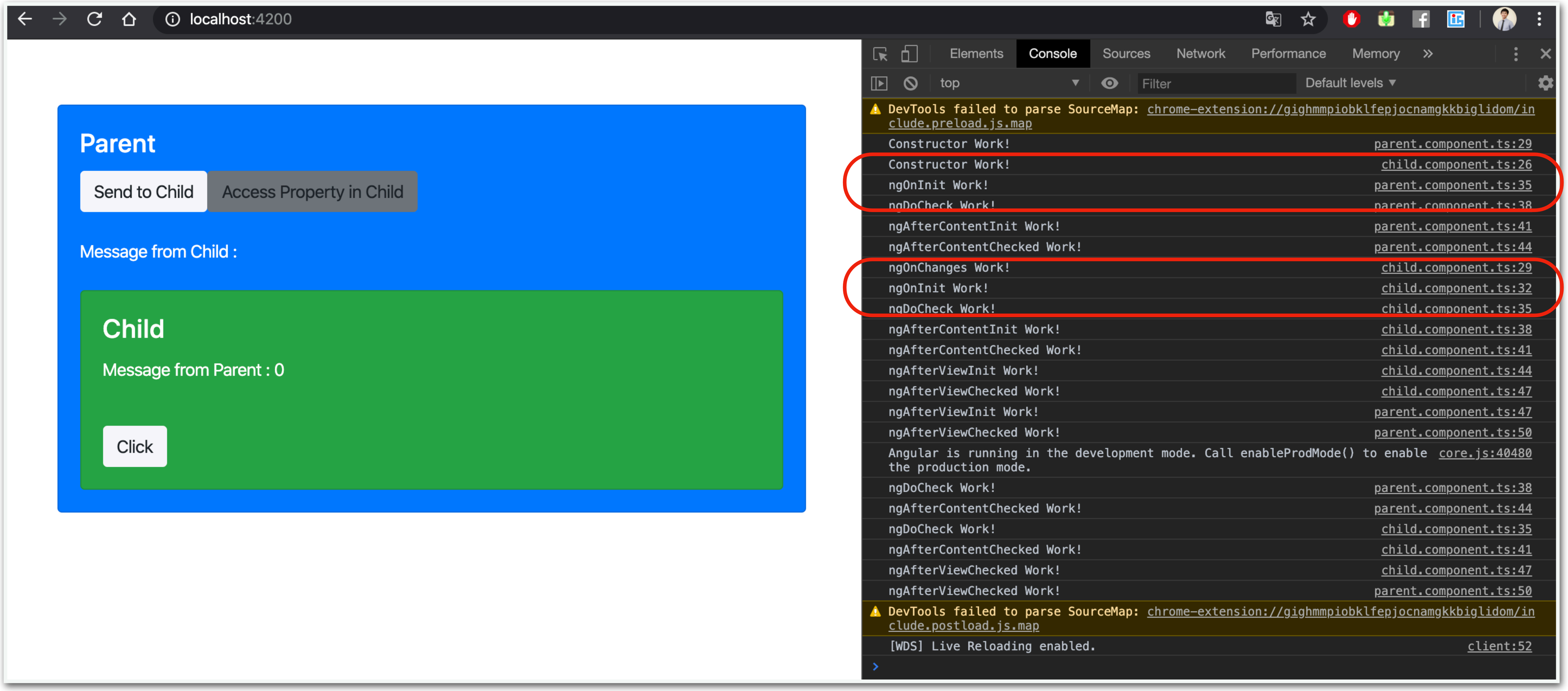
- Initialize the directive/component after Angular first displays the data-bound properties and sets the directive/component's input properties.

- Called once, after the first ngOnChanges().



```
ngOnInit() {
    console.log('ngOnInit Work!');
}
```

ngOnInit() : Example

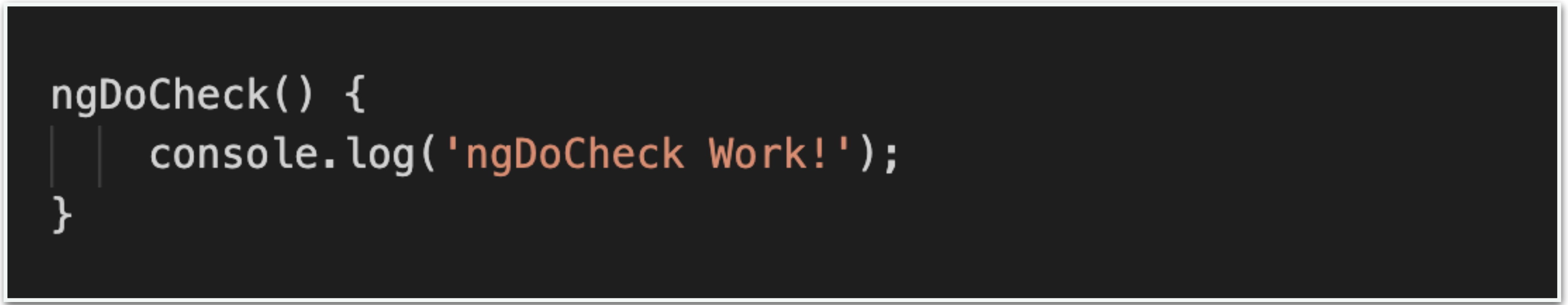


```
⚠ DevTools failed to parse SourceMap: chrome-extension://gighmmpiobklfepjocnamgkkbiglidom/include.preload.js.map
Constructor Work!                                   parent.component.ts:29
Constructor Work!                                    child.component.ts:26
ngOnInit Work!                                      parent.component.ts:35
ngDoCheck Work!                                     parent.component.ts:38
ngAfterContentInit Work!                            parent.component.ts:41
ngAfterContentChecked Work!                         parent.component.ts:44
ngOnChanges Work!                                    child.component.ts:29
ngOnInit Work!                                       child.component.ts:32
ngDoCheck Work!                                      child.component.ts:35
ngAfterContentInit Work!                             child.component.ts:38
ngAfterContentChecked Work!                          child.component.ts:41
ngAfterViewInit Work!                                child.component.ts:44
ngAfterViewChecked Work!                             child.component.ts:47
ngAfterViewInit Work!                               parent.component.ts:47
ngAfterViewChecked Work!                            parent.component.ts:50
Angular is running in the development mode. Call enableProdMode() to enable  core.js:40480
the production mode.
ngDoCheck Work!                                     parent.component.ts:38
ngAfterContentChecked Work!                         parent.component.ts:44
ngDoCheck Work!                                      child.component.ts:35
ngAfterContentChecked Work!                          child.component.ts:41
ngAfterViewChecked Work!                             child.component.ts:47
ngAfterViewChecked Work!                            parent.component.ts:50
⚠ DevTools failed to parse SourceMap: chrome-extension://gighmmpiobklfepjocnamgkkbiglidom/include.postload.js.map
[WDS] Live Reloading enabled.                                    client:52
```

ngDoCheck( )

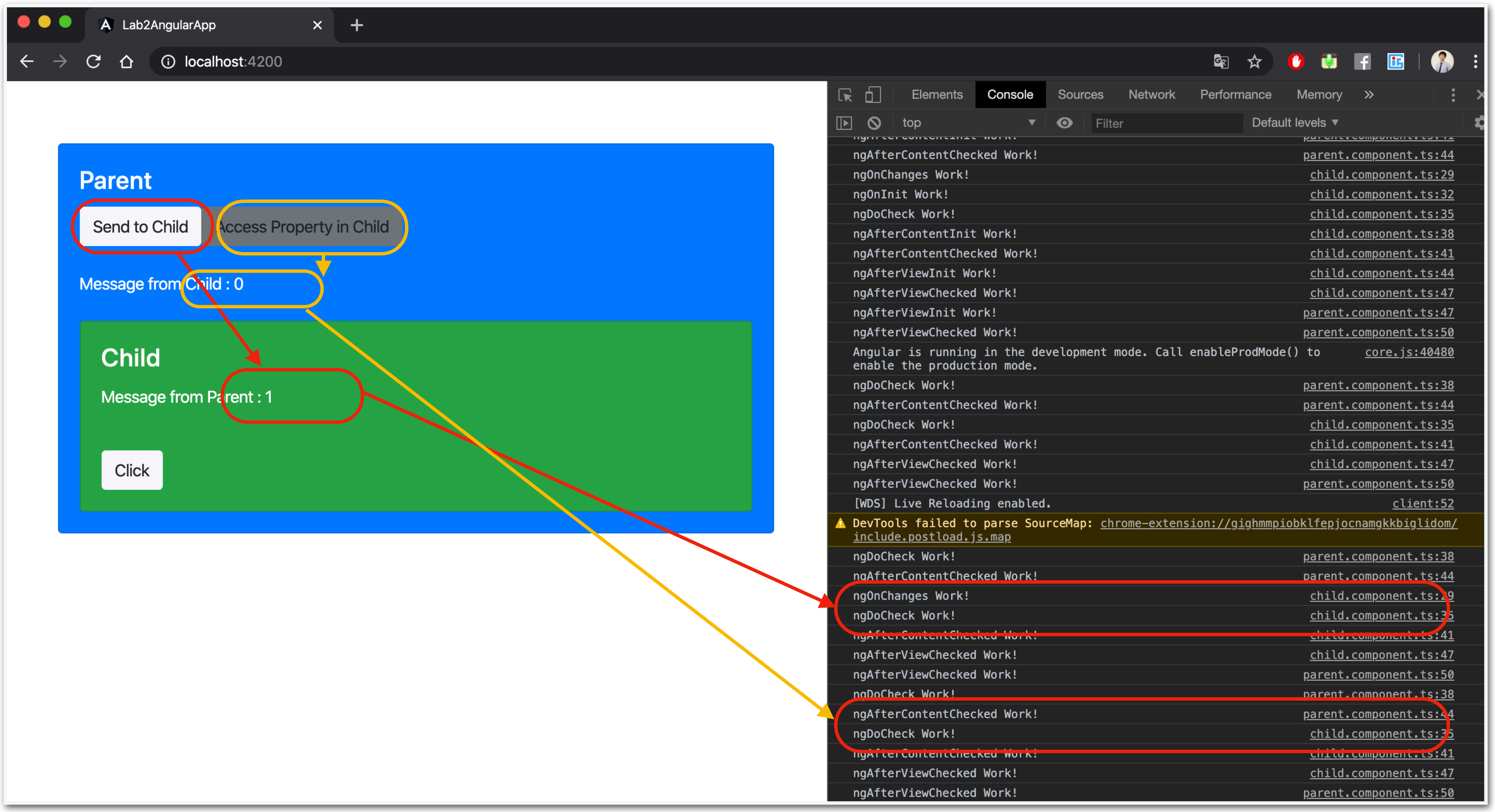
- Detect and act upon changes that Angular can't or won't detect on its own.

- Called during every change detection run, immediately after ngOnChanges() and ngOnInit().



```
ngDoCheck() {
    console.log('ngDoCheck Work!');
}
```

ngDoCheck( ) : Example

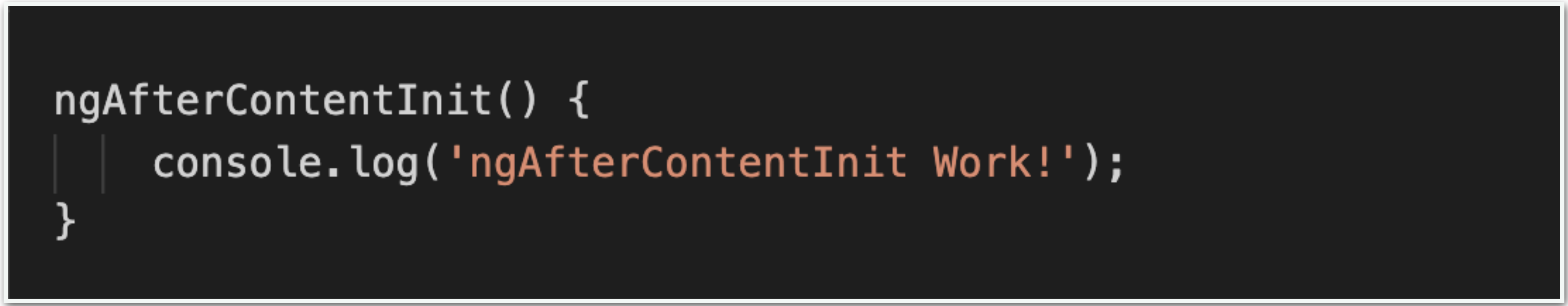


```
ngAfterContentChecked Work!                                   parent.component.ts:44
ngOnChanges Work!                                              child.component.ts:29
ngOnInit Work!                                                 child.component.ts:32
ngDoCheck Work!                                                child.component.ts:35
ngAfterContentInit Work!                                       child.component.ts:38
ngAfterContentChecked Work!                                    child.component.ts:41
ngAfterViewInit Work!                                          child.component.ts:44
ngAfterViewChecked Work!                                       child.component.ts:47
ngAfterViewInit Work!                                         parent.component.ts:47
ngAfterViewChecked Work!                                      parent.component.ts:50
Angular is running in the development mode. Call enableProdMode() to    core.js:40480
enable the production mode.
ngDoCheck Work!                                               parent.component.ts:38
ngAfterContentChecked Work!                                   parent.component.ts:44
ngDoCheck Work!                                                child.component.ts:35
ngAfterContentChecked Work!                                    child.component.ts:41
ngAfterViewChecked Work!                                       child.component.ts:47
ngAfterViewChecked Work!                                      parent.component.ts:50
[WDS] Live Reloading enabled.                                            client:52
⚠ DevTools failed to parse SourceMap: chrome-extension://gighmmpiobklfepjocnamgkkbiglidom/
include.postload.js.map
ngDoCheck Work!                                               parent.component.ts:38
ngAfterContentChecked Work!                                   parent.component.ts:44
ngOnChanges Work!                                              child.component.ts:29
ngDoCheck Work!                                                child.component.ts:35
ngAfterContentChecked Work!                                    child.component.ts:41
ngAfterViewChecked Work!                                       child.component.ts:47
ngAfterViewChecked Work!                                      parent.component.ts:50
ngDoCheck Work!                                               parent.component.ts:38
ngAfterContentChecked Work!                                   parent.component.ts:44
ngDoCheck Work!                                                child.component.ts:35
ngAfterContentChecked Work!                                    child.component.ts:41
ngAfterViewChecked Work!                                       child.component.ts:47
ngAfterViewChecked Work!                                      parent.component.ts:50
```

ngAfterContentInit( )

- Respond after Angular projects external content into the component's view / the view that a directive is in.

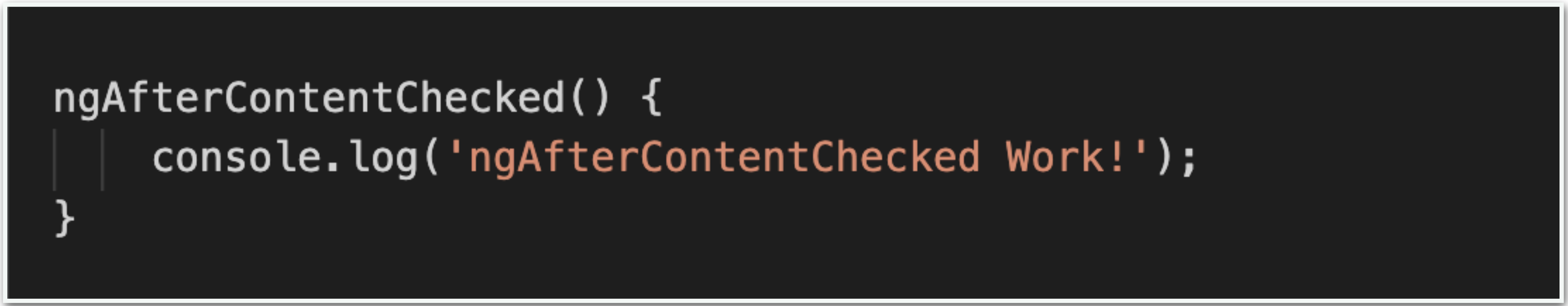
- Called once after the first ngDoCheck().



```
ngAfterContentInit() {
    console.log('ngAfterContentInit Work!');
}
```

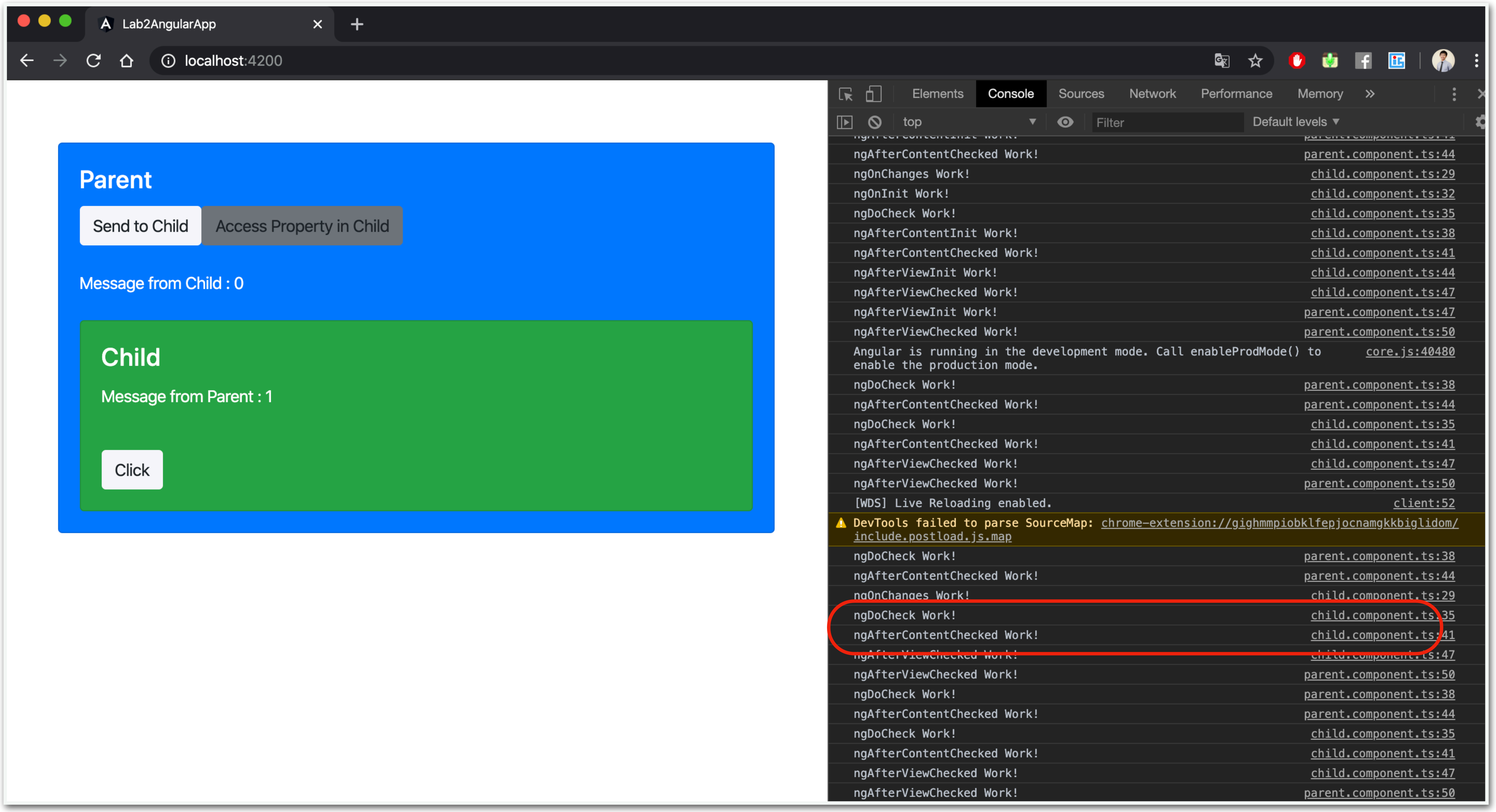
ngAfterContentChecked()

- Respond after Angular checks the content projected into the directive/component.
- Called after the ngAfterContentInit() and every subsequent ngDoCheck().



```
ngAfterContentChecked() {
    console.log('ngAfterContentChecked Work!');
}
```

ngAfterContentChecked() : Example

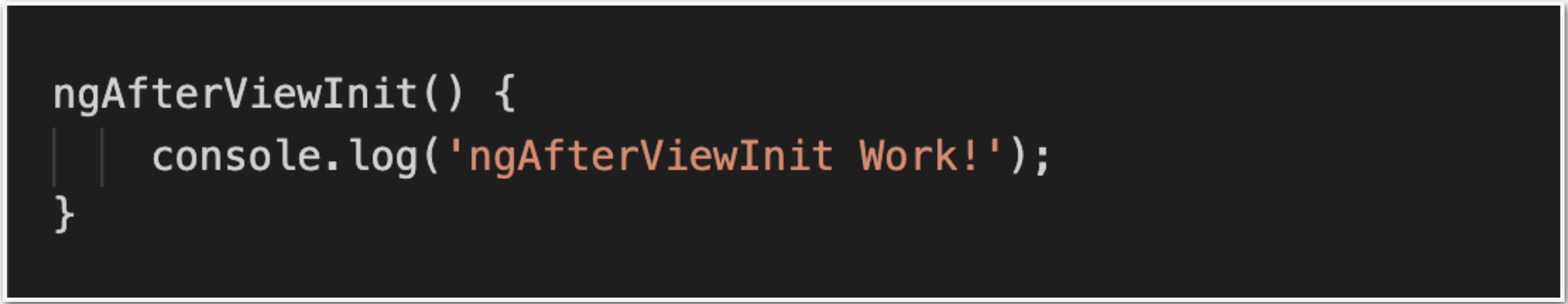


```
ngAfterContentChecked Work!                                   parent.component.ts:44
ngOnChanges Work!                                              child.component.ts:29
ngOnInit Work!                                                 child.component.ts:32
ngDoCheck Work!                                                child.component.ts:35
ngAfterContentInit Work!                                       child.component.ts:38
ngAfterContentChecked Work!                                    child.component.ts:41
ngAfterViewInit Work!                                          child.component.ts:44
ngAfterViewChecked Work!                                       child.component.ts:47
ngAfterViewInit Work!                                         parent.component.ts:47
ngAfterViewChecked Work!                                      parent.component.ts:50
Angular is running in the development mode. Call enableProdMode() to   core.js:40480
enable the production mode.
ngDoCheck Work!                                               parent.component.ts:38
ngAfterContentChecked Work!                                   parent.component.ts:44
ngDoCheck Work!                                                child.component.ts:35
ngAfterContentChecked Work!                                    child.component.ts:41
ngAfterViewChecked Work!                                       child.component.ts:47
ngAfterViewChecked Work!                                      parent.component.ts:50
[WDS] Live Reloading enabled.                                            client:52
⚠ DevTools failed to parse SourceMap: chrome-extension://gighmmpiobklfepjocnamgkkbiglidom/
include.postload.js.map
ngDoCheck Work!                                               parent.component.ts:38
ngAfterContentChecked Work!                                   parent.component.ts:44
ngOnChanges Work!                                              child.component.ts:29
ngDoCheck Work!                                                child.component.ts:35
ngAfterContentChecked Work!                                    child.component.ts:41
ngAfterViewChecked Work!                                       child.component.ts:47
ngAfterViewChecked Work!                                      parent.component.ts:50
ngDoCheck Work!                                               parent.component.ts:38
ngAfterContentChecked Work!                                   parent.component.ts:44
ngDoCheck Work!                                                child.component.ts:35
ngAfterContentChecked Work!                                    child.component.ts:41
ngAfterViewChecked Work!                                       child.component.ts:47
ngAfterViewChecked Work!                                      parent.component.ts:50
```

ngAfterViewInit( )

- Respond after Angular initializes the component's views and child views / the view that a directive is in.

- Called once after the first ngAfterContentChecked().

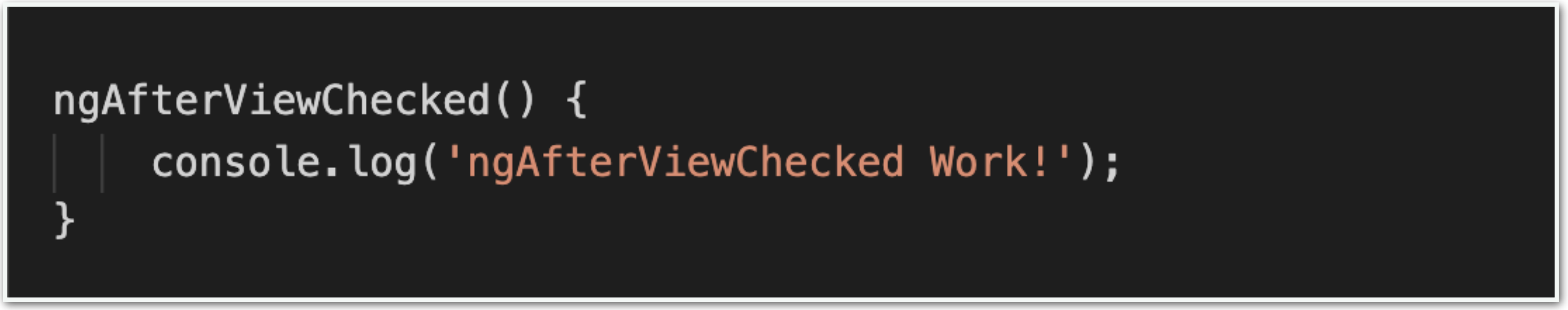


```
ngAfterViewInit() {
    console.log('ngAfterViewInit Work!');
}
```

ngAfterViewChecked( )

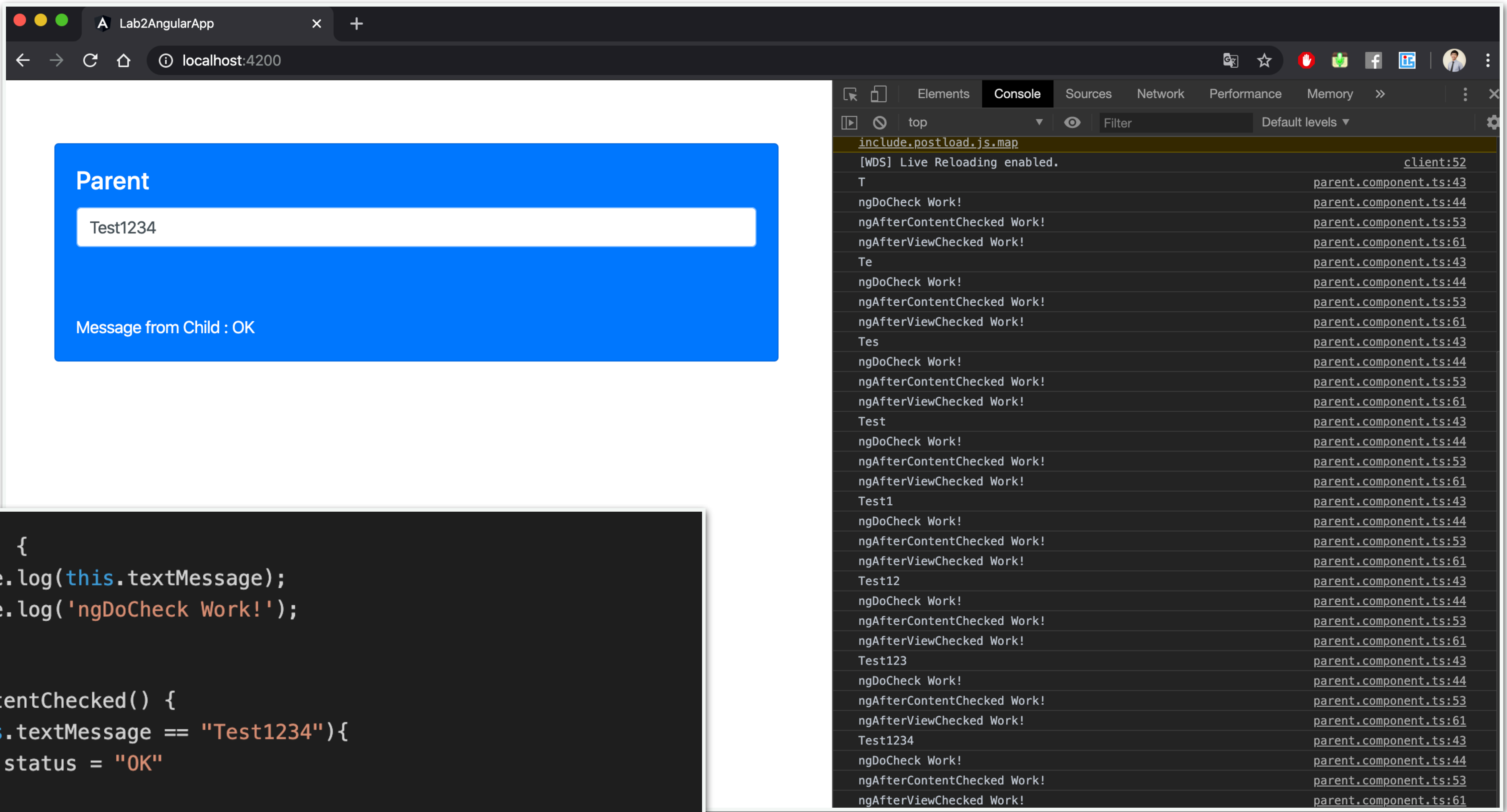
- Respond after Angular checks the component's views and child views / the view that a directive is in.

- Called after the ngAfterViewInit() and every subsequent ngAfterContentChecked().



```
ngAfterViewChecked() {
    console.log('ngAfterViewChecked Work!');
}
```

ngAfterViewChecked( ) : Example

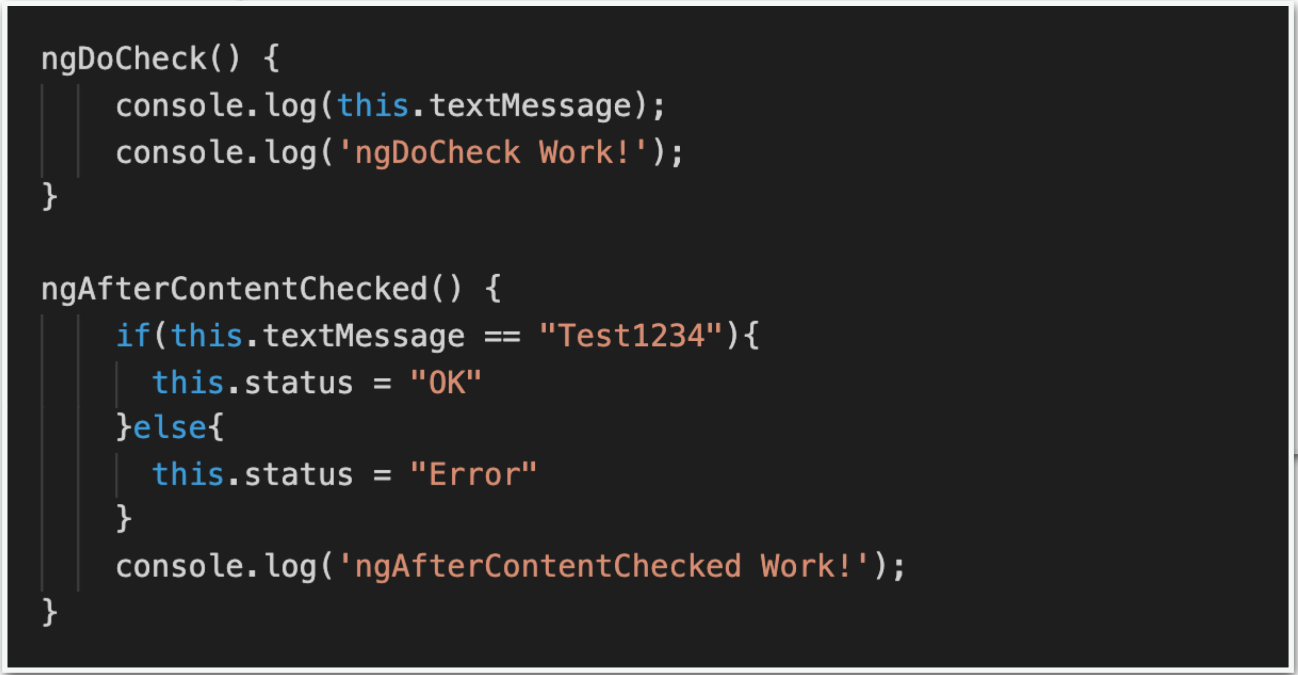


Parent

Test1234

Message from Child : OK

```
include.postload.js.map
[WDS] Live Reloading enabled.                              client:52
T                                                parent.component.ts:43
ngDoCheck Work!                                  parent.component.ts:44
ngAfterContentChecked Work!                      parent.component.ts:53
ngAfterViewChecked Work!                         parent.component.ts:61
Te                                               parent.component.ts:43
ngDoCheck Work!                                  parent.component.ts:44
ngAfterContentChecked Work!                      parent.component.ts:53
ngAfterViewChecked Work!                         parent.component.ts:61
Tes                                              parent.component.ts:43
ngDoCheck Work!                                  parent.component.ts:44
ngAfterContentChecked Work!                      parent.component.ts:53
ngAfterViewChecked Work!                         parent.component.ts:61
Test                                             parent.component.ts:43
ngDoCheck Work!                                  parent.component.ts:44
ngAfterContentChecked Work!                      parent.component.ts:53
ngAfterViewChecked Work!                         parent.component.ts:61
Test1                                            parent.component.ts:43
ngDoCheck Work!                                  parent.component.ts:44
ngAfterContentChecked Work!                      parent.component.ts:53
ngAfterViewChecked Work!                         parent.component.ts:61
Test12                                           parent.component.ts:43
ngDoCheck Work!                                  parent.component.ts:44
ngAfterContentChecked Work!                      parent.component.ts:53
ngAfterViewChecked Work!                         parent.component.ts:61
Test123                                          parent.component.ts:43
ngDoCheck Work!                                  parent.component.ts:44
ngAfterContentChecked Work!                      parent.component.ts:53
ngAfterViewChecked Work!                         parent.component.ts:61
Test1234                                         parent.component.ts:43
ngDoCheck Work!                                  parent.component.ts:44
ngAfterContentChecked Work!                      parent.component.ts:53
ngAfterViewChecked Work!                         parent.component.ts:61
```

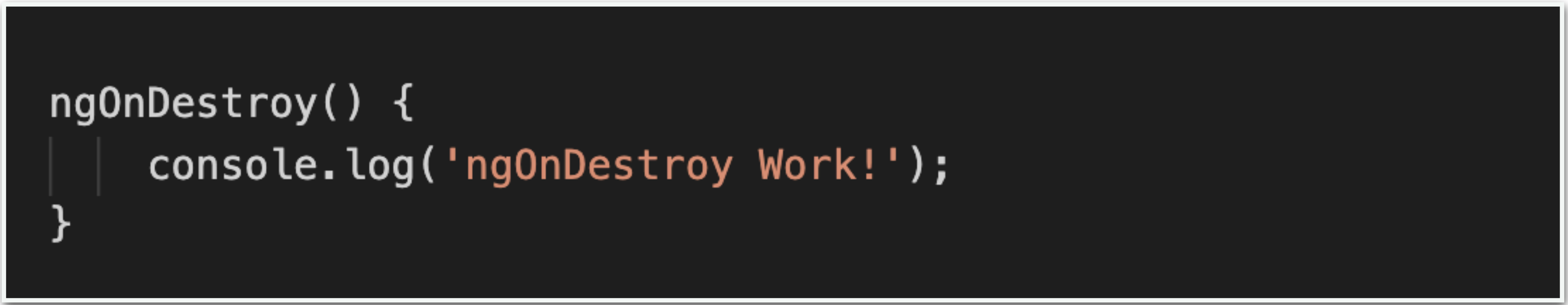


```
ngDoCheck() {
    console.log(this.textMessage);
    console.log('ngDoCheck Work!');
}

ngAfterContentChecked() {
    if(this.textMessage == "Test1234"){
      this.status = "OK"
    }else{
      this.status = "Error"
    }
    console.log('ngAfterContentChecked Work!');
}
```

ngDestroy()

- Cleanup just before Angular destroys the directive/ component. Unsubscribe Observables and detach event handlers to avoid memory leaks.

- Called just before Angular destroys the directive/ component.Lifecycle sequence



```
ngOnDestroy() {
    console.log('ngOnDestroy Work!');
}
```