ANGULAR
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INSIDE KNOWLEDGE

Angular Components

Data-binding & Lifecycle Hooks

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Outline

- Take a closer look on data binding
  - Property binding with @Input()
  - Event binding with @Output()
  - Two-way bindungs
  - Use component bindings
- Component Lifecycle Hooks
- Smart vs dumb components

Data binding

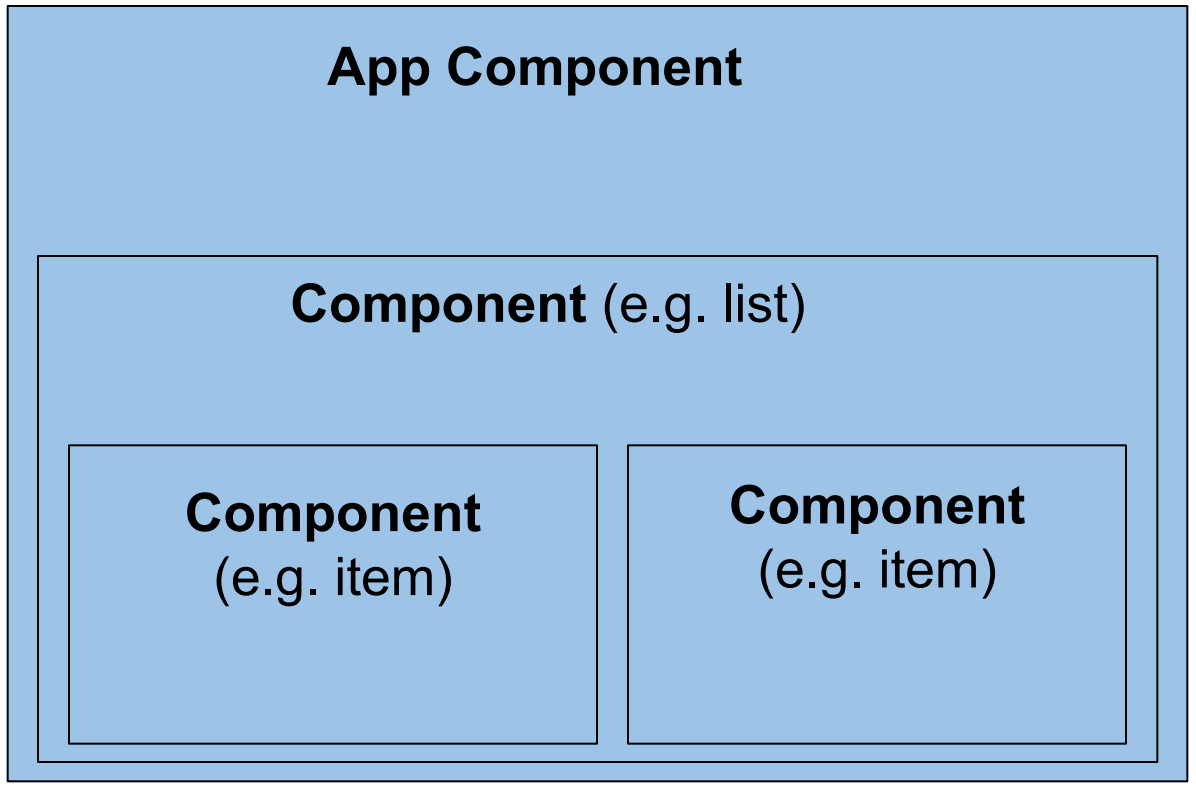
Performance

Components

Predictability

Architecture goals in Angular

Component tree in Angular 2+



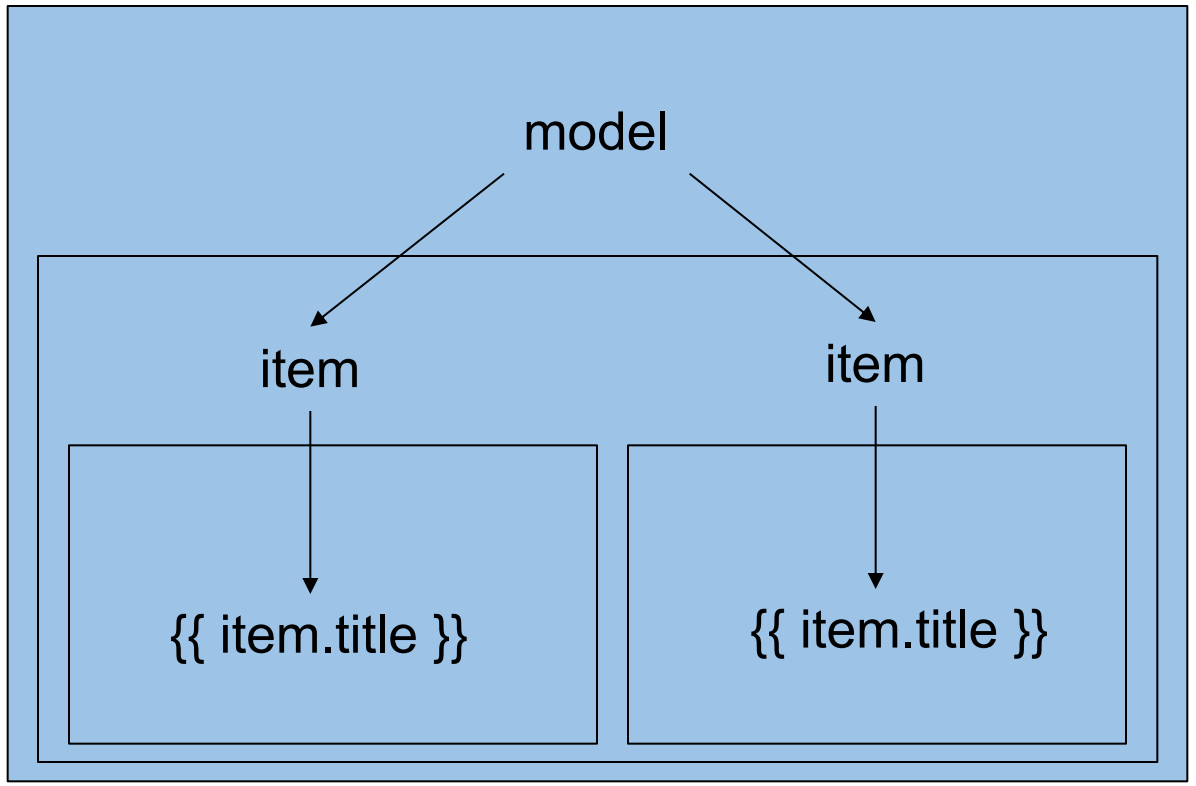
Rules for property binding

- Data can only be passed from top to bottom (top/down)
  - Parent can pass data to children
  - Children cannot pass data to parent (we need events for that)

- Dependency graph is a tree

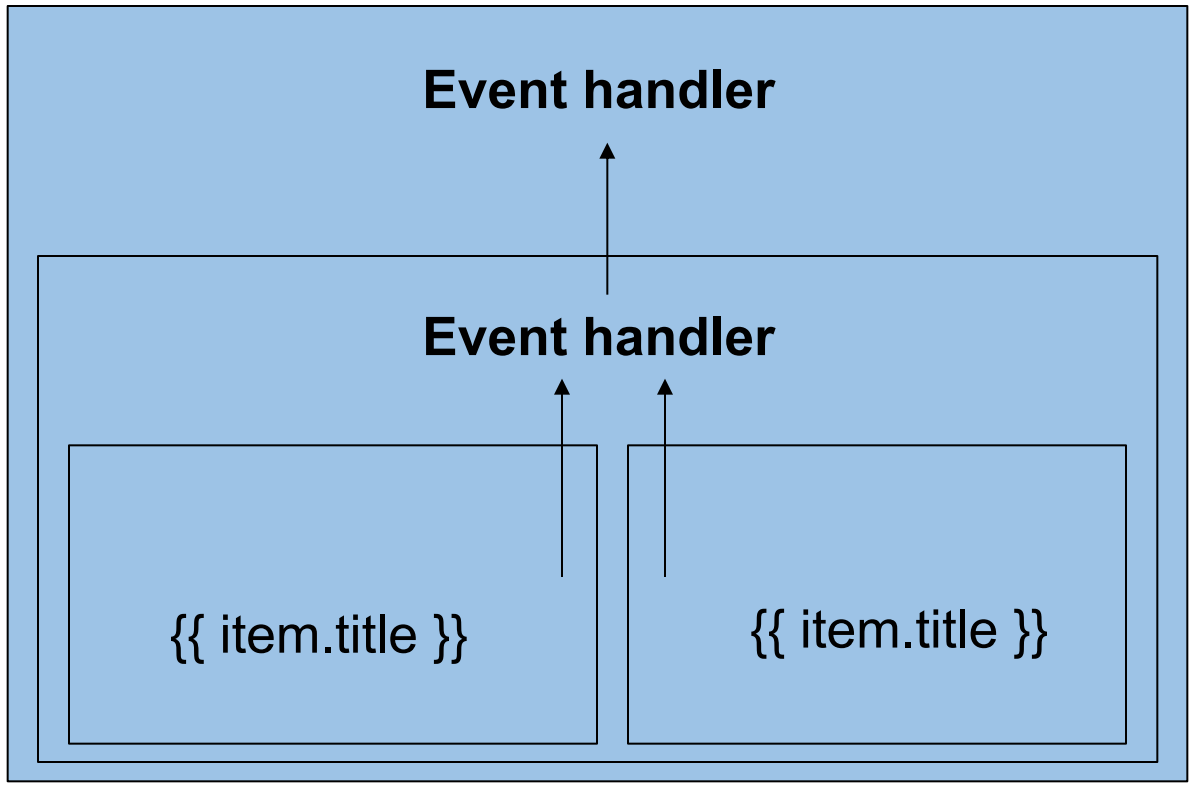
- Angular just takes a digest to compare tree with the browser DOM

Property binding



[http://victorsavkin.com/post/110170125256/change-detection-in-angular-2]

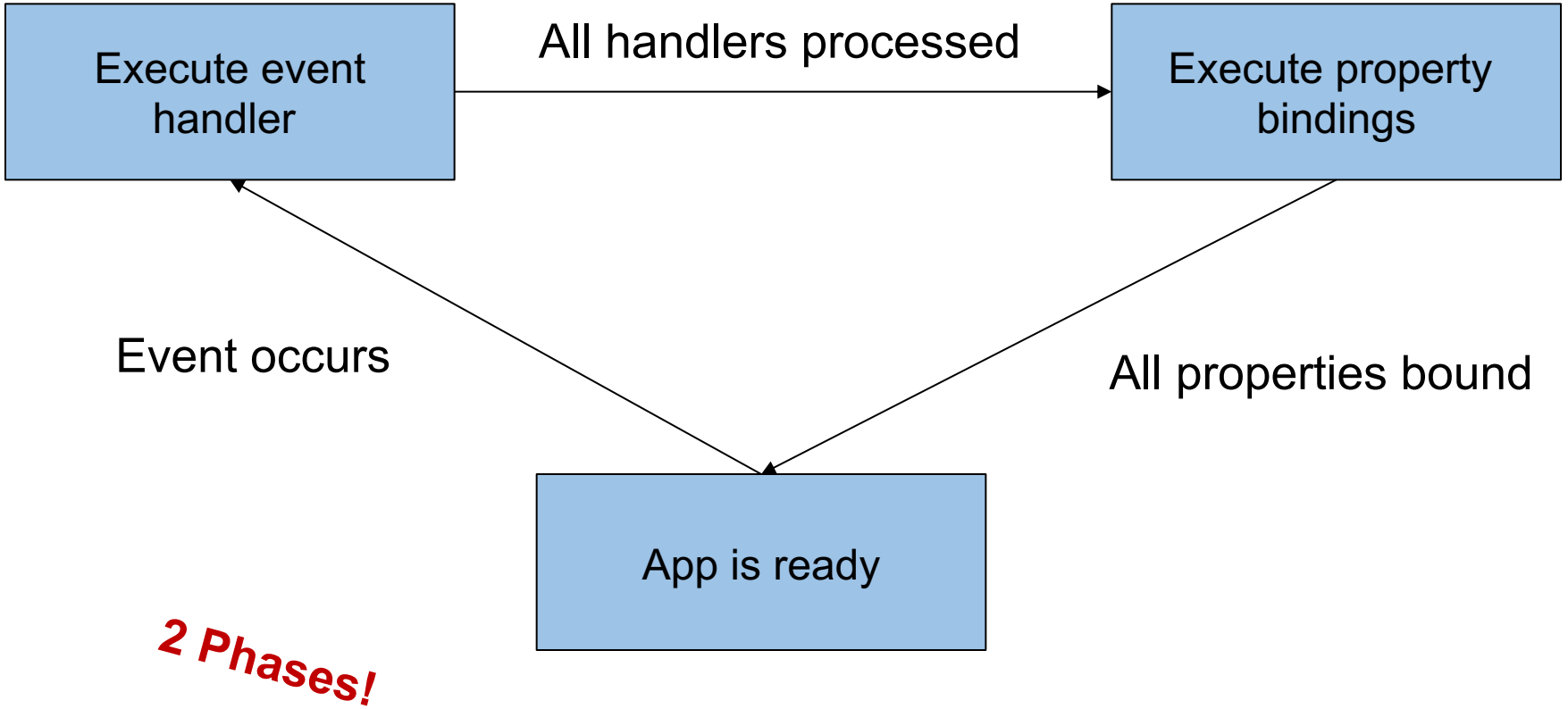
Event bindings (one way, bottom/up)



Event bindings (one way, bottom/up)

- No digest necessary to send events
- But: Events can trigger data change → Property Binding

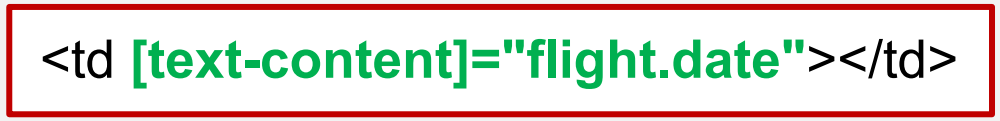
Property and event bindings



View

```
<button [disabled]="!from || !to" (click)="search()">
   Search
</button>

<table>
   <tr *ngFor="let flight of flights">
      <td>{{flight.id}}</td>
      <td>{{flight.date}}</td>
      <td>{{flight.from}}</td>
      <td>{{flight.to}}</td>
      <td><a href="#" (click)="selectFlight(flight)">Select</a></td>
   </tr>
</table>
```



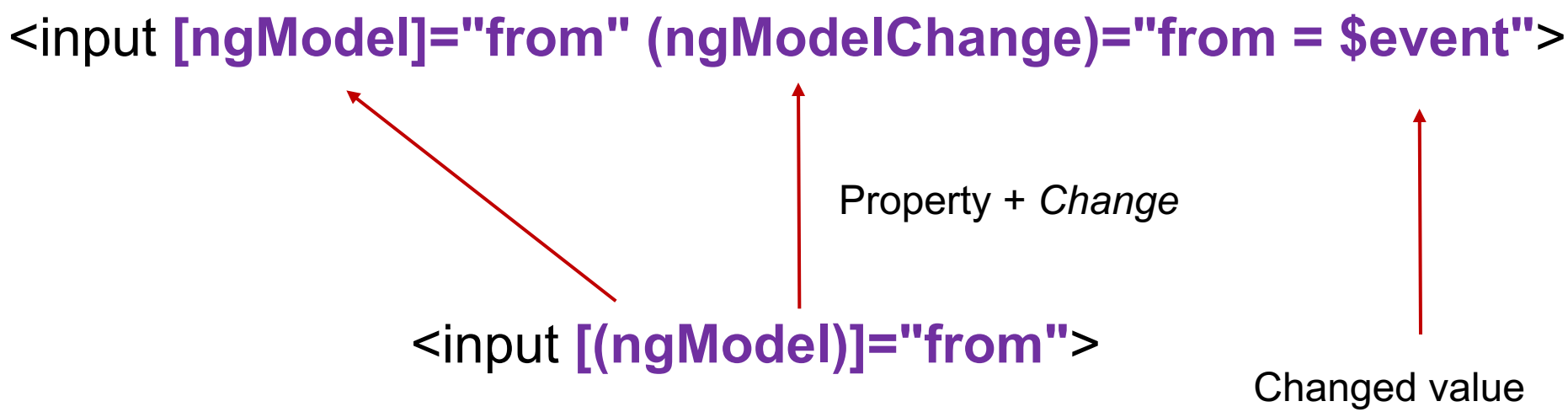
Recap

- Property binding: one way; top/down
- Event binding: one way; bottom/up
- Two way bindings?
- Two way = property binding + event binding

Property + event binding

```
<input [ngModel]="from" (ngModelChange)="update($event)">
```

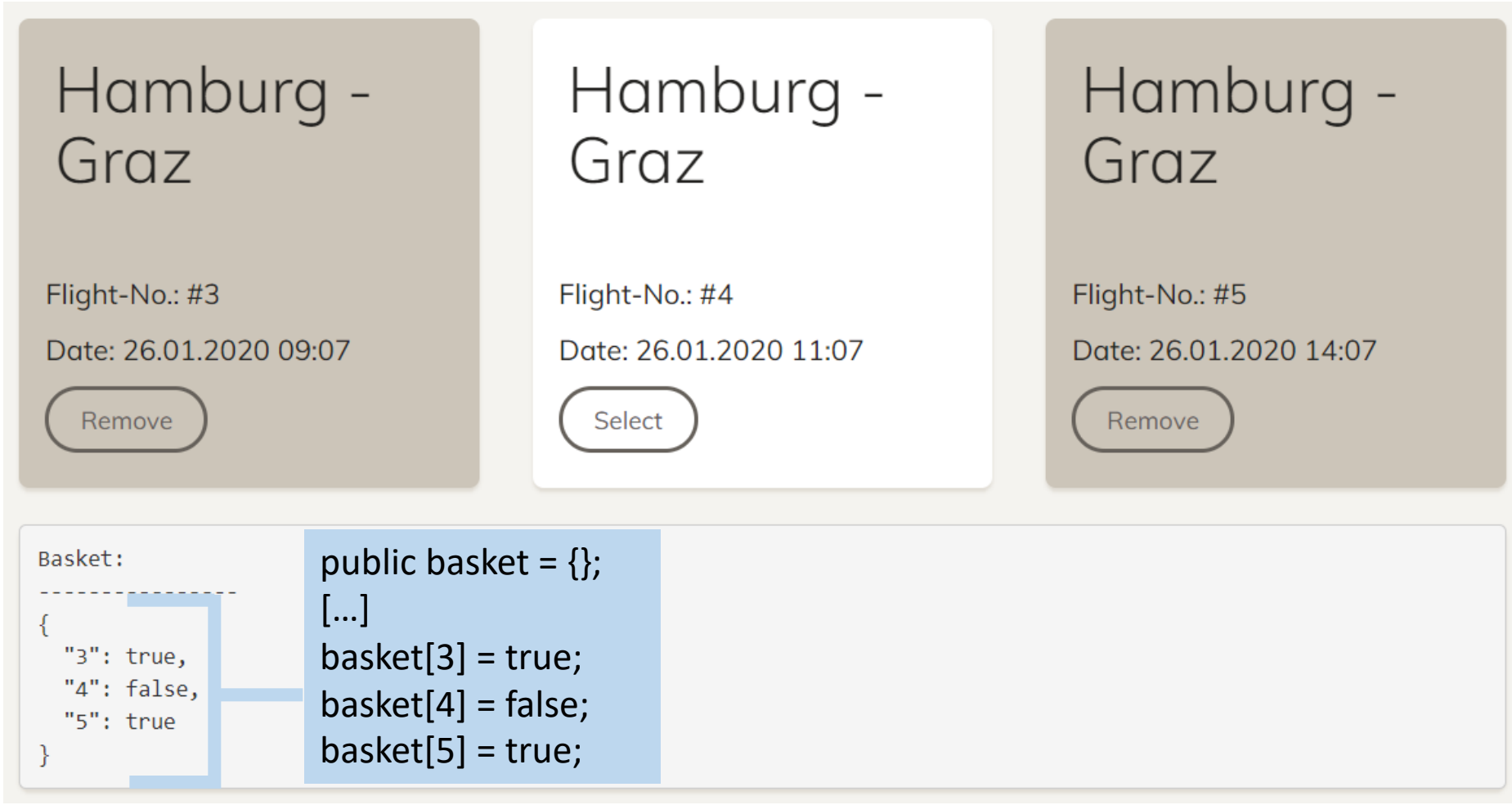
Property + event binding



Components data bindung

Example: flight-card

Example: flight-card



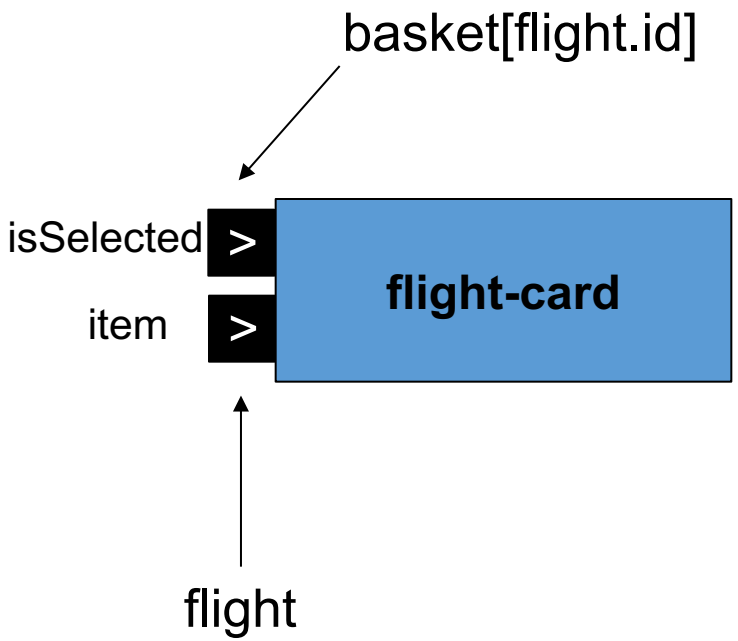
Example: flight-card in flight-search.html

```
<div *ngFor="let f of flights">

   <flight-card [item]="f" [isSelected]="basket[f.id]">
   </flight-card>

</div>
```

flight-card



Example: flight-card

```
@Component({
       selector: 'flight-card',
       templateUrl: './flight-card.component.html'
})
export class FlightCard {

       […]

}
```

Example: flight-card

```
export class FlightCard {

	@Input() item: Flight;
	@Input() isSelected: boolean;

	select(): void {
		this.isSelected = true;
	}

	deselect(): void {
		this.isSelected = false;
	}
}
```

Template

```
<div style="padding:20px;"
     [class.is-selected]="isSelected">

    <h2>{{item.from}} - {{item.to}}</h2>
    <p>Flightnr. #{{item.id}}</p>
    <p>Date: {{item.date | date:'dd.MM.yyyy'}}</p>

    <p>
        <button *ngIf="!isSelected" (click)="select()">Add</button>
        <button *ngIf="isSelected" (click)="deselect()">Remove</button>
    </p>
</div>
```

Register component

```
@NgModule({
    imports: [
        CommonModule, FormsModule, SharedModule
    ],
    declarations: [
        FlightSearchComponent, FlightCardComponent
    ],
    exports: [
        FlightSearchComponent
    ]
})
export class FlightBookingModule{}
```

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Event bindings

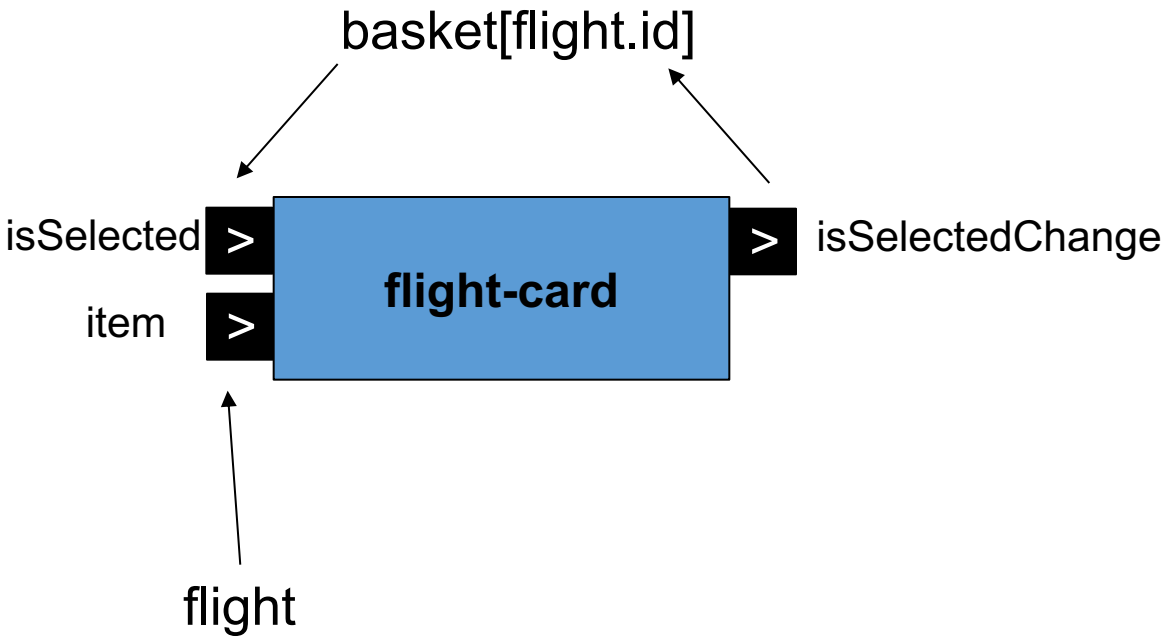
Example: flight-card event *isSelectedChange*

```
<div *ngFor="let f of flights">

   <flight-card [item]="f"
                [isSelected]="basket[f.id]"
                (isSelectedChange)="basket[f.id] = $event">
   </flight-card>

</div>
```

flight-card



Example: flight-ca

```
export class FlightCard {

        @Input() item: Flight;
        @Input() isSelected: boo
        @Output() isSelectedChan

        select() {
                this.isSelected = true;
                this.isSelectedChange.emit(this.isSelected);
        }

        deselect() {
                this.isSelected = false;
                this.isSelectedChange.emit(this.isSelected);
        }
}
```

```
<div *ngFor="let f of flights">
   <flight-card [item]="f"
                [isSelected]="basket[f.id]"
          (isSelectedChange)="basket[f.id] = $event">
   </flight-card>
</div>
```

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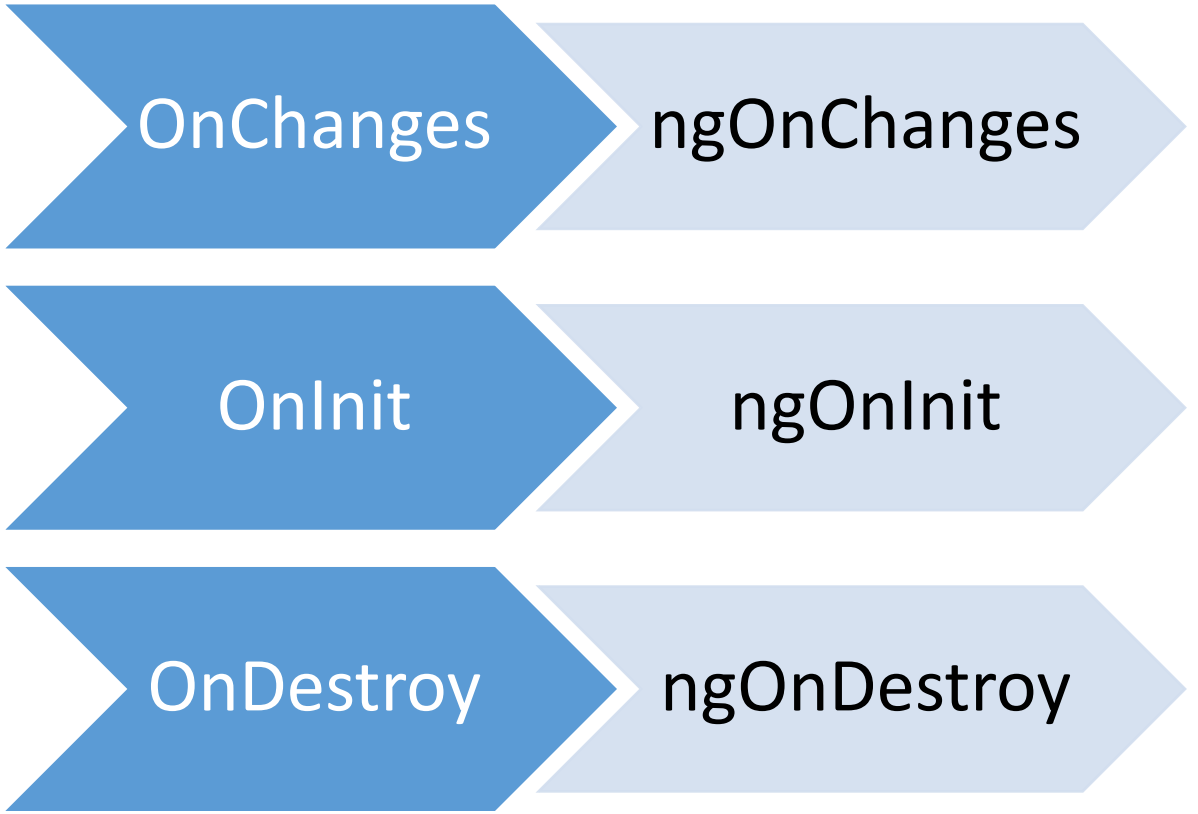
Lifecycle Hooks

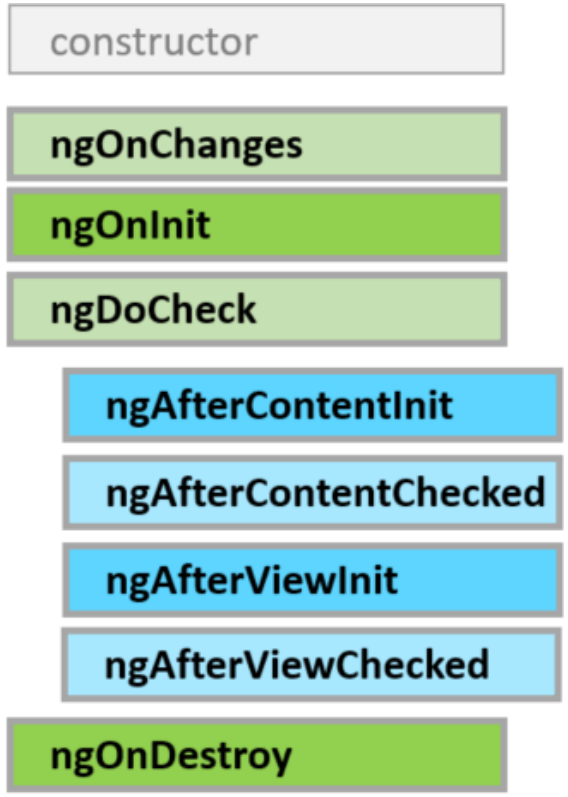
What are Lifecycle Hooks?

- Built in methods in our components & directives
- Will be called at a certain time by Angular

Lifecycle Hooks (selection)



Lifecycle Hooks (all, in order)



Usage

```
@Component({
    selector: 'my-component',
    […]
})
export class Component implements OnChanges, OnInit {

    @Input() someData;

    ngOnChanges(changes: SimpleChanges): void {
        […]
    }

    ngOnInit(): void {
        […]
    }
}
```

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Thought experiment

- What if <flight-card> would handle use case logic?
  - e.g. communicate with API
- Number of requests ==> Performance?
- Traceability?
- Reusability?

Smart vs. Dumb Components

Smart

- Use Case controller
- Container

Dumb

- Independent of Use Case
- Reusable
- Leave