**@input, @output & Eventemitter**

**@input**

Input decorator marks the property as the input property. I.e it can receive data from the parent component. The parent component uses the [property binding](https://www.tektutorialshub.com/angular/property-binding-in-angular/) to bind it to a component property. Whenever the value in the parent component changes angular updates the value in the child component.

**Example**

Consider the following component class

|  |  |
| --- | --- |
| 1  2  3  4  5  6  7  8  9  10 | @Component({    selector: 'app-customer-detail',    templateUrl: './customer-detail.component.html',    styleUrls: ['./customer-detail.component.css']  })  export class CustomerDetailComponent implements OnInit {    @Input() customer:Customer;  } |

We have Input decorator on the customer property. The component expects that the parent component will supply its value.

The parent component supplies the customer object using the [property binding](https://www.tektutorialshub.com/angular/property-binding-in-angular/) syntax. We add a square bracket around the customer property. Assign template expression (selectedCustomer) to it, which is a property in the parent component.

|  |  |
| --- | --- |
| 1  2  3 | <app-customer-detail [customer]="selectedCustomer"></app-customer-detail> |

**@output**

Output decorates the property as the output property. We initialize it as an EventEmitter. The child component raises the event and passes the data as the argument to the event. The parent component listens to events using [event binding](https://www.tektutorialshub.com/angular/event-binding-in-angular/) and reads the data.

**Example**

|  |  |
| --- | --- |
| 1  2  3  4  5  6  7  8  9 | //Declare the property  @Output() customerChange:EventEmitter<Customer> =new EventEmitter<Customer>();    //Raise the event to send the data back to parent  update() {    this.customerChange.emit(this.customer);  } |

The customerChange is the Output property and is of type EventEmitter.

In the parent component, we subscribe to the event using the [event binding](https://www.tektutorialshub.com/angular/event-binding-in-angular/) syntax. Use the () around the event name (customerChange) and assign a template statement (update($event)) to it. It receives the data in the $event argument.

|  |  |
| --- | --- |
| 1  2  3 | <app-customer-detail [customer]="selectedCustomer" (customerChange)="update($event)"></app-customer-detail> |

Remember you must use the argument name as $event.

**EventEmitter**

EventEmitter is responsible for raising the event. The @output property normally is of type EventEmitter. The child component will use the emit() method to emit an event along with the data.

|  |  |
| --- | --- |
| 1  2  3  4  5  6  7  8  9 | //Define  output property  @Output() customerChange:EventEmitter<Customer> =new EventEmitter<Customer>();    //Raise the event using the emit method.  update() {    this.customerChange.emit(this.customer);  } |

Now let us build an app to learn how to use Input, output & EventEmitter.

**@input, @output & Eventemitter Example**

The app we build has two components. The parent component shows a list of customers. The user has the option to click on the edit button, which results in a child component displaying the customer form Once the user updates the records, the child component raises the event. The parent captures the event. The parent then updates the list with the new data.

Create a new application using the following command

|  |  |
| --- | --- |
| 1  2  3  4  5  6 | ng new InputOutputExample      cd InputOutputExample |

Create the customerList & customerDetail components. Also, create the customer class

|  |  |
| --- | --- |
| 1  2  3  4  5 | ng g c customerList  ng g c customerDetail  ng g class customer |

**Customer**

|  |  |
| --- | --- |
| 1  2  3  4  5  6  7  8  9  10  11  12 | export class Customer {      customerNo: number=0;    name: string="";    address: string="";    city: string="";    state: string="";    country: string="";    } |

**app.module.ts**

The ngModel needs the FormsModule. Hence import it and add it in import metadata.

|  |  |
| --- | --- |
| 1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27 | import { BrowserModule } from '@angular/platform-browser';  import { NgModule } from '@angular/core';  import { FormsModule } from '@angular/forms'    import { AppRoutingModule } from './app-routing.module';  import { AppComponent } from './app.component';  import { CustomerListComponent } from './customer-list/customer-list.component';  import { CustomerDetailComponent } from './customer-detail/customer-detail.component';    @NgModule({    declarations: [      AppComponent,      CustomerListComponent,      CustomerDetailComponent    ],    imports: [      BrowserModule,      AppRoutingModule,      FormsModule    ],    providers: [],    bootstrap: [AppComponent],  })  export class AppModule { } |

**Child Component**

The child component gets an instance of the customer in its input property customer. The parent needs to set it using the [property binding](https://www.tektutorialshub.com/angular/property-binding-in-angular/)

Users can edit the customer. Once finished they will click the update button. The update method raises the customerChange event. We pass the customer as the argument to the event. The parent component listens to the event and receives the data.

The following is the complete code of the CustomerDetailComponent.

|  |  |
| --- | --- |
| 1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25 | import { Component, OnInit, Input, Output,EventEmitter } from '@angular/core';  import { Customer } from '../customer';    @Component({    selector: 'app-customer-detail',    templateUrl: './customer-detail.component.html',    styleUrls: ['./customer-detail.component.css']  })  export class CustomerDetailComponent implements OnInit {      @Input() customer:Customer = new Customer();    @Output() customerChange:EventEmitter<Customer> =new EventEmitter<Customer>();      constructor() { }      ngOnInit() {    }      update() {      this.customerChange.emit(this.customer);    }    } |

'app-customer-detail' is the name of the selector for this component.

The customer property is the input property decorated with Input.

|  |  |
| --- | --- |
| 1  2  3 | @Input() customer:Customer = new Customer(); |

customerChange is decorated as the output property of type EventEmitter

|  |  |
| --- | --- |
| 1  2  3 | @Output() customerChange:EventEmitter<Customer> =new EventEmitter<Customer>(); |

Whenever the user updates the customer, we raise the event customerChange. We pass the updated customer as the argument to it.

|  |  |
| --- | --- |
| 1  2  3  4  5 | update() {    this.customerChange.emit(this.customer);  } |

The customer-detail.component.htmlis as follows.

|  |  |
| --- | --- |
| 1  2  3  4  5  6  7  8  9  10 | <p>Customer No : {{customer.customerNo}}</p>  <p>Name        : <input [(ngModel)]="customer.name"></p>  <p>Address     : <input [(ngModel)]="customer.address"></p>  <p>city     : <input [(ngModel)]="customer.city"></p>  <p>state     : <input [(ngModel)]="customer.state"></p>  <p>country     : <input [(ngModel)]="customer.country"></p>    <button (click)="update()">Update</button> |

The [ngModel](https://www.tektutorialshub.com/angular/ngmodel-two-way-data-binding-in-angular/) binds the customer to the input element. It is a [two-way binding](https://www.tektutorialshub.com/angular/ngmodel-two-way-data-binding-in-angular/). The click event of the button is bound to update() method in the component.

**Parent Component**

The job of the parent component is to display a list of customers. When the user clicks on the edit button pass the selected customer to the child component. Then wait for the customerChange event. Update the customer’s list on receipt of data from the child.

The following is the customer-list.component.html

|  |  |
| --- | --- |
| 1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31 | <h2>List of Customers</h2>    <table class='table'>    <thead>      <tr>        <th>No</th>        <th>Name</th>        <th>Address</th>        <th>City</th>        <th>State</th>        <th>Country</th>        <th>Edit</th>      </tr>    </thead>    <tbody>      <tr \*ngFor="let customer of customers;">        <td>{{customer.customerNo}}</td>        <td>{{customer.name}}</td>        <td>{{customer.address}}</td>        <td>{{customer.city}}</td>        <td>{{customer.state}}</td>        <td>{{customer.country}}</td>        <td><button (click)="showDetails(customer)">Edit</button></td>      </tr>    </tbody>  </table>    <h3>Details</h3>  <app-customer-detail [customer]="selectedCustomer" (customerChange)="update($event)"></app-customer-detail> |

Use the [ngFor directive](https://www.tektutorialshub.com/angular/angular-ngfor-directive/) to loop through the customer list and display the customer details.

|  |  |
| --- | --- |
| 1  2  3 | <tr \*ngFor="let customer of customers;"> |

The event binding to capture the click event. We pass the customer object to the showDetails method

|  |  |
| --- | --- |
| 1  2  3 | <td><button (click)="showDetails(customer)">Edit</button></td> |

app-customer-detail is the selector for the CustomerDetailComponent. We use the [property binding](https://www.tektutorialshub.com/angular/property-binding-in-angular/) to send the selectedCustomer to the child component. The child component raises the customerChange event, which we listen to using the [event binding](https://www.tektutorialshub.com/angular/event-binding-in-angular/) and call the update method.

**Customer-list.component.ts**

The component code of the parent component. It has two method showDetails & update

|  |  |
| --- | --- |
| 1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31  32  33  34  35  36  37  38  39  40  41  42 | import { Component, OnInit } from '@angular/core';  import { Customer } from '../customer';  import { element } from 'protractor';  import { ObjectUnsubscribedError } from 'rxjs';    @Component({    selector: 'app-customer-list',    templateUrl: './customer-list.component.html',    styleUrls: ['./customer-list.component.css']  })  export class CustomerListComponent implements OnInit {      customers: Customer[] = [        {customerNo: 1, name: 'Rahuld Dravid', address: '', city: 'Banglaore', state: 'Karnataka', country: 'India'},      {customerNo: 2, name: 'Sachin Tendulkar', address: '', city: 'Mumbai', state: 'Maharastra', country: 'India'},      {customerNo: 3, name: 'Saurrav Ganguly', address: '', city: 'Kolkata', state: 'West Bengal', country: 'India'},      {customerNo: 4, name: 'Mahendra Singh Dhoni', address: '', city: 'Ranchi', state: 'Bihar', country: 'India'},      {customerNo: 5, name: 'Virat Kohli', address: '', city: 'Delhi', state: 'Delhi', country: 'India'},      ]      selectedCustomer:Customer = new Customer();      constructor() { }      ngOnInit() {    }      showDetails(customer:Customer) {      this.selectedCustomer=Object.assign({},customer)    }      update(customer:Customer) {      console.log(customer)      var cust=this.customers.find(e => e.customerNo==customer.customerNo)      Object.assign(cust,customer)      alert("Customer Saved")    }  } |

The showDetails method gets the customer as its argument. We clone it & assign it to selectedCustomer

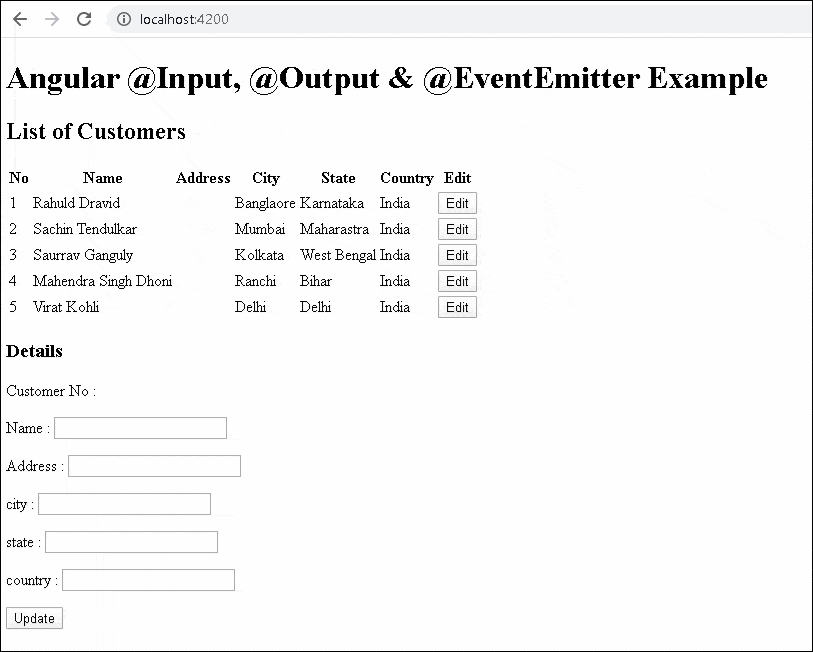
Since the customer is an object it is **Passed by Reference**. When you make any modification to the customer it will also be reflected in the customer’s collection. We want the update the customer’s only when we get the data from the child. Hence we clone the customer and send it to the child component.

If you are passing primitive data types like numbers are **Passed by Value**.

Finally in the root component (i.e. app.component.html ) copy the following

|  |  |
| --- | --- |
| 1  2  3 | <app-customer-list></app-customer-list> |

Run the app



**Notes on @Input & @Output**

**You can also pass the optional name**

Input decorator allows us to pass an option name, which you can use it while binding in the parent

For Example

|  |  |
| --- | --- |
| 1  2  3 | @Input(‘customerData’) customer:Customer; |

**Intercept input property changes with a setter**

You can also create a setter property

|  |  |
| --- | --- |
| 1  2  3  4  5  6  7  8  9  10 | private \_customerData = '';    @Input()    set customer(customer: Customer) {      //You can add some custom logic here      this.\_customerData = customer;      console.log(this.\_customerData)    }    get customer(): string { return this.\_customerData; } |