**What is routerLink?**

routerLink is an Angular directive that **binds a clickable element (like <a>, <button>, etc.) to a route path** in your app, allowing you to **navigate without reloading the page**.

**🔹 Basic Syntax**

**1. String Syntax (for static routes):**

<a routerLink="/about">About</a>

* Navigates to /about.
* **Equivalent to calling this.router.navigate(['/about']).**

**2. Array Syntax (for dynamic or complex routes):**

<a [routerLink]="['/user', userId]">User Profile</a>

* Resolves to /user/123 if userId = 123.

**3. Object Syntax (for named outlets or advanced scenarios):**

<a [routerLink]="[{ outlets: { popup: ['add-item'] } }]">Open Popup</a>

* Navigates using **matrix URL notation** to target **named outlets**.

**🔹 Deep Breakdown of Features**

**✅ 1. Relative vs Absolute Navigation**

* **Absolute:**

<a [routerLink]="['/products']">Products</a>

Starts from the **root** of the application.

* **Relative:**

<a [routerLink]="['details']">Details</a>

Relative to the **current route** (e.g., if you're on /products, this will go to /products/details).

You can also use relativeTo in Router.navigate() for the same effect in TypeScript.

**✅ 2. Dynamic Parameters**

If your route looks like:

**{ path: 'user/:id', component: UserComponent }**

You can pass parameters like this:

**<a [routerLink]="['/user', 42]">User 42</a>**

This results in /user/42.

**✅ 3. Query Parameters**

**<a [routerLink]="['/search']" [queryParams]="{ term: 'angular', page: 2 }">**

Search Angular

</a>

Resulting URL:

**/search?term=angular&page=2**

**✅ 4. Fragment Navigation**

<a [routerLink]="['/about']" fragment="contact">Go to Contact Section</a>

Navigates to /about#contact.

**✅ 5. Named Outlets**

**<a [routerLink]="[{ outlets: { popup: ['chat'] } }]">Chat</a>**

* Opens chat in the named outlet popup.
* URL becomes: /(popup:chat)

**✅ 6. RouterLinkActive**

To apply a CSS class when a link is active:

**<a routerLink="/home" routerLinkActive="active">Home</a>**

**Or for exact match only:**

<a routerLink="/home" routerLinkActive="active" [routerLinkActiveOptions]="{ exact: true }">Home</a>

**✅ 7. Programmatic Navigation (TS)**

In TypeScript, the router can be used like this:

**constructor(private router: Router) {}**

**goToUser(id: number) {**

**this.router.navigate(['/user', id]);**

**}**

**🚧 Common Mistakes**

| **Mistake** | **Explanation** |
| --- | --- |
| Using **href** instead of routerLink | Causes full page reload instead of Angular routing. |
| Forgetting to import RouterModule | routerLink won't work without importing RouterModule in your module. |
| **Not using square brackets for dynamic routes** | [routerLink] is needed for expressions, otherwise Angular treats it as a string. |
| Misusing named outlet syntax | Named outlet navigation requires object/array syntax. |

**✅ Best Practices**

* Use **[routerLink]** for dynamic values or advanced features (query params, outlets).
* Use **routerLinkActive** for visual feedback on active links.
* Keep route configuration consistent to simplify navigation.