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Harnesses



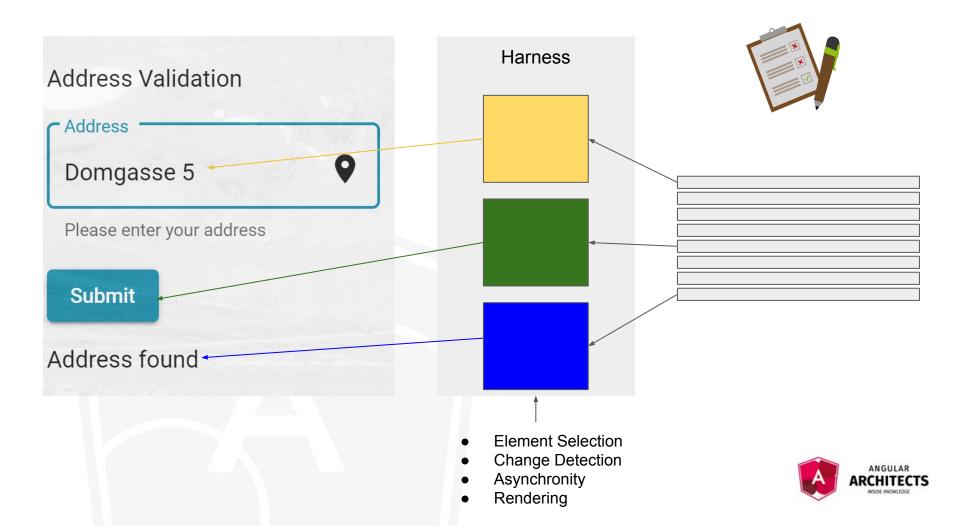
Test Harnesses

- Page Object Models for Component Tests
- Available since Angular v9
- Provide a test abstraction for components
- Developed by @angular/material
- Full coverage for material since v11
- Reduces code size significantly
 - Better Readability
 - Better Maintainability









Creating a Harness

```
export class RequestInfoComponentHarness extends ComponentHarness {
 static hostSelector = "eternal-request-info";
 protected getButton = this.locatorFor("[data-testid=ri-search]");
 async submit(): Promise<void> {
    const button = await this.getButton();
    return button.click();
```



Using a Harness

```
it("should use the harness", async () => {
 // setup TestModule...
 const harness = await TestbedHarnessEnvironment.harnessForFixture(
    fixture,
    RequestInfoComponentHarness
 await harness.submit();
 // expect something
});
```



When to use it?

- Shared UI Components
- In Combination with Testing Library or Spectator
- "Page Objects" in E2E



Spectator



Spectator

- Unopinionated TestBed Wrapper
- Great Support for Mocking
- Applicable for various testing types
- Very popular in Angular
- Powered by ngneat



Setup

```
const createComponent = createComponentFactory({
   component: RequestInfoComponent,
   mocks: [AddressLookuper]
});

const setup = () => {
   return { spectator: createComponent() };
};
```



Tests

```
it(`should show ${message} for ${address}`, fakeAsync(() => {
 const { spectator } = setup();
 spectator
    .inject(AddressLookuper)
    .lookup.mockImplementation((query: string) =>
     scheduled([query === 'Domgasse 5'], asyncScheduler)
  );
 spectator.typeInElement(address, byTestId('ri-address'));
 spectator.click(byTestId('ri-search'));
 spectator.tick();
 expect(spectator.query(byTestId('ri-message'))).toHaveText(message);
}));
```



When to use it?

- If Cypress or Testing Library is not an option
- If you have already Spectator-based tests





Testing Library

Testing Library

- Huge ecosystem
- Enforces a Testing Philosophy
- Superior UI Debugging Tools
- find* removes (most) Asynchrony and Change Detection
- userEvent with real-world behaviour
- Common API for multiple frameworks (Cypress,....)
- Host Components very easy



Configuring the TestingModule

Classic

```
TestBed.configureTestingModule({
 declarations: [NewsletterComponent],
  imports: [ReactiveFormsModule],
  providers: [
    { provide: NewsletterService,
      useValue: MockedNewsletterService },
 ],
});
const fixture = TestBed
  .createComponent(NewsletterComponent);
const component = fixture.componentInstance;
fixture.detectChanges()
```

Testing Library

No component creation and detectChanges() needed



Configuration with static HTML



Selecting DOM Elements

Classic

```
const button = fixture.debugElement.query(
   By.css("[data-testid=btn-submit]")
);
```

Testing Library

```
const button = screen.getByTestId("btn-search");

// Alternatives

// can also be null

const button = screen.queryByTestId("btn-search");

// internally triggers asynchronous tasks and CD

const button = await screen.findByTestId("btn-search"); //
```



Actions

Classic

```
button.click();
fixture.detectChanges();
```

Testing Library

fireEvent.click(button);



Extension userEvent - real DOM Events

@testing-library/user-event

```
// v1
await user.click(screen.getByTestId("btn-submit"));

// v2
await user.click(await
screen.findByTestId("btn-submit"));
```

- Dispatches Events like an end-user
- Works best with 3rd party components
- Provides support for
 - Writing to inputs
 - Mouse movements
 - Clipboard interaction
 - 0 ...



Extension selectors: "mini page objects"

testing-library-selector

Before

```
screen.getByTestId<HTMLButtonElement>('btn-submit');
screen.queryByTestId<HTMLButtonElement>('btn-submit');
await screen
   .findByTestId<HTMLButtonElement>('btn-submit');
```

After

```
const ui = {
  button: byTestId<HTMLButtonElement>('btn-submit')
};

ui.button.get()
ui.button.query()
await ui.button.find()
```



Setup

```
const ui = {
 address: byTestId("ri-address"),
 search: byTestId("ri-search"),
 message: byTestId("ri-message"),
};
const setup = async () => {
 const lookuper = createMock(AddressLookuper);
 const renderResult = await render(RequestInfoComponent, {
    providers: [{ provide: AddressLookuper, useValue: lookuper }],
 });
 const user = userEvent.setup();
 return { ...renderResult, lookuper, user };
};
```



Tests

```
it(`should show ${message} for ${address}`, async () => {
 const { lookuper, user } = await setup();
 lookuper.lookup.mockImplementation((query: string) =>
    scheduled([query === "Domgasse 5"], asyncScheduler)
  await user.type(ui.address.get(), address);
  await user.click(screen.getByTestId("ri-search"));
 const messageEl = await screen.findByTestId("ri-message");
 expect(messageEl.textContent).toBe(message);
});
```



When to use it?

- For all tests where DOM interaction is required
- If Cypress is not an option

