

## ***IFRAME Handling in Selenium***

### **1. What is an iframe?**

- **iframe** stands for **Inline Frame**.
- It is an **HTML tag** (`<iframe>`) used to embed **another webpage inside a webpage**.
- Think of it like a small window inside a larger webpage.

### **2. Purpose of iframe**

- To show external content (ads, maps, videos, or other websites) **without leaving the main page**.
- To logically separate parts of a page if managed by different teams or systems.

### **3. How to detect if an element lies inside an iframe?**

- While inspecting in browser tools, if you see an `<iframe>` tag, it means content is embedded.
- Selenium gives errors like `NoSuchElementException` or `ElementNotInteractableException` when trying to interact with elements inside an iframe without switching.

### **4. How to handle iframe in Selenium**

- **Switch into iframe** before interacting with elements inside.
- **Switch methods:**
  - `driver.switchTo().frame(int index)`
  - `driver.switchTo().frame(String nameOrId)`
  - `driver.switchTo().frame(WebElement iframeElement)`

- Switch back to main page:
  - `driver.switchTo().defaultContent()`

## 5. Example: Handle buttons on different iframes

- Button A opens `iframe1`
- Button B opens `iframe2`

### Code Example:

```
// Click Button A
driver.findElement(By.id("btnA")).click();

// Switch to iframe1
driver.switchTo().frame("iframe1");
driver.findElement(By.id("textbox1")).sendKeys("Value for iframe 1");

driver.switchTo().defaultContent();

// Click Button B
driver.findElement(By.id("btnB")).click();

// Switch to iframe2
driver.switchTo().frame("iframe2");
driver.findElement(By.id("textbox2")).sendKeys("Value for iframe 2");

driver.switchTo().defaultContent();
```

## 6. Handling iframes using List (used at industry level)

### Why use List?

- Sometimes iframe name/id are dynamic.
- Find all iframes and switch based on index.

## Handling Button A and Button B Scenario with List:

```
// Click Button A
driver.findElement(By.id("btnA")).click();
List<WebElement> allIframes = driver.findElements(By.tagName("iframe"));
for (int i = 0; i < allIframes.size(); i++) {
    driver.switchTo().frame(i);
    List<WebElement> textBox1 = driver.findElements(By.id("textBox1"));
    if (textBox1.size() > 0) {
        textBox1.get(0).sendKeys("Text for iframe1");
        break;
    }
    driver.switchTo().defaultContent();
}
driver.switchTo().defaultContent();

// Click Button B
driver.findElement(By.id("btnB")).click();
allIframes = driver.findElements(By.tagName("iframe"));
for (int i = 0; i < allIframes.size(); i++) {
    driver.switchTo().frame(i);
    List<WebElement> textBox2 = driver.findElements(By.id("textBox2"));
    if (textBox2.size() > 0) {
        textBox2.get(0).sendKeys("Text for iframe2");
        break;
    }
    driver.switchTo().defaultContent();
}
```