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Celebrating Years

Selenium - Page Object Pattern

Page Object Model & Page Factory

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Title

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Agenda

- An Unoptimized Way To Code
- The Solution
  □ Page Object Pattern
    ● Page Object Model
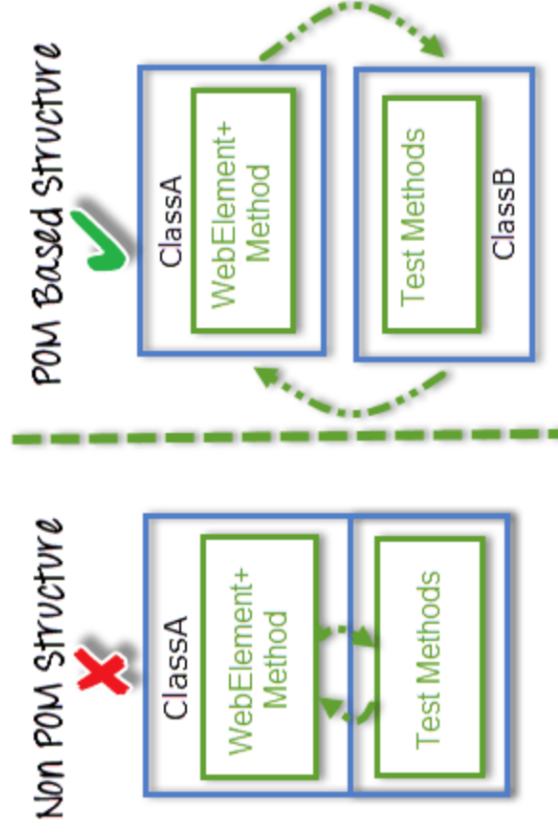   ● Page Factory

An Unoptimized Way to Code

```
WebDriver driver = new ChromeDriver();
driver.manage().timeouts().implicitlyWait( l: 5, TimeUnit.SECONDS);
driver.get("https://www.safeway.com");
driver.findElement(By.xpath("//a[text()='Login']")).click();
driver.findElement(By.xpath("//input[@name='username']")).sendKeys( ...charSequences: "user@safeway.com");
driver.findElement(By.name("password")).sendKeys( ...charSequences: "pwd2001");
driver.findElement(By.name("Submit")).click();
```

Problem with the above code

- The statements will have to be repeated everywhere the element needs to be used.
- Since the statements are duplicated, modification will need to be done at all places the same element is used.
- It becomes extremely difficult to find all instances of the code where the element is being used.

The solution

- Page Object Pattern
  - Grouping the code logically into one class.
  - All locators at one place and modifying the locator at one places will have effect on all the places where the elements are being used.
  - Easier to find the code within the Class.
- There are two ways to achieve Page Object Pattern
  - Page Object Model
  - Page Factory

Non POM Structure ❌

ClassA
- WebElement+Method
- Test Methods

POM Based Structure ✔

ClassA
- WebElement+Method

ClassB
- Test Methods

Page Object Model

- Group related code in one class

- Create Getter Methods for WebElements

- Use Getter methods in

- Create action methods. Eg. Login, checkout, addToCart

- Add relevant Assertions in the action method Eg. login()

```java
public class Login {

    WebDriver driver;

    WebElement lnkSignIn;
    WebElement inpUserName;
    WebElement inpPassword;
    WebElement btnSubmit;

    public Login(WebDriver driver){
        this.driver = driver;
    }

    public WebElement getLnkSignIn() {
        return driver.findElement(By.xpath("//a[text()='Login']"));
    }

    public WebElement getInpUserName() {
        return driver.findElement(By.xpath("//input[@name='username']"));
    }

    public WebElement getInpPassword() {
        return driver.findElement(By.name("password"));
    }

    public WebElement getBtnSubmit() {
        return driver.findElement(By.name("Submit"));
    }

    public void navigateHome(String url){
        driver.get(url);
    }

    public void login(String username, String password){
        getInpUserName().sendKeys(username);
        getInpPassword().sendKeys(password);
        getBtnSubmit().click();
    }
}
```

Page Factory

- Group related code in one class

- Create Getter Methods for WebElements

- Use @FindBy, @FindBys, @FindAll to provide locators to the elements.

- Create action methods. Eg. Login, checkout, addToCart

- Add relevant Assertions in the action method

```java
public class LoginPF {

    WebDriver driver;
    @FindBy(how = How.XPATH, using = "//a[text()='Login']")
    WebElement lnkSignIn;

    @FindBy(xpath="//input[@name='username']")
    WebElement inpUserName;

    //Any one criteria should match
    @FindAll({
        @FindBy(id="pass"), //doesn't match
        @FindBy(name="pwd"), //Matches
        @FindBy(xpath="//input[@name='pwd']") //doesn't match
    })
    WebElement inpPassword;

    //Both Criteria should match
    @FindBys({
        @FindBy(id="Submit"),
        @FindBy(name="Login")
    })
    WebElement btnSubmit;

    public LoginPF(WebDriver driver){
        this.driver = driver;
        PageFactory.initElements(this.driver, page: this);
    }

    public void login(String username, String password){
        inpUserName.sendkeys(username);
        inpPassword.sendkeys(password);
        btnSubmit.click();
    }
}
```
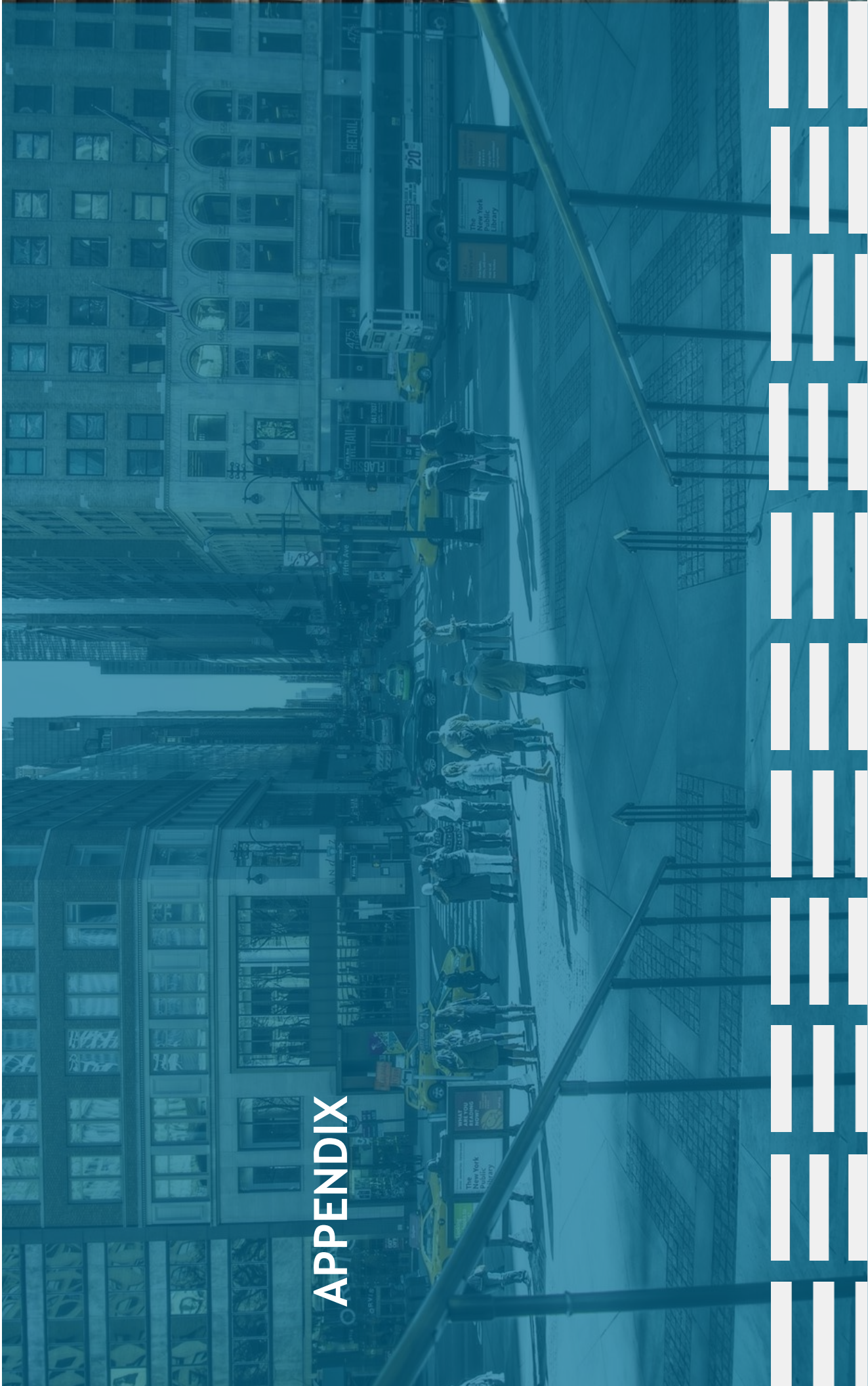
APPENDIX

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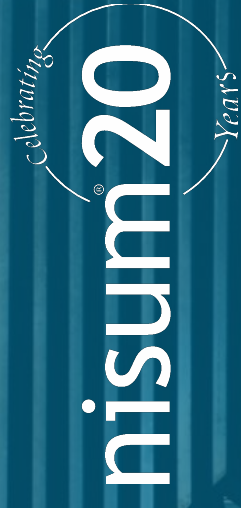Celebrating Years

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