

Handle WebTables

This is the next tutorial in selenium-java series. Please go through the previous tutorials before you start this one. In the last tutorial, we learned how to handle frames. In this tutorial we will see how to handle webtables!

What you will Learn:

1. Handle Webtables

Handling Webtables

Navigate to <https://money.rediff.com/index.html>

Click 'More gainers' link that you see in figure 1

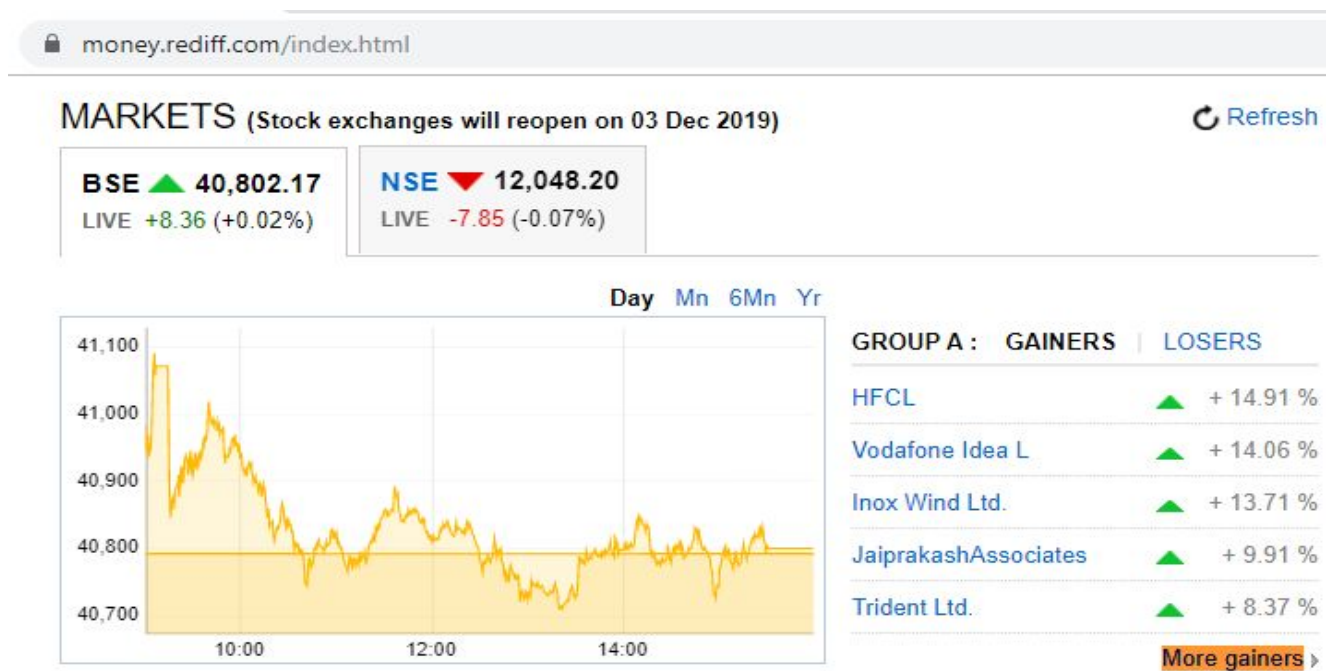


Figure 1

You get a list of all the companies, see below figure

money.rediff.com/gainers/bse/daily/groupa?src=gain_lose

All | **Group A** | Group B | Group M | Group T | Group MT | Group Z

Company	Group	Prev Close (Rs)	Current Price (Rs)	% Change
YES Bank Ltd.	A	21.25	27.65	+ 30.12
Vodafone Idea L	A	4.00	4.52	+ 13.00
Tejas Networks	A	42.30	46.50	+ 9.93
Shipping Corpn.	A	42.95	47.10	+ 9.66
RBL Bank	A	207.80	227.25	+ 9.36
Venky's (India) Ltd.	A	964.85	1,054.20	+ 9.26
Dilip Buildcon Ltd.	A	276.95	296.35	+ 7.00
Zee Entertainment En	A	194.65	208.25	+ 6.99
South Indian Ban	A	7.49	7.99	+ 6.68
Great Eastern	A	215.70	230.05	+ 6.65
Bharti Infratel Ltd.	A	211.15	223.65	+ 5.92
Gujarat Narmada Vall	A	136.45	144.20	+ 5.68

Figure 2 : Webtable

This is an example of Webtable, it is a kind of an excel file where elements are present in a systematic tabular manner.

Right click & inspect this Webtable, you will see that this webtable is under 'table' tag

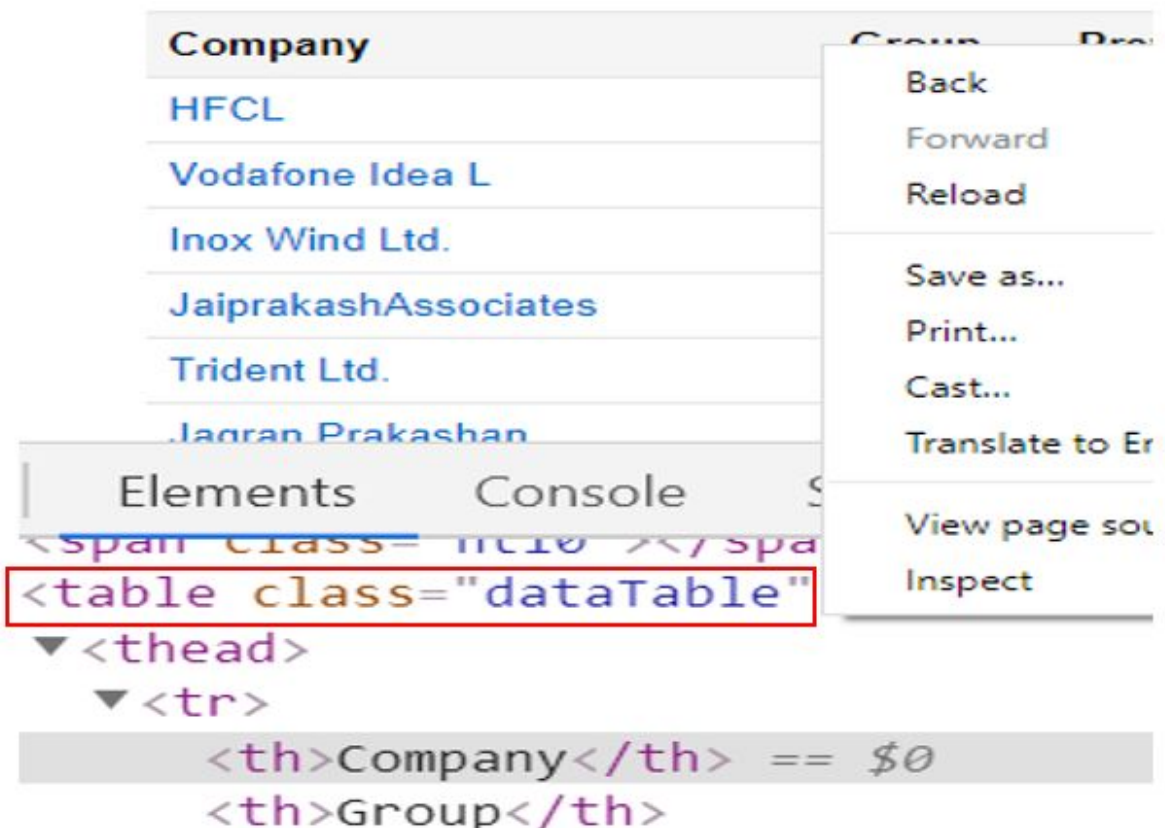


Figure 3

If you hover over `<table class="dataTable">`, the entire Webtable is highlighted

The screenshot shows a web browser at the URL `money.rediff.com/gainers/bse/daily/groupa?src=gain_lose`. The page displays a table of stock prices for Group A. The table has five columns: Company, Group, Prev Close (Rs), Current Price (Rs), and % Change. The table is highlighted with a blue background. Below the table, the browser's developer tools are open, showing the 'Elements' tab. The DOM tree shows the following structure:

```
<div style="width:50%;font-size:14px;float:right;">...</div>
<div style="padding-top:30px; font-size:14px;clear:both;">...</div>
<span class="ht10"></span>
<table class="dataTable">
```

Company	Group	Prev Close (Rs)	Current Price (Rs)	% Change
YES Bank Ltd.	A	21.25	27.65	+ 30.12
Vodafone Idea L	A	4.00	4.52	+ 13.00
Tejas Networks	A	42.30	46.50	+ 9.93
Shipping Corpn.	A	42.95	47.10	+ 9.66
RBL Bank	A	207.80	227.25	+ 9.36
Venky's (India) Ltd.	A	964.85	1,054.20	+ 9.26
Dilip Buildcon Ltd.	A	276.95	296.35	+ 7.00
Zee Entertainment En	A	194.65	208.25	+ 6.99
South Indian Ban	A	7.49	7.99	+ 6.68
Great Eastern	A	215.70	230.05	+ 6.65
Bharti Infratel Ltd.	A	211.15	223.65	+ 5.92
Gujarat Narmada Vall	A	136.45	144.20	+ 5.68
table.dataTable	A	5.81	6.13	+ 5.51

Figure 4

So, **table** is the parent tag of all webtables

Inside the table tag we have 2 immediate child tags: **thead** & **tbody**

```
<table class="dataTable">
  <thead>...</thead>
  <tbody>...</tbody>
</table>
```

Figure 5

Expand **thead** tag, it contains **tr** tag. Mouse hover over **tr**, you would see entire row getting highlighted

tr 620 × 25.45	Group B	Group M	Group T	Group MT	Group Z
Company	Group	Prev Close (Rs)	Current Price (Rs)	% Change	
JaiprakashAssociates	A	2.55	2.80	+ 9.80	
Prestige Estates Pro	A	322.80	341.85	+ 5.90	
Inox Wind Ltd.	A	42.30	44.65	+ 5.56	
Indiabulls Integrate	A	75.20	78.95	+ 4.99	
			2,258.00	+ 4.41	

Figure 6

Expand **tr** tag, it contains **th** tag. Mouse hover over **<th>Prev Close (Rs)</th>**, you would see 'Prev Close (Rs)' column name getting highlighted. So the **th** tag contains the table headings viz column names viz Company, Group, Prev Close, Current Price etc

Company	Group	Prev Close (Rs)	Current Price (Rs)	% Change	
JaiprakashAssociates	A	2.55	2.80	+ 9.80	
Prestige Estates Pro	A	322.80	341.85	+ 5.90	
Inox Wind Ltd.	A	42.30	44.65	+ 5.56	
Indiabulls Integrate	A	75.20	78.95	+ 4.99	
Whirlpool of Ind	A	2,162.70	2,258.00	+ 4.41	

Figure 7

Now expand **tbody** tag. It contains various **tr** tags corresponding to each row. So each **tr** tag represents table row. So if you mouse hover over last **tr** tag, you see that last company row gets highlighted

money.rediff.com/gainers/bse/daily/groupa?src=gain_lose

L&T Infotech	A	1,640.35	1,641.90	+ 0.09
Divi's Lab	A	1,785.45	1,786.65	+ 0.07
Godrej Industries Lt	A	435.15	435.40	+ 0.06
620 x 25.45	A	891.60	892.00	+ 0.04
Varroc Engineering	A	434.95	435.00	+ 0.01

ALL MONEYWIZ PAGES

Stocks: A-Z, Gainers - Daily | Weekly | Monthly
 Mutual Funds: Top 25 schemes, High-risk, High-returns, Equity - ELSS, Equity - Index Funds
 Investments: My Portfolio, My Watchlist

Elements Console Sources Network Performance Memory Application

```

<tr>...</tr>
<tr>...</tr>
<tr>...</tr>
<tr>...</tr>
<tr>...</tr>
<tr>...</tr>

```

Figure 8

Expand 'tr' tag. It contains **td** tag that holds the body of the table. So if you mouse hover over `<td>42.95</td>`, you see that 42.95 is highlighted

money.rediff.com/gainers/bse/daily/groupa?src=gain_lose

All | **Group A** | Group B | Group M | Group T | Group MT | Group Z

Company	Group	Prev Close (Rs)	Current Price (Rs)	% Change
YES Bank Ltd.	A	21.25	27.65	+ 30.12
Vodafone Idea L	A	4.00	4.52	+ 13.00
Tejas Networks	A	130.91 x 25.45	46.50	+ 9.93
Shipping Corpn.	A	42.95	47.10	+ 9.66
RBL Bank	A	207.80	227.25	+ 9.36
Venky's (India) Ltd.	A	964.85	1,054.20	+ 9.26
Dillio Buildcon Ltd.	A	276.95	296.35	+ 7.00

Elements Console Sources Network Performance Memory Application

```

</tr>
<tr>...</tr>
<tr>
  <td>...</td>
  <td>A</td>
  <td>42.95</td> == $0
  <td>47.10</td>
  <td>...</td>

```

Figure 9

So a webtable hierarchy is something like this

1	table	-	parent tag
2		thead	- column headings
3		tbody	- table body
4		tr	- row
5			td - cell data

Figure 10

For webtables, we generally create our own custom xpaths.

In figure#3, we saw that the **table** tag has **class** attribute whose value is '**dataTable**'. So let us write below xpath in xpath and hit enter, you will see that entire/complete webtable gets selected

```
//*[@class='dataTable'] - complete table
```

The screenshot shows a web browser displaying a table of stock data from money.rediff.com. The table has 5 columns: Company Name, Sector, and three numerical values. Below the table, the Chrome DevTools console is open, showing the XPath selector `//*[@class='dataTable']` selected in the 'Selectors' panel. The 'Styles' panel shows the default styles for the selected element, and the 'Computed' panel shows the computed styles. The 'Event Listeners' panel is also visible.

Company Name	Sector	Value 1	Value 2	Value 3
Trident Ltd.	A	71.25	71.35	+ 0.14
KEI Industries	A	515.60	516.25	+ 0.13
BEML Ltd.	A	1,036.75	1,038.00	+ 0.12
ICICI Lombard Gen.	A	1,368.20	1,369.90	+ 0.12
Finolex Industri	A	585.00	585.70	+ 0.12
General Ins. Corp.	A	265.25	265.55	+ 0.11
L&T Infotech	A	1,640.35	1,641.90	+ 0.09
Div's Lab	A	1,785.45	1,786.65	+ 0.07
Godrej Industries Lt	A	435.15	435.40	+ 0.06
Godrej Properties Lt	A	891.60	892.00	+ 0.04
Varroc Engineering	A	434.95	435.00	+ 0.01

Figure 11

Under table tag we have **tbody** tag. Under tbody we have **tr** tag, under **tr** tag we have **td** tag that holds data

```
//*[@class='dataTable']/tbody/tr/td
```

Write above in the Xpath field below and hit enter, you will see all the rows and columns get highlighted

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Company	Group	Prev Close (Rs)	Current Price (Rs)	% Change
Jaiprakash Associates	A	2.55	2.80	+ 9.80
Prestige Estates Pro	A	322.80	341.85	+ 5.90
Inox Wind Ltd.	A	42.30	44.65	+ 5.56
Indiabulls Integrate	A	75.20	78.95	+ 4.99
Whirlpool of Ind	A	2,162.70	2,258.00	+ 4.41
Great Eastern	A	304.30	315.00	+ 3.52
Emami Ltd.	A	315.85	325.20	+ 2.96
Pfizer Ltd.	A	4,192.70	4,312.10	+ 2.85
Suven Life Sciences	A	264.70	272.20	+ 2.83



The screenshot shows the Chrome DevTools interface. The top bar includes tabs for Elements, Console, Sources, Network, Performance, Memory, Application, Security, and Audits. The Elements panel is active, showing a table structure with a colspan=5 attribute. The Styles panel is also open, displaying the default styles for the selected element, including width, font-size, float, and padding-top.

Elements Console Sources Network Performance Memory Application Security Audits 23 52

```
<span class="ht15"></span>
<div style="width:50%;font-size:14px;float:left;">...</div>
<div style="width:50%;font-size:14px;float:right;">...</div>
<div style="padding-top:30px; font-size:14px;clear:both;">...</div>
<span class="ht10"></span>
```

Styles Computed Event Listeners ChroPath

Selectors ☒ //table[@class='dataTable']/tbody/tr/td

5.0 490 elements matching.

Below xpath would highlight 4th cell of 3rd row

```
//table[@class='dataTable']/tbody/tr[3]/td[4] - 3rd row 4th cell
```

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Company	Group	Prev Close (Rs)	Current Price (Rs)	% Change
JaiprakashAssociates	A	2.55	2.80	+ 9.80
Prestige Estates Pro	A	322.80	341.85	+ 5.90
Inox Wind Ltd.	A	42.30	44.65	+ 5.56
Indiabulls Integrate	A	75.20	78.95	+ 4.99
Whirlpool of Ind	A	2,162.70	2,258.00	+ 4.41
Great Eastern	A	304.30	315.00	+ 3.52
Emami Ltd.	A	315.85	325.20	+ 2.96
Pfizer Ltd.	A	4,192.70	4,312.10	+ 2.85
Suven Life Sciences	A	264.70	272.20	+ 2.83

A screenshot of the Chrome DevTools interface. The top bar shows tabs for Elements, Console, Sources, Network, Performance, Memory, Application, Security, and Audits. The right side has a status bar with 23 errors and 52 warnings. The main area is split into two panels. The left panel, titled 'Elements', shows a snippet of HTML code:

```
<div class="ht15"></div>  
<div style="width:50%;font-size:14px;float:left;">...</div>  
<div style="width:50%;font-size:14px;float:right;">...</div>  
<div style="padding-top:30px;font-size:14px;clear:both;">...</div>  
<div class="ht10"></div>
```

The right panel, titled 'Styles', shows the 'Computed' tab selected. It displays a selector path: `//table[@class='dataTable']/tbody/tr[3]/td[4]`. Below the selector, it indicates '1 element matching'. There are also icons for zooming in/out and a settings gear.

Below xpath would highlight entire 3rd row

```
//table[@class='dataTable']/tbody/tr[3] --entire 3rd row
```

Company	Group	Prev Close (Rs)	Current Price (Rs)	% Change
JaiprakashAssociates	A	2.55	2.80	+ 9.80
Prestige Estates Pro	A	322.80	341.85	+ 5.90
Inox Wind Ltd.	A	42.30	44.65	+ 5.56
Indiabulls Integrate	A	75.20	78.95	+ 4.99
Whirlpool of Ind	A	2,162.70	2,258.00	+ 4.41
Great Eastern	A	304.30	315.00	+ 3.52
Emami Ltd.	A	315.85	325.20	+ 2.96
Pfizer Ltd.	A	4,192.70	4,312.10	+ 2.85
Suven Life Sciences	A	264.70	272.20	+ 2.83

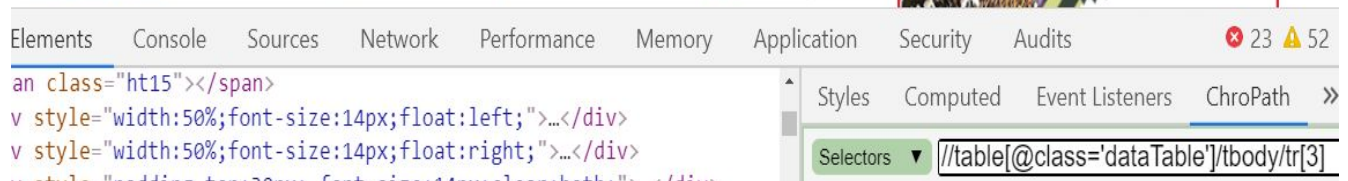
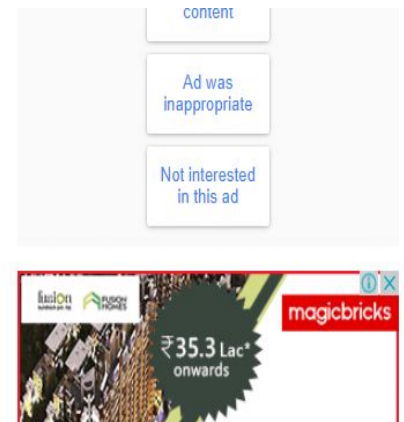


Figure 14

Below xpath would highlight all the cells of 3rd row

`//table[@class='dataTable']/tbody/tr[3]/td --each cell of 3rd row`

Company	Group	Prev Close (Rs)	Current Price (Rs)	% Change
JaiprakashAssociates	A	2.55	2.80	+ 9.80
Prestige Estates Pro	A	322.80	341.85	+ 5.90
Inox Wind Ltd.	A	42.30	44.65	+ 5.56
Indiabulls Integrate	A	75.20	78.95	+ 4.99
Whirlpool of Ind	A	2,162.70	2,258.00	+ 4.41
Great Eastern	A	304.30	315.00	+ 3.52
Emami Ltd.	A	315.85	325.20	+ 2.96
Pfizer Ltd.	A	4,192.70	4,312.10	+ 2.85
Suven Life Sciences	A	264.70	272.20	+ 2.83

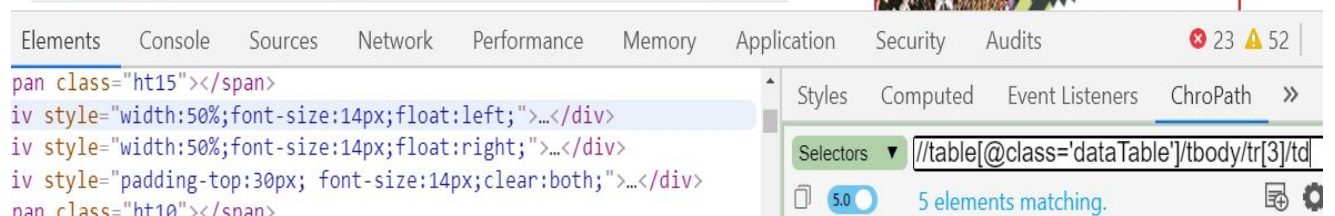
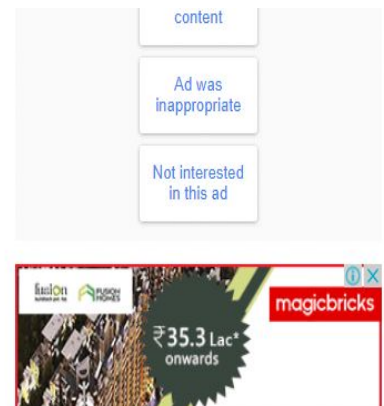


Figure 15

Similarly below xpath represents all the rows

`//table[@class='dataTable']/tbody/tr --all the rows`

Company	Group	Prev Close (Rs)	Current Price (Rs)	% Change
JaiprakashAssociates	A	2.55	2.80	+ 9.80
Prestige Estates Pro	A	322.80	341.85	+ 5.90
Inox Wind Ltd.	A	42.30	44.65	+ 5.56
Indiabulls Integrate	A	75.20	78.95	+ 4.99
Whirlpool of Ind	A	2,162.70	2,258.00	+ 4.41
Great Eastern	A	304.30	315.00	+ 3.52
Emami Ltd.	A	315.85	325.20	+ 2.96
Pfizer Ltd.	A	4,192.70	4,312.10	+ 2.85
Suven Life Sciences	A	264.70	272.20	+ 2.83

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Selectors

5.0 98 elements matching.

Figure 16

Let us say we want to print the 'Current price' of 'Hero MotoCorp'. Copy the text 'Hero MotoCorp' from webpage

Company	Group	Prev Close (Rs)	Current Price (Rs)
Hero MotoCorp	A	1,957.25	2,029.50

Figure 17

Create new class, we will put the company name in a string var (paste the same text that was copied above). Ensure that spelling is correct.

```

7 public class Table {
8
9     public static void main(String[] args) {
10         String companyName = "Hero MotoCorp";
11         System.setProperty("webdriver.chrome.driver", "C:\\Users\\DELL\\Desktop\\TRAINI
12
13         WebDriver driver = null;
14
15         driver = new ChromeDriver();
16
17         driver.get("https://money.rediff.com/gainers/bse/daily/groupa?src=gain_lose");

```

Figure 18

The xpath of first column (company names) would be: `//table[@class='dataTable']/tbody/tr/td[1]`
 So `tr/td[1]` will give us entire column 1 viz a list of all the companies

Company	Group	Prev Close (Rs)	Current Price (Rs)	% Change
Jaiprakash Associates	A	2.55	2.80	+ 9.80
Prestige Estates Pro	A	322.80	352.80	+ 9.29
Inox Wind Ltd.	A	42.30	44.55	+ 5.32
Lakshmi Vilas Ba	A	19.00	19.95	+ 5.00
Indiabulls Integrate	A	75.20	78.95	+ 4.99
Shoppers Stop	A	351.00	367.25	+ 4.63

Network gone, music on. Only with Spotify Premium. GET PREMIUM

Elements Console Sources Network Performance Memory Application Security Audits

Styles Computed Event Listeners ChroPath

Selectors `//table[@class='dataTable']/tbody/tr/td[1]`

5.0 117 elements matching.

`<td xpath="5" == $0`

`<a href="//money.rediff.com/companies/indiabulls-integrate/`

Figure 19

So we will extract all the values of first column (since first column gives us company name) using `findElements` method. This method returns us a List (make sure to import `java.util.List`)

selenium.dev/selenium/docs/api/java/index.html

Interface WebElement

All Superinterfaces: SearchContext, TakesScreenshot

All Known Implementing Classes: RemoteWebElement

```
public interface WebElement
    extends SearchContext, TakesScreenshot
```

Represents an HTML element. Generally, all interesting operations to do with interacting with a page will be performed on this interface.

All method calls will do a freshness check to ensure that the element reference is still valid. This essentially determines the DOM. If this test fails, then an `StaleElementReferenceException` is thrown, and all future calls to this instance will fail.

Method Summary

All Methods	Instance Methods	Abstract Methods
void	clear()	Method and Description
		If this element is a text entry element, this will clear the value.
void	click()	Click this element.
WebElement	findElement(By by)	Find the first WebElement using the given method.
<code>java.util.List<WebElement></code>	findElements(By by)	Find all elements within the current context using the given mechanism.

Figure 20

So we have

```

1 import java.util.List;
2 import org.openqa.selenium.By;
3 import org.openqa.selenium.WebDriver;
4 import org.openqa.selenium.WebElement;
5 import org.openqa.selenium.chrome.ChromeDriver;
6
7 public class Table {
8
9     public static void main(String[] args) {
10         String companyName = "Hero MotoCorp";
11         System.setProperty("webdriver.chrome.driver", "C:\\Users\\DELL\\Desktop\\TRAINING\\Software\\chromedriver.exe");
12
13         WebDriver driver = null;
14
15         driver = new ChromeDriver();
16
17         driver.get("https://money.rediff.com/gainers/bse/daily/groupa?src=gain_lose");
18
19         List<WebElement> companyNames = driver.findElements(By.xpath("//table[@class='dataTable']/tbody/tr/td[1]"));

```

Figure 21

Similarly `//table[@class='dataTable']/tbody/tr/td[4]` will extract all the current prices (since column 4 gives us current price)

Company	Group	Prev Close (Rs)	Current Price (Rs)	% Change
Jaiprakash Associates	A	2.55	2.80	+ 9.80
Prestige Estates Pro	A	322.80	352.80	+ 9.29
Inox Wind Ltd.	A	42.30	44.55	+ 5.32
Lakshmi Vilas Ba	A	19.00	19.95	+ 5.00
Indiabulls Integrate	A	75.20	78.95	+ 4.99
Shoppers Stop	A	351.00	367.25	+ 4.63

Network gone, music on.
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GET PREMIUM
Monthly subscription fee applies after. Limited eligibility, terms apply.

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<tr>...</tr>
><tr>...</tr>
><tr>
 <td> == \$0
 <a href="//money.rediff.com/companies/indiabulls-integrate/

Styles Computed Event Listeners ChroPath >>

Selectors ▾ `//table[@class='dataTable']/tbody/tr/td[4]`

5.0 117 elements matching.

Figure 22

So we have

```

15 driver = new ChromeDriver();
16
17 driver.get("https://money.rediff.com/gainers/bse/daily/groupa?src=gain_lose");
18
19 List<WebElement> companyNames = driver.findElements(By.xpath("//table[@class='dataTable']/tbody/tr/td[1]"));
20 List<WebElement> currentPrices = driver.findElements(By.xpath("//table[@class='dataTable']/tbody/tr/td[4]"));

```

Figure 23

Next, we can use a 'for' loop and can print each company & its corresponding current price by using `get(i).getText()` method


```

17 driver.get("https://money.rediff.com/gainers/bse/daily/groupa?src=gain_lose");
18
19 List<WebElement> companyNames = driver.findElements(By.xpath("//table[@class='dataTable']/tbody/tr/td[1]"));
20 List<WebElement> currentPrices = driver.findElements(By.xpath("//table[@class='dataTable']/tbody/tr/td[4]"));
21
22 for(int i=0; i < companyNames.size() ; i++)
23 {
24     System.out.println(companyNames.get(i).getText() + "-----" + currentPrices.get(i).getText());
25 }

```

Figure 24

Run the script, we see all companies along with their respective current prices printed in console

```

Table [Java Application] C:\Program Files\Java\jre1.8.0_191\bin\javaw.exe
KNR Constructions-----233.60
NMDC Ltd.-----108.20
Oberoi Realty-----526.35
Dr. Lal Pathlabs Ltd-----1,633.00
HDFC Life Insurance-----583.00
GE Power India-----738.90
Torrent Pharmac-----1,933.45

```

Figure 25

Now we are only interested in 'Hero MotoCorp', so we can put a simple 'if' condition inside the 'for' loop. This 'if' condition will check, if the companyName that we have defined in line#10 equals the companyNames that we are fetching inside the 'for' loop. Once both match, the o/p gets printed in console

```

17 driver.get("https://money.rediff.com/gainers/bse/daily/groupa?src=gain_lose");
18
19 List<WebElement> companyNames = driver.findElements(By.xpath("//table[@class='dataTable']/tbody/tr/td[1]"));
20 List<WebElement> currentPrices = driver.findElements(By.xpath("//table[@class='dataTable']/tbody/tr/td[4]"));
21
22 for(int i=0; i < companyNames.size() ; i++)
23 {
24     if(companyName.equals(companyNames.get(i).getText()))
25     System.out.println(companyNames.get(i).getText() + "-----" + currentPrices.get(i).getText());
26 }

```

Figure 26

Run the script, notice below that only desired value is printed


```
Table [Java Application] C:\Program Files\Java\jre1.8.0_191\
Starting ChromeDriver 2.42.5910:
Only local connections are allow
[1583914575.610][WARNING]: Time
Mar 11, 2020 1:46:17 PM org.open
INFO: Detected dialect: OSS
Hero MotoCorp-----2,046.60
```

Figure 27

This is how we handle webtables. Thank you for reading!