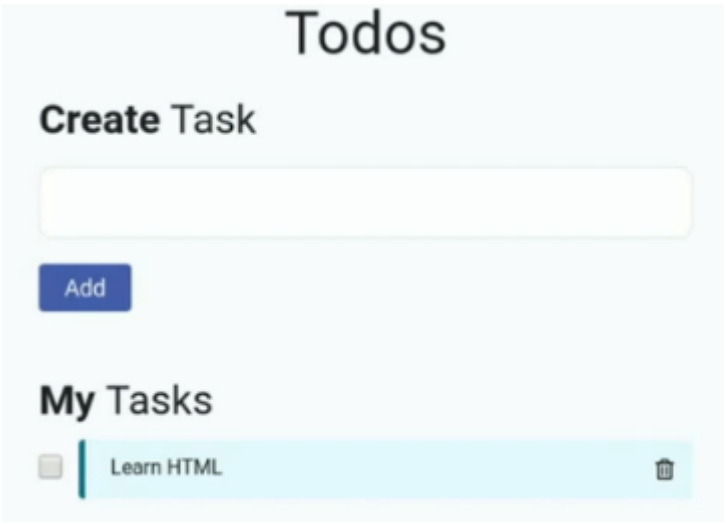
In [1]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js1.png")
```

Out[1]:




**DOM Manipulations**
- **getElementById()**
- **createElement()**
- **appendChild()**
- **classList.add()**
- **textContent**
- **setAttribute()**

**Lets Create the Todo item statically**

In [2]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js2.png")
```

Out[2]:

```
<body> <script src="https://kit.fontawesome.com/5f59ca6ad3.js" crossorigin="anonymous"></sc
  <div class="todos-bg-container">
    <div class="container">
      <div class="row">
        <div class="col-12">
          <h1 class="todos-heading">Todos</h1>
          <h1 class="create-task-heading">
            Create <span class="create-task-heading-subpart">Task</span>
          </h1>
          <input type="text" id="todoUserInput" class="todo-user-input" />
          <button class="add-todo-button">Add</button>
          <h1 class="todo-items-heading">
            My <span class="todo-items-heading-subpart">Tasks</span>
          </h1>
          <ul class="todo-items-container" id="todoItemsContainer">
            <li class="todo-item-container d-flex flex-row">
              <input type="checkbox" id="checkboxInput" class="checkbox-input"/>
              <div class="label-container d-flex flex-row">
                <label for="checkboxInput" class="checkbox-label">Learn Html</label>
                <div class="delete-icon-container">
                  <i class="far fa-trash-alt delete-icon"></i>
                </div>
              </div>
            </li>
          </ul>
        </div>
      </div>
    </div>
  </div>
</body>
```

In [3]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js3.png", height=30,width=700)
```

Out[3]:

```
.todos-bg-container {
  background-color: #f9fbfe;
  height: 100vh;
}
.todos-heading {
  text-align: center;
  font-family: "Roboto";
  font-size: 46px;
  font-weight: 500;
  margin-top: 20px;
  margin-bottom: 20px;
}
.create-task-heading {
  font-family: "Roboto";
  font-size: 32px;
  font-weight: 700;
}
.create-task-heading-subpart {
  font-family: "Roboto";
  font-size: 32px;
  font-weight: 500;
}
.todo-items-heading {
  font-family: "Roboto";
  font-size: 32px;
  font-weight: 700;
}
.todo-items-heading-subpart {
  font-family: "Roboto";
  font-size: 32px;
  font-weight: 500;
}
```

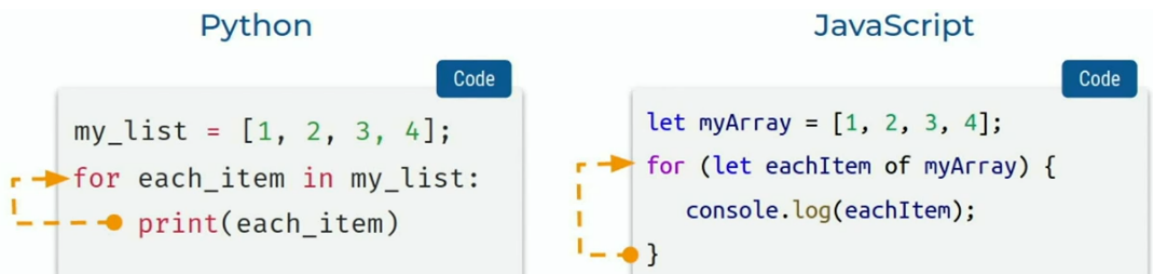
```
.todo-items-container {
  margin: 0px;
  padding: 0px;
}
.todo-item-container {
  margin-top: 15px;
}
.todo-user-input {
  background-color: white;
  width: 100%;
  border-style: solid;
  border-width: 1px;
  border-color: #e4e7eb;
  border-radius: 10px;
  margin-top: 10px;
  padding: 15px;
}
.add-todo-button {
  color: white;
  background-color: #4c63b6;
  font-family: "Roboto";
  font-size: 18px;
  border-width: 0px;
  border-radius: 4px;
  margin-top: 20px;
  margin-bottom: 50px;
  padding-top: 5px;
  padding-bottom: 5px;
  padding-right: 20px;
  padding-left: 20px;
}.delete-icon {
  padding: 15px;
```

```
.label-container {
  background-color: #e6f6ff;
  width: 100%;
  border-style: solid;
  border-width: 5px;
  border-color: #096f92;
  border-right: none;
  border-top: none;
  border-bottom: none;
  border-radius: 4px;
}
.checkbox-input {
  width: 20px;
  height: 20px;
  margin-top: 12px;
  margin-right: 12px;
}
.checkbox-label {
  font-family: "Roboto";
  font-size: 16px;
  font-weight: 400;
  width: 82%;
  margin: 0px;
  padding-top: 10px;
  padding-bottom: 10px;
  padding-left: 20px;
  padding-right: 20px;
  border-radius: 5px;
}
.delete-icon-container {
  text-align: right;
  width: 18%;
}
```

In [4]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js4.png")
```

Out[4]:




**Lets Create the Todo item dynamically**

In [5]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js5.png")
```

Out[5]:

odo > JS pg2_dynamically.js > ...

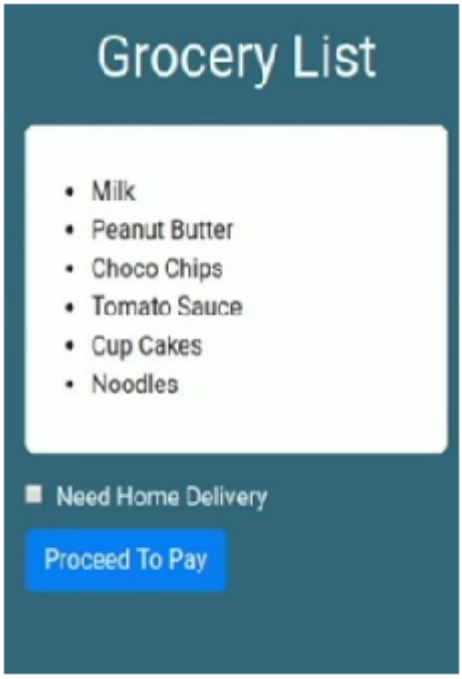
```
let todoItemsContainer = document.getElementById("todoItemsContainer");
let todoList = [
    {text:"Learn Html"},{text:"Learn CSS"},{text:"Learn JavaScript"}
];
function createAndAppendTodo(todo){
    let todoElement = document.createElement("li");
    todoElement.classList.add("todo-item-container","d-flex","flex-row");
    todoItemsContainer.appendChild(todoElement);
    let inputElement = document.createElement("input");
    inputElement.type = "checkbox";
    inputElement.id = "checkboxInput";
    inputElement.classList.add("checkbox-input");
    todoElement.appendChild(inputElement);
    let divElement = document.createElement("div");
    divElement.classList.add("label-container","d-flex","flex-row");
    todoElement.appendChild(divElement);
    let labelElement = document.createElement("label");
    labelElement.setAttribute("for","checkboxInput");
    labelElement.classList.add("checkbox-label");
    labelElement.textContent = todo.text;
    divElement.appendChild(labelElement);
    let deleteContainer = document.createElement("div");
    deleteContainer.classList.add("delete-icon-container");
    divElement.appendChild(deleteContainer);
    let iconElement = document.createElement("i");
    iconElement.classList.add("far","fa-trash-alt","delete-icon");
    deleteContainer.appendChild(iconElement)
}
// createAndAppendTodo(todoList[0])
for (let todo of todoList){
    createAndAppendTodo(todo)
}
```

**Approach to develop a Layout Statically**

In [6]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js6_1.png")
```

Out[6]:




In [7]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js6.png")
```

Out[7]:

```
<script src="https://kit.fontawesome.com/5f59ca6ad3.js" crossorigin="anonymous"></script>
</head>
<body>
    <div class="bg-container">
        <h1 class="heading">Grocery List</h1>
        <ul class="list-container">
            <li>Milk</li>
            <li>Peanut Butter</li>
            <li>Choco Chips</li>
            <li>Tomato Sauce</li>
            <li>Cup Cakes</li>
            <li>Noodles</li>
        </ul>
        <input type="checkbox" id="deliveryMode"/>
        <label for="deliveryMode" class="delivery-text">Need Home Delivery</label><br/>
        <button class="btn btn-primary">Proceed To Pay</button>
    </div>
    <script src="pg2_dynamically.js"></script>
</body>
```

```
.bg-container{
    background-color: #3a6781;
    padding: 30px;
    height: 100vh;
}
.heading{
    font-family: "Roboto";
    font-weight: 500;
    font-size: 36px;
    color: white;
    text-align: center;
    margin-bottom: 20px;
}
.list-container{
    background-color: white;
    border-radius: 6px;
    padding-top: 30px;
    padding-bottom: 30px;
    padding-right: 45px;
    padding-left: 45px;
}
.delivery-text{
    font-family: "Roboto";
    font-size: 16px;
    color: white;
}
```

### Approach to develop a Layout Statically

- html page with only body element
- css file with all styles

In [8]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js7.png")
```

Out[8]:

odo > JS pg4.js > ...

```
let bgcontElement = document.createElement("div");
bgcontElement.classList.add("bg-container");
document.body.appendChild(bgcontElement);
```

```
let h1Element = document.createElement("h1");
h1Element.textContent = "Grocery List";
h1Element.classList.add("heading");
bgcontElement.appendChild(h1Element);
```

```
let ulElement = document.createElement("ul");
ulElement.classList.add("list-container");
bgcontElement.appendChild(ulElement);
```

```
let liElement = document.createElement("li");
liElement.textContent="Milk";
ulElement.appendChild(liElement);
```

```
let groceryItems = ["Milk", "Peanut Butter", "Choco Chips","Tomato Sauce"]
for (let gorceryItem of groceryItems){
    let liElement = document.createElement("li");
    liElement.textContent=gorceryItem;
    ulElement.appendChild(liElement);}
```

```
let inputElement = document.createElement("input");
inputElement.type = "checkbox";
inputElement.id = "deliveryMode";
bgcontElement.appendChild(inputElement);
```

```
let labelElement = document.createElement("label");
labelElement.setAttribute("for","deliveryMode");
labelElement.classList.add("delivery-text");
labelElement.textContent = "Need Home Delivery"
bgcontElement.appendChild(labelElement);
```

```
let brElement = document.createElement("br");
bgcontElement.appendChild(brElement);
```

```
let btnElement = document.createElement("button");
btnElement.classList.add("btn","btn-primary");
btnElement.textContent = "Proceed To Pay";
bgcontElement.appendChild(btnElement);
```

### 1. HTML Input Element

#### 1.1 Placeholder

- Placeholder is the text that appears in the HTML input element when no value is set. We can specify it using the HTML attribute placeholder.

### 2. JavaScript Built-in Functions

#### 2.1 alert()

- The alert() function displays an alert box with a specified message and an OK button.

### 3. DOM Properties

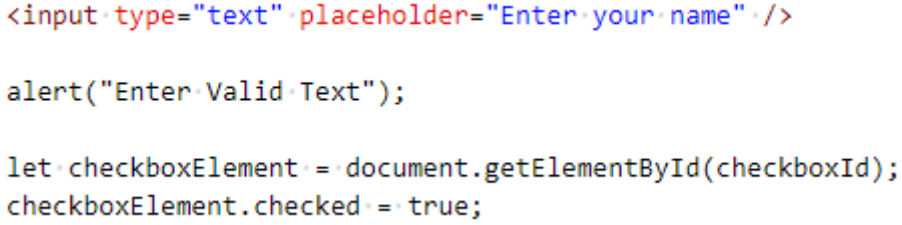
#### 3.1 Checked

The checked property sets or returns the checked status of an HTML checkbox input element as a boolean value.

In [9]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js18.png")
```

Out[9]:




### Enhancements

#### 1. Fixing checkbox issue

- we have to specify a Unique ID to each checkbox
- provide the same ID to the labels for attribute

#### 2. Striking through the label when selected

- adding required CSS to strike the text
- specifying ID to each Label Element
- Adding Event Listeners to Checkboxes
- Accesing the checkbox Elements

In [10]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js20.png")
```

Out[10]:

odo > JS pg2_dynamically.js > createAndAppendTodo

```
let todoItemsContainer = document.getElementById("todoItemsContainer");
let todoList = [
    {text:"Learn Html", uniqueNo: 1},
    {text:"Learn CSS", uniqueNo: 2},
    {text:"Learn JavaScript", uniqueNo: 3}
];
function onTodoStatus(checkboxId, labelId){
    let checkboxEle = document.getElementById(checkboxId);
    let labelEle = document.getElementById(labelId);
    if (checkboxEle.checked === true){
        labelEle.classList.add("checked");
    }
    else{
        labelEle.classList.remove("checked");
    }
}
function createAndAppendTodo(todo){
    let checkboxId = "checkbox"+todo.uniqueNo;
    let labelId = "label"+todo.uniqueNo;

    let todoElement = document.createElement("li");
    todoElement.classList.add("todo-item-container","d-flex","flex-row");
    todoItemsContainer.appendChild(todoElement);

    let inputElement = document.createElement("input");
    inputElement.type = "checkbox";
    inputElement.id = checkboxId;
    inputElement.classList.add("checkbox-input");
    inputElement.onclick = function(){
        onTodoStatus(checkboxId, labelId);
    }
    todoElement.appendChild(inputElement);

    let divElement = document.createElement("div");
    divElement.classList.add("label-container","d-flex","flex-row");
    todoElement.appendChild(divElement);

    let labelElement = document.createElement("label");
    labelElement.setAttribute("for",checkboxId);
    labelElement.classList.add("checkbox-label");
    labelElement.textContent = todo.text;
    labelElement.id = labelId;
    divElement.appendChild(labelElement);

    let deleteContainer = document.createElement("div");
    deleteContainer.classList.add("delete-icon-container");
    divElement.appendChild(deleteContainer);

    let iconElement = document.createElement("i");
    iconElement.classList.add("far","fa-trash-alt","delete-icon");
    deleteContainer.appendChild(iconElement)
}
```

style.css

```
.checked{
    text-decoration: line-through;
}
```

## 4. DOM Manipulations

### 4.1 The removeChild() Method

- The removeChild() method removes an HTML child element of the specified HTML parent element from the DOM and returns the removed HTML child element.

### 4.2 The classList.toggle() Method

- The classList.toggle() method is used to toggle between adding and removing a class name from an HTML element.

In [11]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js19.png")
```

Out[11]:

```
function onDeleteTodo(todoId) {
    let todoElement = document.getElementById(todoId);

    todoItemsContainer.removeChild(todoElement);
  }

function onTodoStatusChange(checkboxId, labelId) {
let checkboxElement = document.getElementById(checkboxId);
let labelElement = document.getElementById(labelId);

labelElement.classList.toggle('checked');
}
```

### Deleting ToDo item

- Specifying ID to each Todo item
- Add Event Listeners to Delete icon
- Delete Todo item from the Todo item container

In [12]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js21.png")
```

Out[12]:

```
function ondeleteTodo(todoId){
    let todoElement = document.getElementById(todoId);
    todoItemsContainer.removeChild(todoElement);
}
function createAndAppendTodo(todo){
    let checkboxId = "checkbox"+todo.uniqueNo;
    let labelId = "label"+todo.uniqueNo;
    let todoId = "todo"+todo.uniqueNo;

    let todoElement = document.createElement("li");
    todoElement.classList.add("todo-item-container","d-flex","flex-row");
    todoElement.id = todoId;
    todoItemsContainer.appendChild(todoElement);

  let iconElement = document.createElement("i");
  iconElement.classList.add("far","fa-trash-alt","delete-icon");
  iconElement.onclick = function(){
      ondeleteTodo(todoId)
  }
  deleteContainer.appendChild(iconElement)
```

### Adding ToDo item

- Add Event Listner to the Add button
- Access user input value
- create new todo item

### showing warning message

### placeholder text

In [13]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js22.png")
```

Out[13]:

```
<input type="text" id="todoUserInput" class="todo-user-input" placeholder="E
<button class="add-todo-button" id="addtodobutton">Add</button>
```

**pg2_dynamically.js**

```
let todoList = [
    {text:"Learn Html", uniqueNo: 1},{text:"Learn CSS", uniqueNo: 2},
    {text:"Learn JavaScript", uniqueNo: 3}
];
let todoCount = todoList.length;
```

2

```
function onAddTodo(){
    let userInputEle = document.getElementById("todoUserInput");
    let userInputVal = userInputEle.value;
    if (userInputVal==""){
        alert("Enter Valid Text");
        return;
    }
    todoCount = todoCount+1;
    let newTodo = {text:userInputVal, UniqueNo: todoCount};
    createAndAppendTodo(newTodo)
    userInputEle.value = "";
}
```

```
let addTodoButton = document.getElementById("addtodobutton");
addTodoButton.onclick = function(){
    onAddTodo();
}
```

1

### Topic 4

- Local Storage : getItem(), setItem()
- Values : null
- HTML Elements : The textarea Element

**What happens when we reload the Todos Application?**

**How to Persist Todo items even on reload?**

### 1. Execution Context

- The environment in which JavaScript Code runs is called Execution Context.
- Execution context contains all the variables, objects, and functions.
- Execution Context is destroyed and recreated whenever we reload an Application.

### 2. Storage Mechanisms

#### 2.1 Client-Side Data Storage

- Client-Side Data Storage is storing the data on the client (user's machine).
  - Local Storage
  - Session Storage
  - Cookies
  - IndexedDB and many more.

#### 2.2 Server-Side Data Storage

- Server-Side Data Storage is storing the data on the server.

### 3. Local Storage

- It allows web applications to store data locally within the user's browser.
- It is a Storage Object. Data can be stored in the form of key-value pairs.
- Please note that both key and value must be strings. If their type is other than a string, they get converted to strings automatically.
- To access and work with Local Storage we have below methods:
  - setItem()
  - getItem()
  - clear()
  - removeItem()

#### 3.1 The setItem() Method

- The setItem() method can be used for storing data in the Local Storage.
- Syntax: localStorage.setItem("Key", "Value");

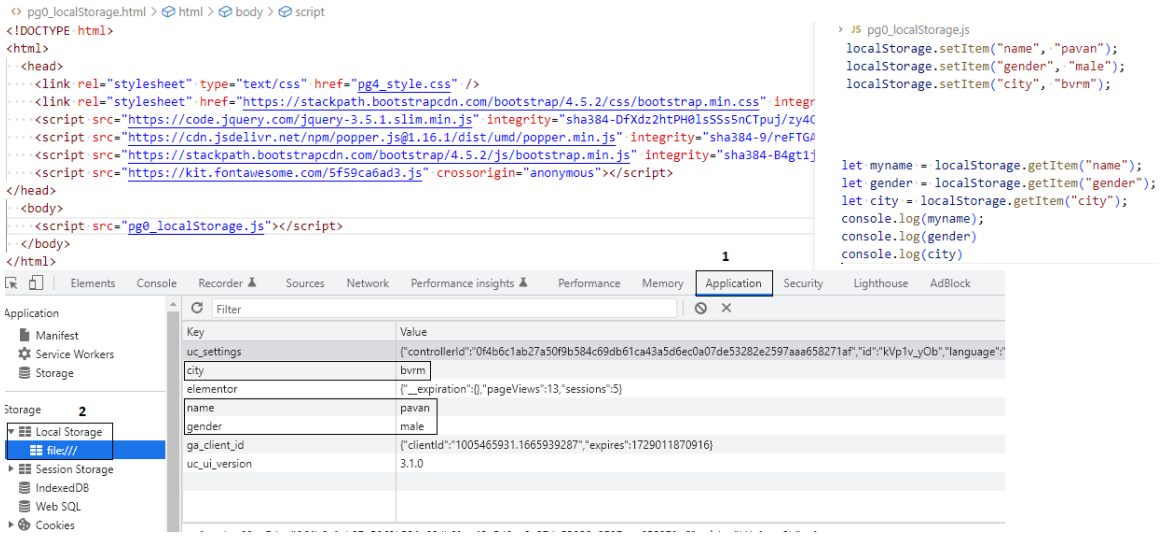
#### 3.2 The getItem() Method

- The getItem() method can be used for getting data from the Local Storage.
- Syntax: localStorage.getItem("Key");

In [14]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js24.png")
```

Out[14]:




### 4. Values

### 4.1 null

- We use null in a situation where we intentionally want a variable but don't need a value to it.
- let occupation = localStorage.getItem("occupation");
- console.log(occupation);

### 5. HTML Elements

### 5.1 The textarea Element

- The HTML textarea element can be used to write the multiline text as an input.
  - textarea rows="8" cols="55"></textarea
  - The HTML rows attribute specifies the number of lines.
  - The HTML cols attribute specifies the number of characters per each line.

In [15]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js25.png")
```

Out[15]:

### 1. JavaScript Object Notation (JSON)

- JSON is a data representation format used for:
  - Storing data (Client/Server)
  - Exchanging data between Client and Server

#### 1.1 Supported Types

```
- Number
- String
- Boolean
- Array
- Object
- Null
```

#### 1.2 JS Object vs JSON Object

- In JSON, all keys in an object must be enclosed with double-quotes. While in JS, this is not necessary.

**Javascript**

- let profile = {name: "pavan", age: 29, designation: "Web Developer"};

**JSON:**

- let profile = {"name": "pavan", "age": 29, "designation": "Web Developer"};

#### 1.3 JSON Methods

#### 1.3.1 JSON.stringify()

- It converts the given value into JSON string.
- Syntax: JSON.stringify( value )
- JSON.stringify( profile )

#### 1.3.2 JSON.parse()

- It parses a JSON string and returns a JS object.
- Syntax: JSON.parse( value )
- JSON.parse( profile )

In [16]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js26.png")
```

Out[16]:

```
<div class="col-12">
    <h1 class="todos-heading">Todos</h1>
    <h1 class="create-task-heading">
        Create <span class="create-task-heading-subpart">Task</span>
    </h1>
    <input type="text" id="todoUserInput" class="todo-user-input" placeholder="Enter the Name"/>
    <button class="add-todo-button" id="addtodobutton">Add</button>
    <h1 class="todo-items-heading">
        My <span class="todo-items-heading-subpart">Tasks</span>
    </h1>
    <ul class="todo-items-container" id="todoItemsContainer"></ul>
    <button class="button" id="saveTodoButton">Save</button>
</div>
```

```
.button {
    color: white;
    background-color: #4c63b6;
    font-family: "Roboto";
    font-size: 18px;
    border-width: 0px;
    border-radius: 4px;
    margin-top: 20px;
    margin-bottom: 50px;
    padding-top: 5px;
    padding-bottom: 5px;
    padding-right: 20px;
    padding-left: 20px;
}
```

In [17]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js27.png")
```

Out[17]:

pg2_dynamically.js > onAddTodo

```
let todoItemsContainer = document.getElementById("todoItemsContainer");

let todoList = getTodoListfromStorage();
// let todoList = [
//     {text:"Learn Html", uniqueNo: 1},
//     {text:"Learn CSS", uniqueNo: 2},
//     {text:"Learn JavaScript", uniqueNo: 3}
// ];
function onTodoStatus(checkboxId, labelId){ ···
}
function ondeleteTodo(todoId){ ···
}
function createAndAppendTodo(todo){ ···
}
// createAndAppendTodo(todoList[0])
for (let todo of todoList){
    createAndAppendTodo(todo)
}
```

```
let saveTodobtn = document.getElementById("saveTodoButton");
saveTodobtn.onclick = function(){
    localStorage.setItem("todoList", JSON.stringify(todoList));
};
```

```
let todoCount = todoList.length;
function onAddTodo(){
    let userInputEle = document.getElementById("todoUserInput");
    let userInputVal = userInputEle.value;
    if (userInputVal==""){
        alert("Enter Valid Text");
        return;
    }
    todoCount = todoCount+1;
    let newTodo = {text:userInputVal, UniqueNo: todoCount};
    todoList.push(newTodo);
    createAndAppendTodo(newTodo)
    userInputEle.value = "";
}
let addTodoButton = document.getElementById("addtodobutton");
addTodoButton.onclick = function(){
    onAddTodo();
}
```

```
function getTodoListfromStorage(){
    let StringifiedTodo = localStorage.getItem("todoList");
    let parsedTodoList = JSON.parse(StringifiedTodo);
    if (parsedTodoList===null){
        return [];
    }
    else{
        return parsedTodoList;
    }
}
```

### Topic 5

- Array Methods : findIndex(), splice()
- Local Storage : Deleting a Todo and Updating Local Storage

### Array Methods

In [18]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js38.png")
```

Out[18]:

| Method | Functionality |
|---|---|
| includes, indexOf, lastIndexOf, find, findIndex() | Finding Elements |
| push, unshift, splice | Adding Elements |
| pop, shift, splice | Removing Elements |
| concat, slice | Combining & Slicing Arrays |
| join | Joining Array Elements |
| sort | Sorting Array Elements |

**splice() : The splice() method changes the contents of an array.**

- Using splice() method, we can
  - Remove existing items
  - Replace existing items
  - Add new items
- Removing existing items
  - Syntax: arr.splice(Start, Delete Count)
  - Start: Starting Index
  - Delete Count: Number of items to be removed, starting from the given index
  - The splice() method returns an array containing the deleted items.
- Adding new items
  - Syntax: arr.splice(Start, Delete Count, Item1, Item2 ... )
  - Here the Item1, Item2 ... are the items to be added, starting from the given index.
- Replacing existing items
  - Syntax: arr.splice(Start, Delete Count, Item1, Item2 ... )

In [19]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js39.png")
```

Out[19]:

JS pg1_array_methods.js > ...

```
let myArray = [5, "six", 2, 8.2];
myArray.splice(2, 2);
console.log(myArray); // [5, "six"]

let deletedItems = myArray.splice(2, 2);
console.log(deletedItems); // []

let myArray2 = [5, "six", 2, 8.2];
myArray2.splice(2, 0, "one", false);
console.log(myArray2); // [5, "six", "one", false, 2, 8.2]

let myArray3 = [5, "six", 2, 8.2];
myArray3.splice(2, 1, true);
console.log(myArray3); // [5, "six", true, 8.2]
```

**findIndex() :**

- The findIndex() method returns the first item's index that satisfies the provided testing function. If no item is found, it returns -1.
- Syntax: arr.findIndex(Testing Function)

In [20]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js40.png")
```

Out[20]:

```
let myarray4 = [5,12,8,130,44];
let itemIndex = myarray4.findIndex(function(eachItem){
    // console.log(eachItem)
    if (eachItem === 130){
        return true;
    }
    else{
        return false;
    }
});
console.log(itemIndex);
```

**output: 3**

```
let customerData = [{name:"pavan", id:101},
{name:"kumar", id:102},{name:"puppala", id:103}];
let itemIdx = customerData.findIndex(function(eachItm){
    if (eachItm.id===103){
        return true;
    }
    else{
        return false;
    }
});
console.log(itemIdx);
```

**output: 2**

**includes()**

- The includes() method returns true if the provided item exists in the array. If no item is found, it returns false.
- Syntax: arr.includes(item)

**indexOf()**

- The indexOf() method returns the first index at which a given item can be found in the array. If no item is found, it returns -1.
- Syntax: arr.indexOf(item)

**lastIndexOf()**

- The lastIndexOf() method returns the last index at which a given item can be found in the array. If no item is found, it returns -1.
- Syntax: arr.lastIndexOf(item)

**find()**

- The find() method returns the first item's value that satisfies the provided testing function. If no item is found, it returns undefined.
- Syntax: arr.find(Testing Function)

**unshift()**

- The unshift() method adds one or more items to the beginning of an array and returns the new array length.
- Syntax: arr.unshift(item1,item2, ..., itemN)

**shift()**

- The shift() method removes the first item from an array and returns that removed item.
- Syntax: arr.shift()

**concat()**

- The concat() method can be used to merge two or more arrays.
- This method does not change the existing arrays but instead returns a new array.
- let newArray = arr1.concat(arr2);

**slice()**

- The slice() method returns a portion between the specified start index and end index(end index not included) of an array into a new array.
- Syntax: arr.slice(startIndex, endIndex)

**join()**

- The join() method creates and returns a new string by concatenating all of the items in an array, separated by commas or a specified separator string.
- If the array has only one item, then it will be returned without using the specified separator.
- Syntax: arr.join(separator)

- Here separator is a string used to separate each item of the array. If omitted, the array items are separated with a comma.

**sort()**

- The sort() method sorts the items of an array and returns the sorted array. The default sort order is ascending.
- Syntax: arr.sort()

**Why did the Deleted Todo Item Appear again on reload?**

- remove corresponding Todo object from Todo List using splice

In [21]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js41.png")
```

Out[21]:


**1. Local Storage**

**1.1 The removeItem() Method**

- The removeItem() method removes the specified storage object item based on the key.
- Syntax: localStorage.removeItem(key)
- Key - Name of the key to be removed
- localStorage.removeItem("todoList");

### persisting Todo Checked Status on Reload

- adding isChecked key to Newly added item
- some todo objects have Checked status and some don't(remove existing todo List and create new todo List to local storage)
- to remove item from the local storage (localStorage.removeItem(key))
- localStorage.removeItem(todoList);

In [22]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js43.png")
```

Out[22]:

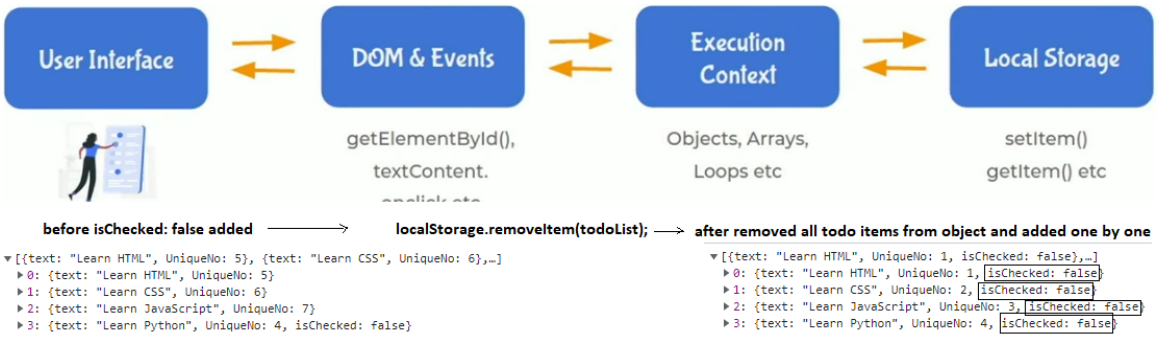
```
let todoCount = todoList.length;
function onAddTodo(){
    let userInputEle = document.getElementById("todoUserInput");
    let userInputVal = userInputEle.value;
    if (userInputVal==""){
        alert("Enter Valid Text");
        return;
    }
    todoCount = todoCount+1;
    let newTodo = {text:userInputVal, UniqueNo: todoCount, isChecked:false};
    todoList.push(newTodo);
    createAndAppendTodo(newTodo)
    userInputEle.value = "";
}
```

### Application Flow

In [23]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js42.png")
```

Out[23]:




- creating each TodoId
- comparing Todo Id's
- Accessing the Todo Object
- updating todo object checked status

In [24]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js44.png")
```

Out[24]:


- reflect the change to UI

In [25]:

```
from IPython.display import Image
Image("E:/code/frontend/img/js45.png")
```

Out[25]: