SVKM's NMIMS
School of Technology Management & Engineering (Shirpur Campus)
Computer Science Department (Sem IV)
Web Programming
Lab Manual

PART A

(Part A: TO BE REFFERED BY STUDENTS)

Experiment No. 07

A.1 AIM:

Implement basics of Angular JS by using directive, controller, expression, modules etc.

A.2 Pre requisite:

HTML, CSS, Javascript

A.3 Outcome:

After successful completion of this experiment students will be able to:

1. Understand and implement directives, expressions, controllers, scope in Angular JS.
2. Understand the principles behind data binding in Angular JS.

A.4 Theory:

Angular JS is an open source framework built on javascript

Directives are markers on a DOM element (such as an attribute, element name, comment or CSS class) that tell AngularJS's HTML compiler ($compile) to attach a specified behavior to that DOM element (e.g. via event listeners), or even to transform the DOM element and its children.

AngularJS comes with a set of these directives built-in, like ng-app, ngBind, ngModel, ngClass

Ex:

```
<body>
    <h1>Sample Application</h1>
      <div ng-app = "My App">
    <p>Enter your Name: <input type = "text" ng-model = "name"></p>
    <p>Hello <span ng-bind = "name"></span>!</p>
```

```
        </div>

    <script src =
"https://ajax.googleapis.com/ajax/libs/angularjs/1.3.14/angular.min.js"></script>

</body>
```

Expressions:

Expressions are used to bind application data to html.

Expressions are written inside double braces like {{ expression}}.

Expressions behaves in same way as ng-bind directives

Controller

In AngularJS, a Controller is defined by a JavaScript constructor function that is used to augment the AngularJS Scope.

Controllers can be attached to the DOM in different ways. For each of them, AngularJS will instantiate a new Controller object, using the specified Controller's constructor function:

use the ng-controller directive. A new child scope will be created and made available as an injectable parameter to the Controller's constructor function as $scope.

```
<script>

var app = angular

    .module("myModule", [])

    .controller("myController", function($scope){

      $scope.technologies = [

        {"href": 'http://www.pngmart.com/files/4/Cute-Cartoon-PNG-Picture.png', likes: 0,
dislikes:0}];

 $scope.incrementLike = function(technology){

        technology.likes++ ;

      }
```

```
});

</script>
```

Data Binding in Angular JS works in MVC. Any changes to the view are immediately reflected in the model,and any changes in the model are propagated to the view.

AngularJS directives are used to extend HTML. They are special attributes starting with **ng**-prefix. Let us discuss the following directives −

- **ng-app** − This directive starts an AngularJS Application.
- **ng-init** − This directive initializes application data.
- **ng-model** − This directive defines the model that is variable to be used in AngularJS.
- **ng-repeat** − This directive repeats HTML elements for each item in a collection.

Example

testAngularJS.htm

```
<html>
  <head>
    <title>AngularJS Directives</title>
  </head>

  <body>
    <h1>Sample Application</h1>

    <div ng-app = "" ng-init = "countries = [{locale:'en-US',name:'United States'},
      {locale:'en-GB',name:'United Kingdom'}, {locale:'en-FR',name:'France'}]">
      <p>Enter your Name: <input type = "text" ng-model = "name"></p>
      <p>Hello <span ng-bind = "name"></span>!</p>
      <p>List of Countries with locale:</p>

      <ol>
        <li ng-repeat = "country in countries">
          {{ 'Country: ' + country.name + ', Locale: ' + country.locale }}
        </li>
      </ol>
    </div>

    <script src = "https://ajax.googleapis.com/ajax/libs/angularjs/1.3.14/angular.min.js">
    </script>
```

The following directives are used to bind application data to the attributes of HTML DOM elements –

ng-disabled

disables a given control.

ng-show

shows a given control.

ng-hide

hides a given control.

ng-click

represents a AngularJS click event.

Example

The following example shows use of all the above mentioned directives.

testAngularJS.htm

```
<html>
  <head>
    <title>AngularJS HTML DOM</title>
  </head>

  <body>
    <h2>AngularJS Sample Application</h2>

    <div ng-app = "">
      <table border = "0">
        <tr>
          <td><input type = "checkbox" ng-model = "enableDisableButton">Disable Button</td>
          <td><button ng-disabled = "enableDisableButton">Click Me!</button></td>
        </tr>
        <tr>
          <td><input type = "checkbox" ng-model = "showHide1">Show Button</td>
          <td><button ng-show = "showHide1">Click Me!</button></td>
        </tr>
        <tr>
          <td><input type = "checkbox" ng-model = "showHide2">Hide Button</td>
          <td><button ng-hide = "showHide2">Click Me!</button></td>
        </tr>
        <tr>
          <td><p>Total click: {{ clickCounter }}</p></td>
```

```
        <td><button ng-click = "clickCounter = clickCounter + 1">Click Me!</button></td>
      </tr>
    </table>
  </div>

  <script src = "https://ajax.googleapis.com/ajax/libs/angularjs/1.3.14/angular.min.js">
  </script>

</body>
```

A.5 Procedure/Task:

1. Implement following directives
   ng-init, ng-model, ng-bind, ng-repeat

2. Designed angular JS application to change background color of page as per the color name entered in text box.

3. Implement 1-way and 2-way data binding

4. To create a shopping cart application with directives in Angular JS. The following directives are mandatory to use. However, students can explore more and use as per need.

- ng-app, ng-init, ng-model, ng-bind, ng-controller, ng-click, ng-repeat, ng-show, ng-hide, ng-disabled.

5. To create an application to implement likes/dislikes score change on button hit.

6. Prepare the document. Save and close the file and name it as **EXP07_Name of Student**

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PART B

(PART B: TO BE COMPLETED BY STUDENTS)

(Students must submit the soft copy as per following segments within two hours of the practical. The soft copy must be uploaded on the Blackboard or emailed to the concerned lab in charge faculties at the end of the practical in case the there is no Black board access available)

Roll No. : E258	Name: Kundan Patil
Class : BTech CS	Batch : A-3
Date of Experiment :	Date/Time of Submission :
Grade :	

B.1 Code:

1

```
<!DOCTYPE html>
<html ng-app="myApp">
<head>
    <title>AngularJS Directives Example</title>
    <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.3.14/angular.min.js"></script>
</head>
<body>

    <div ng-controller="myCtrl">
        <h1>Welcome to the AngularJS Directives Example!</h1>

        <!-- User input section -->
        <p>Enter your Name: <input type="text" ng-model="name"></p>
        <p>Hello <span ng-bind="name"></span>!</p>

        <!-- List of Countries using ng-repeat -->
        <p>List of Countries:</p>
        <ul>
            <li ng-repeat="country in countries">
                {{ country.name }} - {{ country.locale }}
            </li>
        </ul>
    </div>

    <script>
        angular.module('myApp', [])
            .controller('myCtrl', function($scope) {
                $scope.name = '';  // Two-way data binding with ng-model

                // Initializing countries data with ng-init
                $scope.countries = [
                    {locale: 'en-US', name: 'United States'},
                    {locale: 'en-GB', name: 'United Kingdom'},
                    {locale: 'fr-FR', name: 'France'}
                ];
            });
    </script>
</body>
</html>
```

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```
<!DOCTYPE html>
<html ng-app="myApp">
<head>
    <title>Change Background Color</title>
    <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.3.14/angular.min.js"></script>
</head>
<body ng-controller="colorCtrl" ng-style="{'background-color': bgColor}">

    <h1>Enter a color to change the background:</h1>
    <input type="text" ng-model="colorInput" placeholder="e.g., red, blue, green">
    <button ng-click="changeColor()">Change Color</button>

    <script>
        angular.module('myApp', [])
            .controller('colorCtrl', function($scope) {
                $scope.bgColor = 'white';  // Default background color

                // Function to change background color based on user input
                $scope.changeColor = function() {
                    $scope.bgColor = $scope.colorInput;
                };
            });
    </script>
</body>
</html>
```

```
<!DOCTYPE html>
<html ng-app="myApp">
<head>
    <title>Data Binding Example</title>
    <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.3.14/angular.min.js"></script>
</head>
<body>

    <div ng-controller="myCtrl">
        <!-- 1-Way Data Binding (expression) -->
        <h1>{{ message }}</h1>

        <!-- 2-Way Data Binding (ng-model) -->
        <input type="text" ng-model="userInput" placeholder="Type something">
        <p>You typed: {{ userInput }}</p>
    </div>

    <script>
        angular.module('myApp', [])
            .controller('myCtrl', function($scope) {
                $scope.message = 'Hello, AngularJS!';
                $scope.userInput = '';
            });
    </script>

</body>
</html>
```

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```html
<!DOCTYPE html>
<html lang="en" ng-app="shoppingApp">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.8.2/angular.min.js"></script>
    <link href="https://fonts.googleapis.com/css2?family=Inter:wght@300;400;500;600;700&display=swap" rel="stylesheet">
    <style>
        :root {
            --primary-gradient: linear-gradient(135deg, #667eea 0%, #764ba2 100%);
            --accent: #7c3aed;
            --glass: rgba(255, 255, 255, 0.05);
            --neon-shadow: 0 0 15px rgba(124, 58, 237, 0.3);
        }

        * {
            margin: 0;
            padding: 0;
            box-sizing: border-box;
            font-family: 'Inter', sans-serif;
        }

        body {
            min-height: 100vh;
            background: linear-gradient(135deg, #0f172a 0%, #1e293b 100%);
            display: flex;
            justify-content: center;
            align-items: center;
            padding: 2rem;
            color: #f8fafc;
        }

        .container {
            width: 100%;
            max-width: 1400px;
            background: var(--glass);
            backdrop-filter: blur(16px);
            border-radius: 24px;
            padding: 2.5rem;
            box-shadow: var(--neon-shadow);
            border: 1px solid rgba(255, 255, 255, 0.1);
        }

        .product-list {
            display: grid;
            grid-template-columns: repeat(auto-fill, minmax(280px, 1fr));
            gap: 2rem;
            margin-bottom: 3rem;
        }

        .product {
            background: linear-gradient(145deg, rgba(99, 102, 241, 0.1), rgba(124, 58, 237, 0.05));
            border-radius: 20px;
            padding: 2rem;
            transition: transform 0.3s cubic-bezier(0.4, 0, 0.2, 1), box-shadow 0.3s;
            position: relative;
            overflow: hidden;
        }

        .product::before {
            content: '';
            position: absolute;
            inset: 0;
            background: var(--primary-gradient);
            opacity: 0;
            transition: opacity 0.3s;
```

```
        z-index: -1;
    }

    .product:hover {
        transform: translateY(-5px);
        box-shadow: var(--neon-shadow);
    }

    .product:hover::before {
        opacity: 0.1;
    }

    .product h3 {
        font-size: 1.5rem;
        font-weight: 600;
        margin-bottom: 0.5rem;
        background: var(--primary-gradient);
        -webkit-background-clip: text;
        -webkit-text-fill-color: transparent;
    }

    .product p {
        color: #94a3b8;
        margin-bottom: 1.5rem;
    }

    .product button {
        width: 100%;
        padding: 1rem;
        background: var(--primary-gradient);
        border: none;
```

```
        border-radius: 12px;
        color: white;
        font-weight: 600;
        cursor: pointer;
        transition: transform 0.2s, opacity 0.2s;
        position: relative;
        overflow: hidden;
    }

    .product button::after {
        content: '';
        position: absolute;
        inset: 0;
        background: rgba(255, 255, 255, 0.1);
        opacity: 0;
        transition: opacity 0.2s;
    }

    .product button:hover::after {
        opacity: 1;
    }

    .product button:active {
        transform: scale(0.98);
    }

    .product button:disabled {
        opacity: 0.7;
        cursor: not-allowed;
        background: #475569;
    }
```

```css

    .cart {
        background: rgba(30, 41, 59, 0.5);
        border-radius: 20px;
        padding: 2rem;
        margin-top: 2rem;
    }

    .cart h2 {
        font-size: 2rem;
        margin-bottom: 1.5rem;
        background: var(--primary-gradient);
        -webkit-background-clip: text;
        -webkit-text-fill-color: transparent;
    }

    .cart-item {
        display: flex;
        justify-content: space-between;
        align-items: center;
        padding: 1.5rem;
        background: rgba(255, 255, 255, 0.03);
        border-radius: 12px;
        margin-bottom: 1rem;
        animation: slideIn 0.3s ease-out;
    }

    @keyframes slideIn {
        from { opacity: 0; transform: translateX(20px); }
        to { opacity: 1; transform: translateX(0); }
    }
```

```
160
161         .cart-item button {
162             background: none;
163             border: 2px solid #ef4444;
164             color: #ef4444;
165             padding: 0.5rem 1rem;
166             border-radius: 8px;
167             cursor: pointer;
168             transition: all 0.2s;
169         }
170
171         .cart-item button:hover {
172             background: #ef4444;
173             color: white;
174         }
175
176         .total-price {
177             display: flex;
178             justify-content: space-between;
179             align-items: center;
180             padding-top: 2rem;
181             margin-top: 2rem;
182             border-top: 1px solid rgba(255, 255, 255, 0.1);
183         }
184
185         .total-price span:first-child {
186             font-size: 1.25rem;
187             color: #94a3b8;
188         }
189
190         .total-price span:last-child {
191             font-size: 1.5rem;
192             font-weight: 700;
193             background: var(--primary-gradient);
194             -webkit-background-clip: text;
195             -webkit-text-fill-color: transparent;
196         }
197
198         .clear-cart-btn {
199             background: var(--primary-gradient);
200             border: none;
201             padding: 1rem 2rem;
202             border-radius: 12px;
203             color: white;
204             font-weight: 600;
205             cursor: pointer;
206             transition: transform 0.2s;
207             float: right;
208             margin-top: 1.5rem;
209         }
210
211         .clear-cart-btn:hover {
212             transform: translateY(-2px);
213         }
214
215         .empty-cart {
216             text-align: center;
217             padding: 4rem;
218             color: #64748b;
219         }
220
221         @media (max-width: 768px) {
```

```
            .container {
                padding: 1.5rem;
                border-radius: 16px;
            }

            .product {
                padding: 1.5rem;
            }

            .cart-item {
                flex-direction: column;
                gap: 1rem;
                align-items: flex-start;
            }
        }
    </style>
</head>
<body ng-controller="ShoppingCartController" ng-init="initializeCart()">
    <div class="container">
        <!-- Product List -->
        <div class="product-list">
            <div ng-repeat="product in products" class="product">
                <h3>{{ product.name }}</h3>
                <p>${{ product.price }}</p>
                <button ng-click="addToCart(product)" ng-disabled="product.addedToCart">
                    {{ product.addedToCart ? 'Added ✓' : 'Add to Cart' }}
                </button>
            </div>
        </div>

        <!-- Shopping Cart -->
```

```
        <!-- Shopping Cart -->
        <div class="cart" ng-show="cart.length > 0">
            <h2>Shopping Cart</h2>
            <div class="cart-item" ng-repeat="item in cart">
                <div>
                    <h3>{{ item.name }}</h3>
                    <p>${{ item.price }} × {{ item.quantity }}</p>
                </div>
                <button ng-click="removeFromCart(item)">Remove</button>
            </div>

            <div class="total-price">
                <span>Total:</span>
                <span>${{ totalPrice() }}</span>
            </div>

            <button class="clear-cart-btn" ng-click="clearCart()">Clear Cart</button>
        </div>

        <!-- Empty Cart Message -->
        <div class="empty-cart" ng-show="cart.length === 0">
            <h3>Your cart is empty</h3>
            <p>Explore our products above</p>
        </div>
    </div>

    <script>
        angular.module('shoppingApp', [])
        .controller('ShoppingCartController', function($scope) {
            // Initialize products and cart
            $scope.initializeCart = function() {
                $scope.products = [
```

```
            $scope.initializeCart = function() {
                $scope.products = [
                    {name: 'Laptop', price: 999, addedToCart: false},
                    {name: 'Smartphone', price: 599, addedToCart: false},
                    {name: 'Headphones', price: 199, addedToCart: false},
                    {name: 'Keyboard', price: 49, addedToCart: false}
                ];
                $scope.cart = [];
            };

            // Add product to cart
            $scope.addToCart = function(product) {
                const found = $scope.cart.find(item => item.name === product.name);
                if (found) {
                    found.quantity++;
                } else {
                    $scope.cart.push({ name: product.name, price: product.price, quantity: 1 });
                }
                product.addedToCart = true;
            };

            // Remove product from cart
            $scope.removeFromCart = function(item) {
                const index = $scope.cart.indexOf(item);
                if (index !== -1) {
                    $scope.cart.splice(index, 1);
                    const product = $scope.products.find(product => product.name === item.name);
                    product.addedToCart = false;
                }
            };
```

```

            // Calculate total price
            $scope.totalPrice = function() {
                let total = 0;
                for (let i = 0; i < $scope.cart.length; i++) {
                    total += $scope.cart[i].price * $scope.cart[i].quantity;
                }
                return total;
            };

            // Clear the cart
            $scope.clearCart = function() {
                $scope.cart = [];
                for (let i = 0; i < $scope.products.length; i++) {
                    $scope.products[i].addedToCart = false;
                }
            };
        });
    </script>
</body>
</html>

```

```
<!DOCTYPE html>
<html ng-app="likeDislikeApp">
<head>
    <title>Like/Dislike Example</title>
    <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.3.14/angular.min.js"></script>
</head>
<body ng-controller="likeDislikeCtrl">

    <h1>Like/Dislike Counter</h1>

    <div>
        <p>Likes: {{ likes }} | Dislikes: {{ dislikes }}</p>
        <button ng-click="incrementLikes()">Like</button>
        <button ng-click="incrementDislikes()">Dislike</button>
    </div>

    <script>
        angular.module('likeDislikeApp', [])
            .controller('likeDislikeCtrl', function($scope) {
                $scope.likes = 0;
                $scope.dislikes = 0;

                $scope.incrementLikes = function() {
                    $scope.likes++;
                };

                $scope.incrementDislikes = function() {
                    $scope.dislikes++;
                };
            });
    </script>

</body>
</html>
```

B.2 Output

(Take screen shots of the output at run time and paste it here)

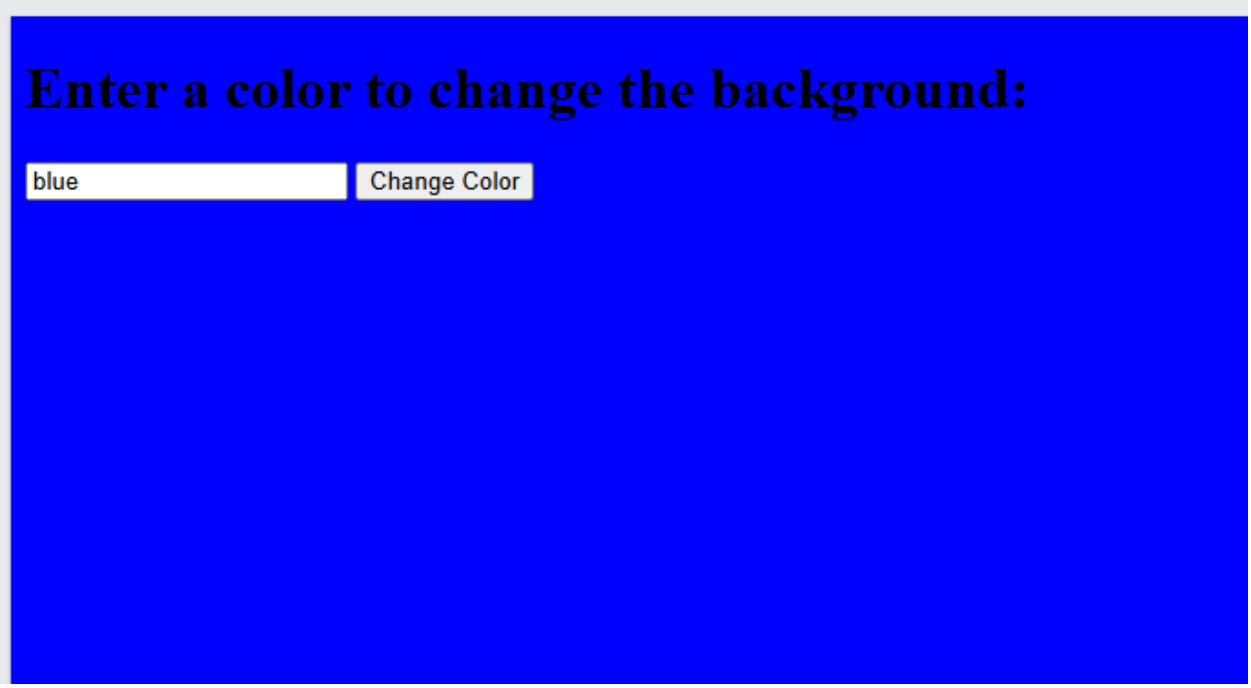
Welcome to the AngularJS Directives Example!

Enter your Name: Kundan Patil

Hello Kundan Patil!

List of Countries:

- United States en-US
- United Kingdom en-GB
- France fr-FR



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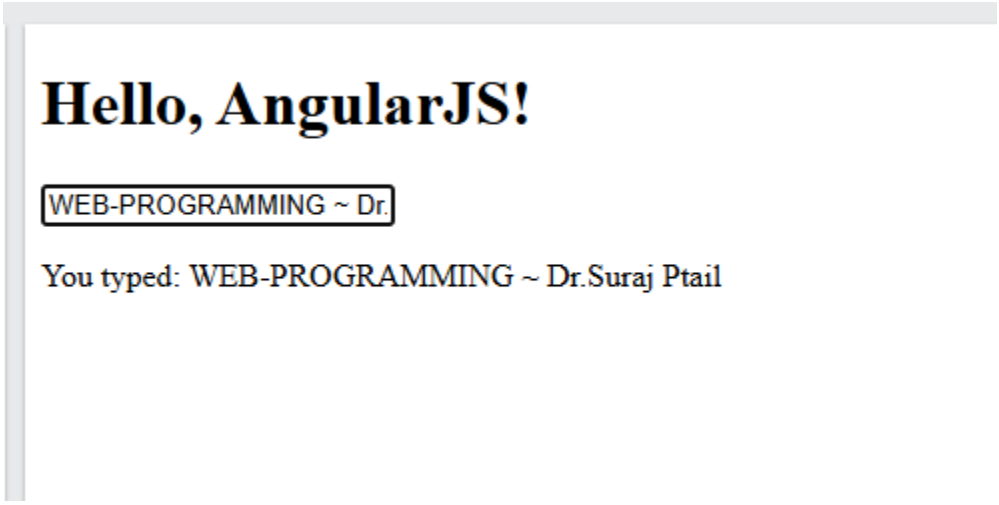

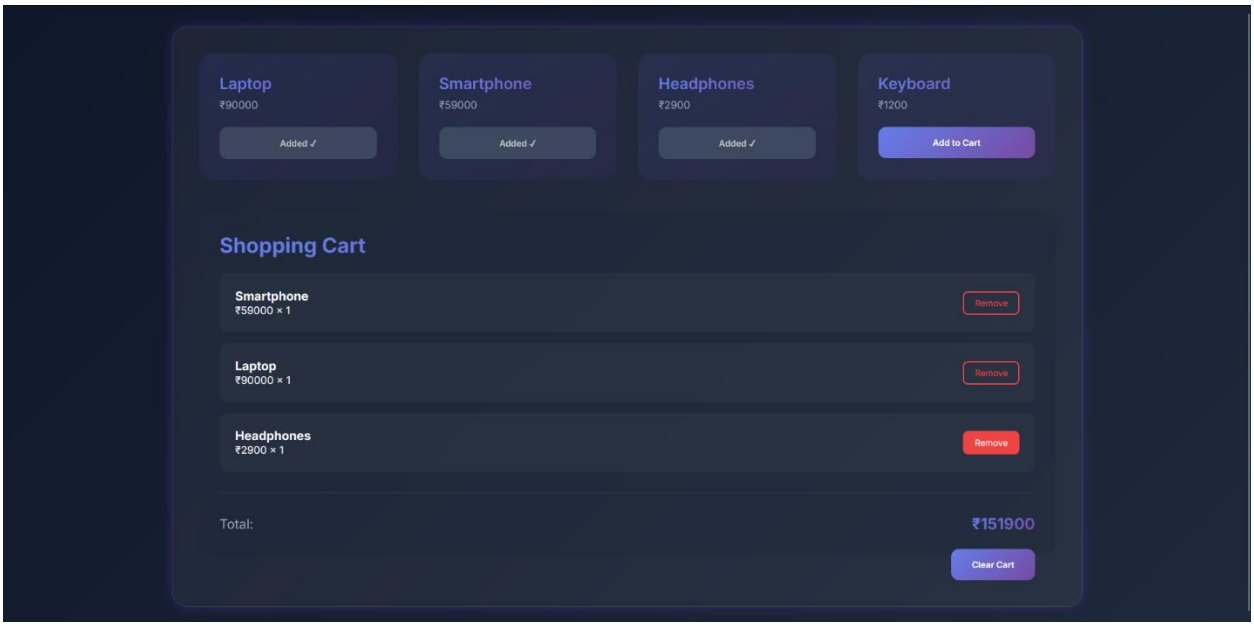

B.3 Conclusion:

(Students must write the conclusion as per the attainment of individual outcome listed above)

I successfully implemented AngularJS basics, including directives, controllers, expressions, and modules. This experiment enhanced my understanding of data binding and creating dynamic web pages using AngularJS.

B.3 Observations and Learning:

(Students must write their observations and learnings as per the attainment of individual outcome listed above)

- Learned usage of directives like ng-model, ng-repeat, ng-click, etc.
- Understood one-way and two-way data binding.
- Practiced using controllers to manage data and logic.
- Applied knowledge to build interactive applications like shopping carts and like/dislike counters.