

AngularJS

AngularJS is a structured, very powerful JavaScript based open-source front end web framework. It is used for one-page dynamic applications. It is maintained by Google and by a community of individuals and corporations to address many of the challenges encountered in developing single-page applications. Single page means the webpages need to be refreshed. We can further divide a webpage into different components. It is used by thousands of developers around the world. It is mainly used for creating the web applications. It was originally developed in 2009 by Misko Hevery and Adam Abrons.

AngularJS injects the required components to the same webpage, i.e. the webpage becomes dynamic. And when the user navigates to a URL, AngularJS injects the required components into the same page instead of refreshing the page. It essentially reuses the components which do not change, i.e. reducing the load time.

Being a framework, it uses code templates written in HTML in order to perform particular function or command. The data binding and dependency functionalities of Angular JS saves time invested in writing lengthy codes. AngularJS provides developers an options to write browser based applications with Model View Controller (MVC) capability and reduce the amount of JavaScript needed to make web application functional. These types of Apps are also knows as Single-Page Applications. Further, applications written in AngularJS are cross-browser compliant as it automatically handles JavaScript code suitable for each browser.

In Short, AngularJS is a framework to build large scale, high-performance, and easy to-maintain web applications.

AngularJS Key Features

- **Model-View-Controller** (MVC) design pattern is used in the framework which is used in all modern day web applications. MVC pattern works on splitting the business logic layer, the data layer, and presentation layer into separate sections. The division into different sections is done so that each one could be managed more easily.
- **Scope** – These are objects that refer to the model. They act as glue between controller and view.
- **Data Model Binding** – It is the automatic synchronization of data between model and view components. And need not to write special code to bind data to the HTML controls and this can be done by AngularJS by just adding a few snippets of code.
- **Directives** – Directives are markers on DOM elements such as elements, attributes, css, and more. These can be used to create custom HTML tags that serve as new, custom widgets. AngularJS has built-in directives such as ng-Bind, ng-Model, etc.
- **Writing less code** – With AngularJS less amount of code is required to write for DOM manipulation.
- **Deep Linking** – Deep linking allows to encode the state of application in the URL so that it can be bookmarked. The application can then be restored from the URL to the same state.
- **Dependency Injection** – AngularJS has a built-in dependency injection subsystem that helps the developer to create, understand, and test the applications easily.

Architecture

MVC (**Model-View-Controller**) architecture framework is being followed by AngularJS.

- **Controller** is the layer having the business logic. The user events are part of the controller. Controllers are JavaScript functions bound to a particular scope.
- **Views** is the presentation layer which is provided to the end users

- **Models** are used to represent data. The data in model can have a student_id and a name in simple terms Or it can be complex by having a structured data model to define the vehicle itself in terms of its engine capacity, seating capacity, etc.

Advantages

- It is an open source framework, freely available and maintained by Google.
- **Easy to Learn** and work in minimum possible time.
- **Two-way binding of data** – Angular JS allows you to do two-way data binding that enables view and model to coordinate with the changes in one another, i.e. data and presentation layer in sync.
- It extends HTML by providing its own elements called **directives** which tell AngularJS's HTML compiler to attach a specified behavior to that DOM element such as an attribute, element name, and comment or CSS class. These directives help in extending the functionality of existing HTML elements to give more power to web application.
- **Less Code & Functions** – AngularJS analyzes the DOM and creates the bindings on the basis of Angular-specific element attributes. This saves times in writing lengthy codes.
- **Automatically joins the components** as compared to the framework which may require the developers to divide the application into multiple small MVC components and write codes to join them again.
- **Routing** – Angular can take care of routing which means moving from one view to another. This is the key fundamental of single page applications; wherein you can move to different functionalities in your web application based on user interaction but still stay on the same page.
- AngularJS supports both Unit Testing, and Integration Testing.

Example: A Simple Application

```
<html>
<head>
  <title>AngularJS Application Example</title>
</head>
<script src = "https://ajax.googleapis.com/ajax/libs/angularjs/1.3.14/angular.min.js">
  </script>
<body>
```

```
<h1>Displaying the Welcome Message Dynamically</h1>
```

```
<div ng-app = "">
```

```
  <p>Enter Your Name in the input box below:</p>
```

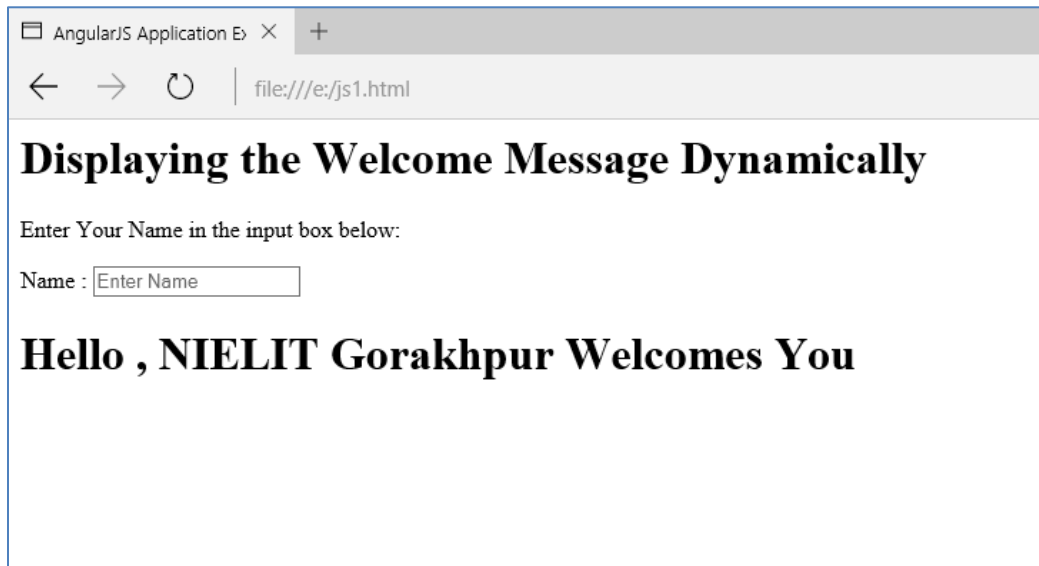
```
  <p>Name : <input type="text" ng-model="name" placeholder="Enter Name" ></p>
```

```
  <h1>Hello {{name}}, NIELIT Gorakhpur Welcomes You</h1>
```

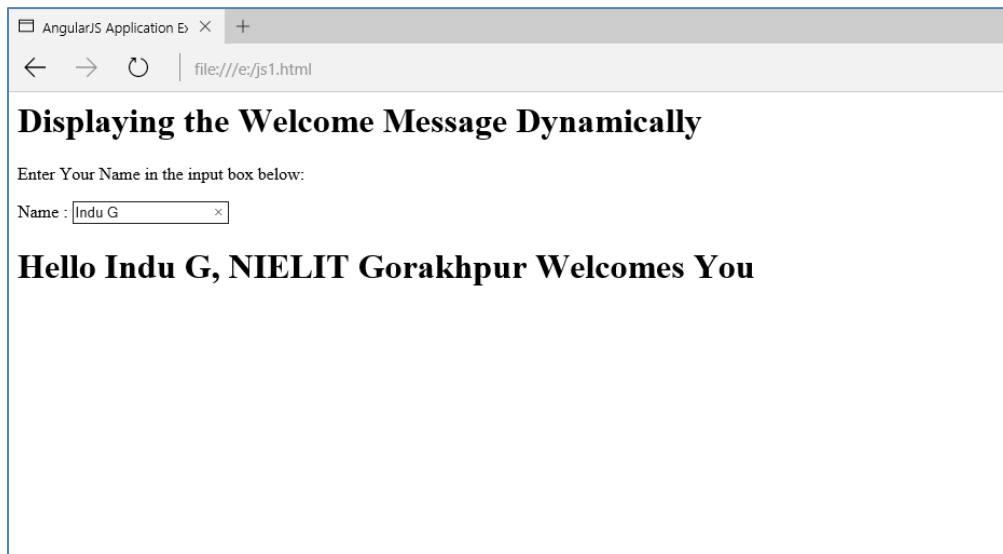
```
</div>
```

```
</body>
```

```
</html>
```



Value Entered in the Name input box will be displayed dynamically below in welcome message.



Assignment

- 1.What is AngularJS? What are its features?
- 2.What are the uses & advantages of AngularJS?