Angular JS: Simple calculator, Component, Controller, Service and Filters

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Exercise Number:	3
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Aim

To write an Angular program to

- Implement Simple Calculator.
- Implement Components, Service, and Controllers.
- Implement search to filter items.

Procedure for Calculator

- Import the angular script.
- Get operand 1 and operand 2 as input from the user using input tag.
- Get the operation to be performed from the user using select tag.
- The div enclosing the calculator is directed to the respective ng-app and ng-controller.
- Inside the angular controller, define function result() and using $scope, get the operation required.
- Using if statements perform the necessary operation on the operands a and b which are linked by ng-model and return it.
- Result is invoked in the calculator which will give the required output.

Procedure for Components, Service and Controllers

- Components can be registered using the .component() method of an AngularJS module (returned by angular.module()).
- The method takes two arguments
  - The name of the Component (as string).
  - The Component config object.
- We will display the URL of the HTML file.
- We will also use the Time service to display the current time.
- AngularJS applications are controlled by controllers.
- The ng-controller directive defines the application controller.

- A controller is a JavaScript Object, created by a standard JavaScript object constructor.
- AngularJS will invoke the controller with a $scope object.

Procedure for Filters

- We write a script query using Angualr JS.
- To display the different items we Loop through all list items, and hide those who don't match the search query.

Experiment Name:	Simple Calculator Using Angular JS
Exercise Number:	3A
Date:	March 9, 2021

HTML Code

```
<!DOCTYPE html>
<html ng-app>

<head>
    <script data-require="angular.js@1.0.7" data-semver="1.0.7"
    ↪  src="https://ajax.googleapis.com/ajax/libs/angularjs/1.0.7/angular.js"></script>
    <title>Angular JS Calculator</title>
    <link rel="stylesheet" href="style.css"/>
    <script src="script.js"></script>
</head>

<body>
    <h1>Angular JS Calculator</h1>
    <div ng-controller="CalculatorCtrl">
      <table>
        <tr>
          <td>Value 1 :</td>
          <td><input ng-model="a"></td>
        </tr>
        <tr>
          <td>Value 2 :</td>
          <td><input ng-model="b"></td>
        </tr>
        <tr>
          <td>Operator :</td>
          <td>
            <select ng-model="operation">
              <option value="+">+</option>
              <option value="-">-</option>
              <option value="*">*</option>
              <option value="/">/</option>
              <option value="%">%</option>
            </select>
          </td>
        </tr>
      </table>
      <p class="result">Result : {{na()}} {{operation}} {{nb()}} = {{calculate()}}</p>
```

```
    </div>
</body>

</html>
```

CSS Code

```
.result
{
          font-size : 20px;
          font-weight: bold;
}

td
{
        font-size: 20px;
}
```

Java Script Code

```
function CalculatorCtrl($scope)
{

  $scope.a = 0;
  $scope.b = 0;
  $scope.operation = '+';

  $scope.na = function()
  {
    return $scope.a - 0;
  }

  $scope.nb = function()
  {
    return $scope.b - 0;
  }

  $scope.calculate = function()
  {
    if($scope.operation == '+')
    {
      return $scope.na() + $scope.nb();
    }
    if($scope.operation == '-')
    {
      return $scope.a - $scope.b;
    }
    if($scope.operation == '*')
    {
      return $scope.a * $scope.b;
    }
    if($scope.operation == '/')
    {
      return $scope.a / $scope.b;
    }
    if($scope.operation == '%')
    {
      return $scope.a % $scope.b;
```

```
    }
    return "undef";
  }
}
```

Output

Figure 1: **Calculator Output Pic1**

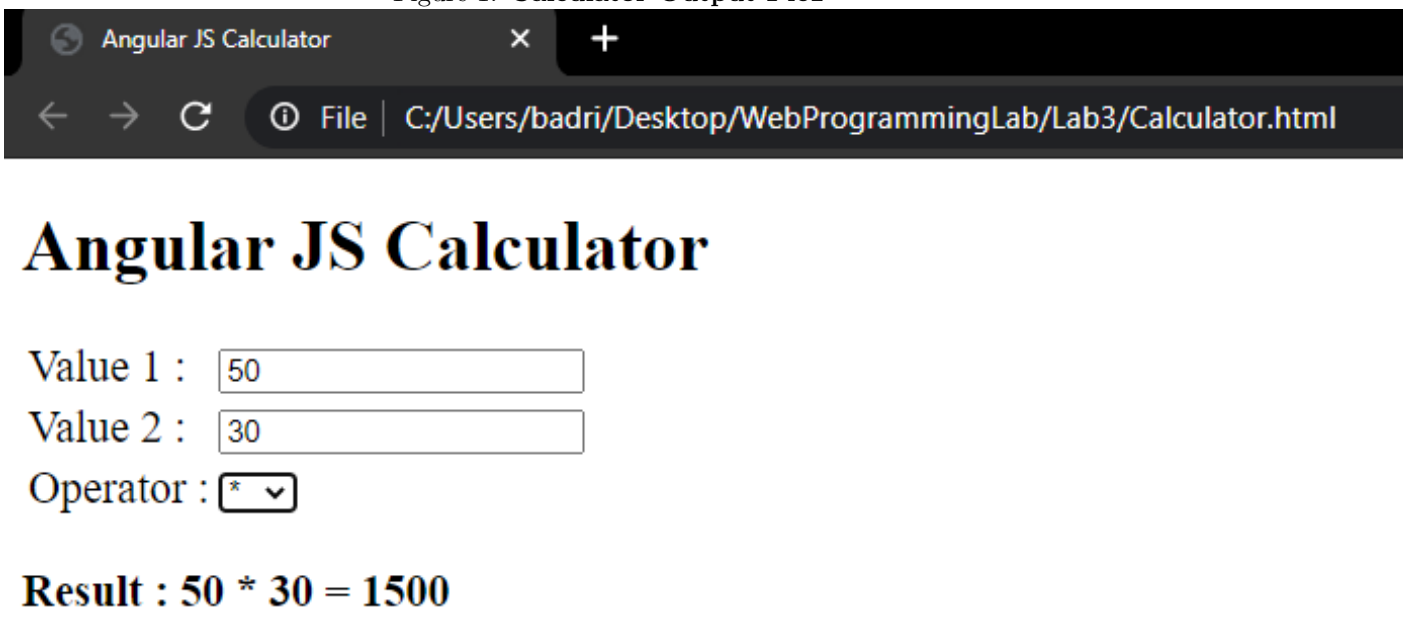
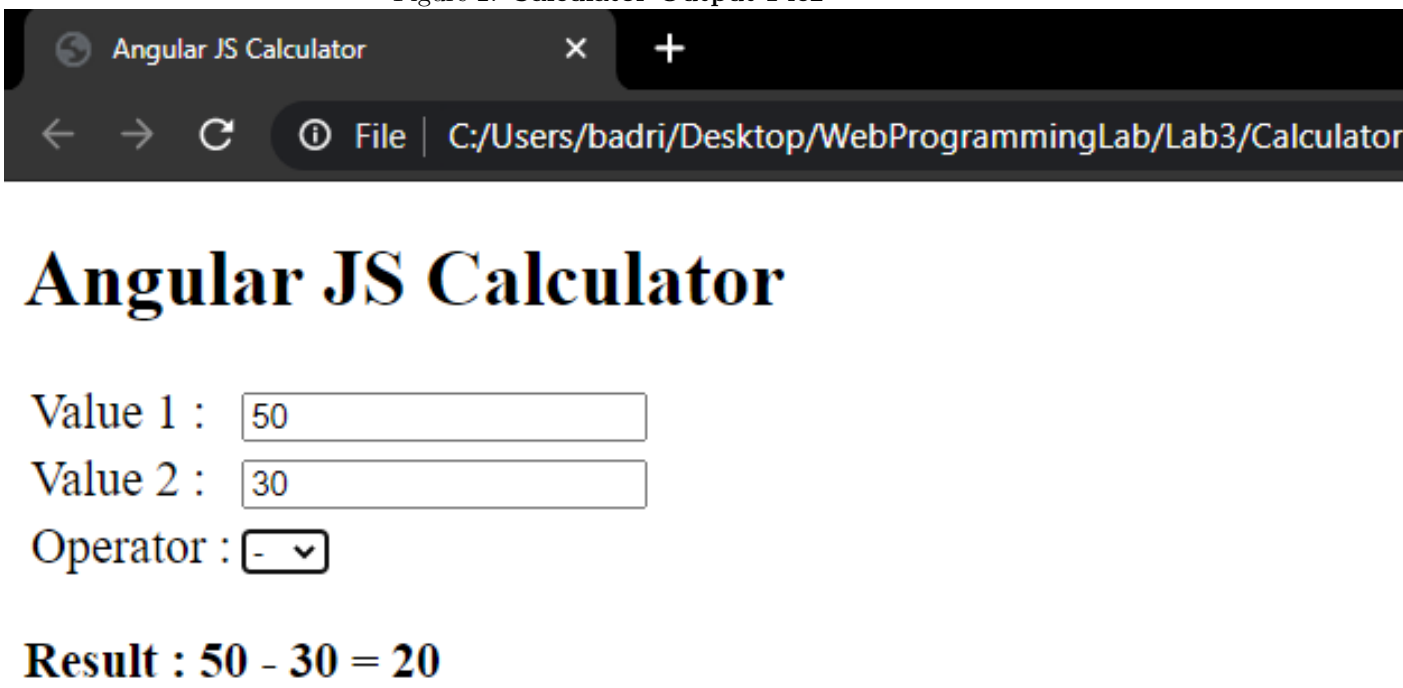


Figure 2: **Calculator Output Pic2**



Experiment Name:	Angular program to implement Components, Service, and Controllers
Exercise Number:	3B
Date:	March 9, 2021

HTML Code

```
<!DOCTYPE html>
<html>
<head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>Components and Services</title>
    <script
    ↪  src="http://ajax.googleapis.com/ajax/libs/angularjs/1.6.9/angular.min.js"></script>
    <script src="App.js"></script>
    <script src="Service.js"></script>
    <script src="MathController.js"></script>
    <script src="Interval.js"></script>
    <script src="FileLocation.js"></script>
    <script src="Component.js"></script>
</head>

<body ng-app="myApp" align="center">

    <div align="center" class="box">
      <h2>
        <mycomp></mycomp>
```

```
      </h2>

        <div ng-controller="mathController">
            <table>
              <tr>
                <td><label>Value 1 :</label></td>
                <td></td>
                <td>
                  <div class="inputBox">
                    <input type="text" ng-model="x" />
                  </div>
                </td>
                <td></td>
              </tr>

              <tr>
                <td><label>Value 2 :</label></td>
                <td></td>
                <td>
                  <div class="inputBox">
                    <input type="text" ng-model="y" />
                  </div>
                </td>
                <td></td>
              </tr>

              <tr>
                <td>Result : </td>
                <td></td>
                <td><b>{{result}}</b></td>
                <td></td>
              </tr>
            </table>

            <input type="button" ng-click="calcAdd()" value="Addition" id="myBtn" />
            <input type="button" ng-click="calcSub()" value="Subtraction" id="myBtn"/>
            <input type="button" ng-click="calcMul()" value="Multiply" id="myBtn" />
            <input type="button" ng-click="calcDiv()" value="Division" id="myBtn" />
            <br>
        </div>
    </div>

    <br>
    <br>

    <div ng-controller="sample">
      <h2>Time : {{theTime}}</h2>
    </div>

    <br>
    <br>

    <div ng-app="myApp" ng-controller="myCtrl" >
      <h2>File URL : {{myUrl}}</h2>
    </div>

</body>
</html>
```

Component Code

```
myApp.component("mycomp", {
  template: " {{$ctrl.name}}{{$ctrl.myName}}",
  bindings: { name: "@" },
  controller: function () {
    this.myName = "AngularJs Arithmetic Calculator";
  },
});
```

File Location Code

```
myApp.controller("myCtrl", function ($scope, $location)
{
  $scope.myUrl = $location.absUrl();
});
```

Interval Code

```
myApp.controller("sample", function ($scope, $interval)
{
  $interval(function ()
  {
    $scope.theTime = new Date().toLocaleTimeString();
  }, 1000);
});
```

Controller Code

```
myApp.controller("mathController", function ($scope, mathService)
{
  $scope.x = 10;
  $scope.y = 30;
  $scope.result = 0;
  $scope.calcAdd = function ()
  {
    $scope.result = mathService.add($scope.x, $scope.y);
  };
  $scope.calcSub = function ()
  {
    $scope.result = mathService.sub($scope.x, $scope.y);
  };
  $scope.calcMul = function ()
  {
    $scope.result = mathService.mul($scope.x, $scope.y);
  };
  $scope.calcDiv = function ()
  {
    $scope.result = mathService.div($scope.x, $scope.y);
  };
});
```

Service Code

```
myApp.service("mathService", function ()
{
  this.add = function (x, y)
  {
    return parseInt(x) + parseInt(y);
  };
  this.sub = function (x, y)
  {
    return parseInt(x) - parseInt(y);
  };
  this.mul = function (x, y)
  {
    return parseInt(x) * parseInt(y);
  };
  this.div = function (x, y)
  {
    return parseInt(x) / parseInt(y);
  };
});
```

Output

Figure 3: **Components, Services and Controllers Output Pic1**

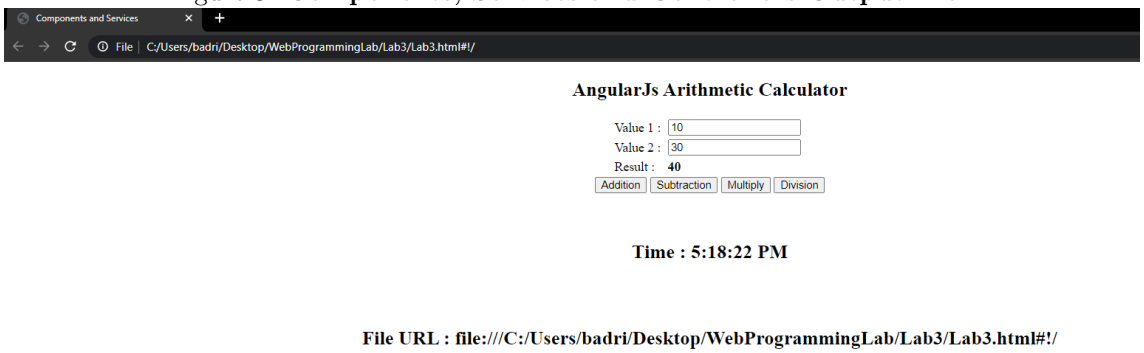
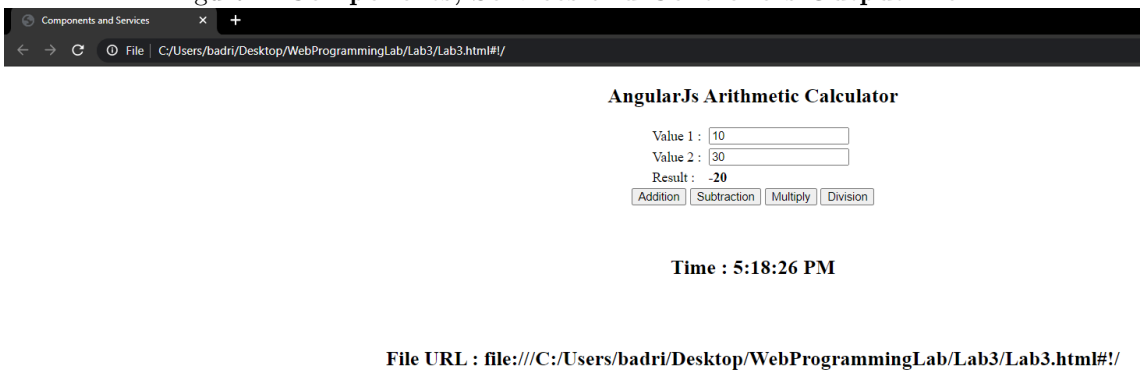


Figure 4: **Components, Services and Controllers Output Pic2**



Experiment Name:	Implement Search to filter items
Exercise Number:	3C
Date:	March 9, 2021

Filter Code

```
<!DOCTYPE>
<html lang = "en">
<head>
        <title>Filters</title>
        <script
        ↪  src="https://ajax.googleapis.com/ajax/libs/angularjs/1.6.9/angular.min.js"></script>
</head>
<body>

        <h2>Filters</h2>

        <div ng-app="myApp" ng-controller="namesCtrl">
```

```
            <h4>My technical skills</h4>
            <p>Type a letter in the input field to filter accordingly</p>

            <p><input type="text" ng-model="test"></p>

            <ul>
              <li ng-repeat="x in names | filter:test">
                {{ x }}
              </li>
            </ul>

        </div>

        <script>
        angular.module('myApp', []).controller('namesCtrl', function($scope)
        {
            $scope.names = [
                'Python',
                'Tensorflow',
                'Keras',
                'PyTorch',
                'NLTK',
                'spaCy',
                'OpenCV',
                'C',
                'C++',
                'Java',
                'Git',
                'HTML5',
                'CSS3',
                'JavaScript',
                'R',
                'LaTeX',
                'MASM',
                'GNU Octave'
            ];
        });
        </script>
</body>
</html>
```

Output

Figure 5: **Filters Output Pic1**

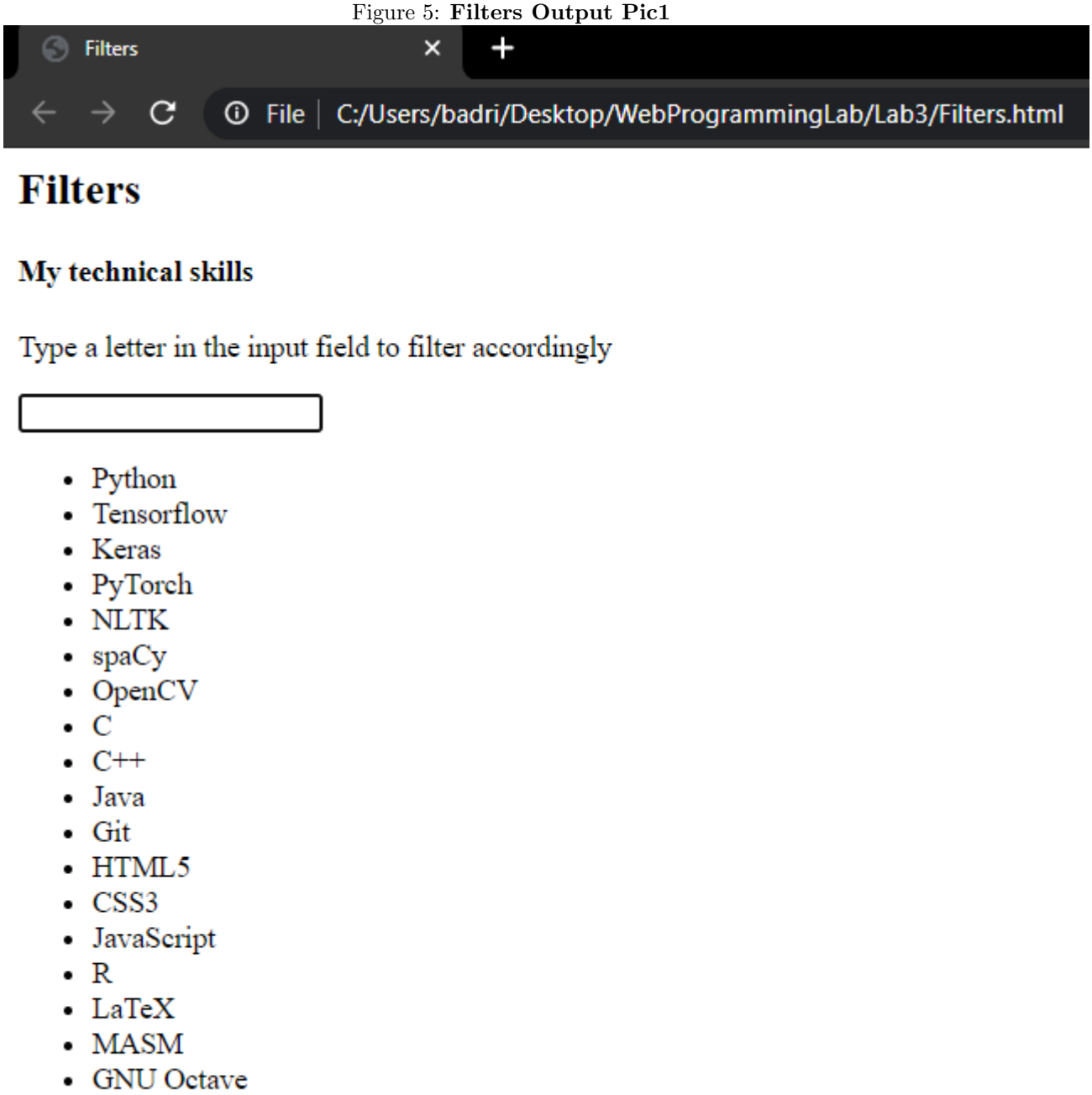
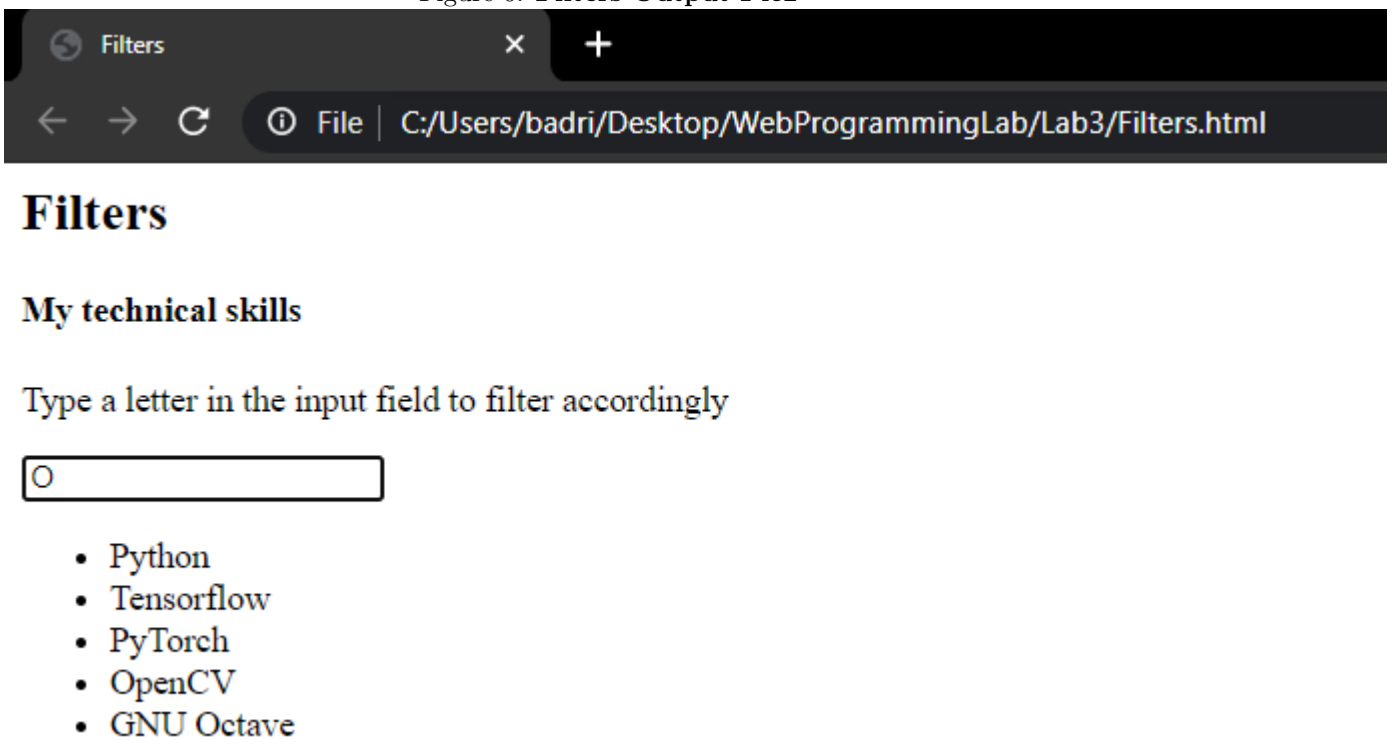


Figure 6: **Filters Output Pic2**



Result

The programs to implement Simple Calculator, Components, Service, Controllers and search to filter items were created successfully using AngularJS.