SAKET COLLEGE OF ARTS, SCIENCE & COMMERCE

(Affiliated to University Of Mumbai)
2021 – 2021

M.Sc. (IT)
Semester-III Examination

SUBMITTED BY
ADITYA VERMA

Roll No
217539

Subject
CLOUD APPLICATION DEVELOPMENT

SAKET GYANPEETH'S
SAKET COLLEGE OF ARTS, SCIENCE & COMMERCE
(Affiliated to University of Mumbai)
Saket Vidyanagari Marg, Chinchpada Road, Katemanivali, Kalyan (East)-421 306, Dist. Thane(MAH.)

Department of Information Technology

CERTIFICATE

This is to certify that

ADITYA VERMA AS PRESCRIBED BY OF MSC INFORMATION TECHNOLOGY

Submitted the same in the Partial Fulfillment of **M.Sc (Information Technology)** Degree of Mumbai University.

Project Code:psit3p2c **Head of the Department**

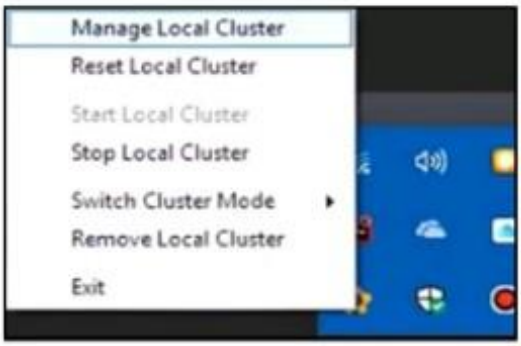
External Examiner **Principal**

INDEX

Develop an ASP.NET core MVC based Stateful Web Application.

Pre-Requisite:

1. Install Microsoft Visual Studio 2017 or any higher version.
2. Install the Microsoft Azure Service Fabric SDK.
3. Create a Microsoft Azure account.
4. Make sure that the Service Fabric local cluster is in a running state. Ensure this by browsing https://localhost:19080/Explorer/index.html# or by right clicking the service Fabric Icon in the system tray, as shown in below Figure.



Steps to create ASP.NET core MVC based Stateful Web Application:

1. Launch the Visual Studio as an administrator.
2. Create a project by selecting **File** > **New** > **Project.**
3. Select '**Service Fabric Application**' from Project template and click on 'Next' button.
4. Enter Project Name and click on 'Next' button.
5. On the New Service Fabric Service page, choose **Stateless ASP.NET Core**, name your service **VotingWeb**, then click 'Create' button.
6. Select '**Web Application (Model-View-Controller)**' and click on 'Create' button.
7. Visual Studio creates an application and a service project and displays them in Solution Explorer.
8. **Update the site.js file**

Open wwwroot/js/site.js. Replace its contents with the following JavaScript used by the Home views, then save your changes.

```
var app = angular.module('VotingApp', ['ui.bootstrap']);

app.run(function () { });

app.controller('VotingAppController', ['$rootScope', '$scope', '$http', '$timeout', function ($rootScope,
$scope, $http, $timeout) {

  $scope.refresh = function () {

    $http.get('api/Votes?c=' + new Date().getTime())

      .then(function (data, status) {

        $scope.votes = data;

      }, function (data, status) {

        $scope.votes = undefined;

      });
```

```
};
$scope.remove = function (item) {
    $http.delete('api/Votes/' + item)
        .then(function (data, status) {
            $scope.refresh();
        })
};
$scope.add = function (item) {
    var fd = new FormData();
    fd.append('item', item);
    $http.put('api/Votes/' + item, fd, {
        transformRequest: angular.identity,
        headers: { 'Content-Type': undefined }
    })
        .then(function (data, status) {
            $scope.refresh();
            $scope.item = undefined;
        })
};
}]);
```

9. Update the Index.cshtml file

Open Views/Home/Index.cshtml, the view specific to the Home controller. Replace its contents with the following, then save your changes.

```
@{
    ViewData["Title"] = "Service Fabric Voting Sample";
}
<div ng-controller="VotingAppController" ng-init="refresh()">
    <div class="container-fluid">
        <div class="row">
            <div class="col-xs-8 col-xs-offset-2 text-center">
                <h2>Service Fabric Voting Sample</h2>
            </div>
```

```
    </div>
    <div class="row">
      <div class="col-xs-8 col-xs-offset-2">
        <form class="col-xs-12 center-block">
          <div class="col-xs-6 form-group">
            <input id="txtAdd" type="text" class="form-control" placeholder="Add voting option" ng-
model="item"/>
          </div>
          <button id="btnAdd" class="btn btn-default" ng-click="add(item)">
            <span class="glyphicon glyphicon-plus" aria-hidden="true"></span>
            Add
          </button>
        </form>
      </div>
    </div>
    <hr/>
    <div class="row">
      <div class="col-xs-8 col-xs-offset-2">
        <div class="row">
          <div class="col-xs-4">
            Click to vote
          </div>
        </div>
        <div class="row top-buffer" ng-repeat="vote in votes.data">
          <div class="col-xs-8">
            <button class="btn btn-success text-left btn-block" ng-click="add(vote.key)">
              <span class="pull-left">
                {{vote.key}}
              </span>
              <span class="badge pull-right">
                {{vote.value}} Votes
              </span>
            </button>
          </div>
```

11. Update the VotingWeb.cs file

Open the VotingWeb.cs file, which creates the ASP.NET Core WebHost inside the stateless service using the WebListener web server.

Replace the content with the following code, then save your changes.

```
namespace VotingWeb
{
    using System;
    using System.Collections.Generic;
    using System.Fabric;
    using System.IO;
    using System.Net.Http;
    using Microsoft.AspNetCore.Hosting;
    using Microsoft.Extensions.Logging;
    using Microsoft.Extensions.DependencyInjection;
    using Microsoft.ServiceFabric.Services.Communication.AspNetCore;
    using Microsoft.ServiceFabric.Services.Communication.Runtime;
    using Microsoft.ServiceFabric.Services.Runtime;

    internal sealed class VotingWeb : StatelessService
    {
        public VotingWeb(StatelessServiceContext context)
            : base(context)
        {
        }
        protected override IEnumerable<ServiceInstanceListener> CreateServiceInstanceListeners()
        {
            return new ServiceInstanceListener[]
            {
                new ServiceInstanceListener(
                    serviceContext =>
                        new KestrelCommunicationListener(
                            serviceContext,
                            "ServiceEndpoint",
```

```
                (url, listener) =>
                {
                    ServiceEventSource.Current.ServiceMessage(serviceContext, $"Starting Kestrel on
{url}");
                    return new WebHostBuilder()
                        .UseKestrel()
                        .ConfigureLogging(logging =>
                        {
                            logging.ClearProviders();
                            logging.AddApplicationInsights();
                        })
                        .ConfigureServices(
                            services => services
                                .AddSingleton<HttpClient>(new HttpClient())
                                .AddSingleton<FabricClient>(new FabricClient())
                                .AddSingleton<StatelessServiceContext>(serviceContext))
                        .UseContentRoot(Directory.GetCurrentDirectory())
                        .UseStartup<Startup>()
                        .UseServiceFabricIntegration(listener, ServiceFabricIntegrationOptions.None)
                        .UseUrls(url)
                        .Build();
                }))
        };
    }
     internal static Uri GetVotingDataServiceName(ServiceContext context)
    {
        return new Uri($"{context.CodePackageActivationContext.ApplicationName}/VotingData");
    }       }       }
```

12. Add the VotesController.cs file

Add a controller, which defines voting actions. Right-click on the Controllers folder, then select Add ->New item->Visual C#->ASP.NET Core->Class. Name the file VotesController.cs, then click Add.

Replace the VotesController.cs file contents with the following, then save your changes this file is modified to read and write voting data from the back-end service.

```
namespace VotingWeb.Controllers
{
    using System;
    using System.Collections.Generic;
    using System.Fabric;
    using System.Fabric.Query;
    using System.Linq;
    using System.Net.Http;
    using System.Net.Http.Headers;
    using System.Text;
    using System.Threading.Tasks;
    using Microsoft.AspNetCore.Mvc;
    using Newtonsoft.Json;
    [Produces("application/json")]
    [Route("api/[controller]")]
    public class VotesController : Controller
    {
        private readonly HttpClient httpClient;
        private readonly FabricClient fabricClient;
        private readonly string reverseProxyBaseUri;
        private readonly StatelessServiceContext serviceContext;

        public VotesController(HttpClient httpClient, StatelessServiceContext context, FabricClient
fabricClient)
        {
            this.fabricClient = fabricClient;
            this.httpClient = httpClient;
            this.serviceContext = context;
            this.reverseProxyBaseUri = Environment.GetEnvironmentVariable("ReverseProxyBaseUri");
        }

        // GET: api/Votes
        [HttpGet("")]
        public async Task<IActionResult> Get()
```

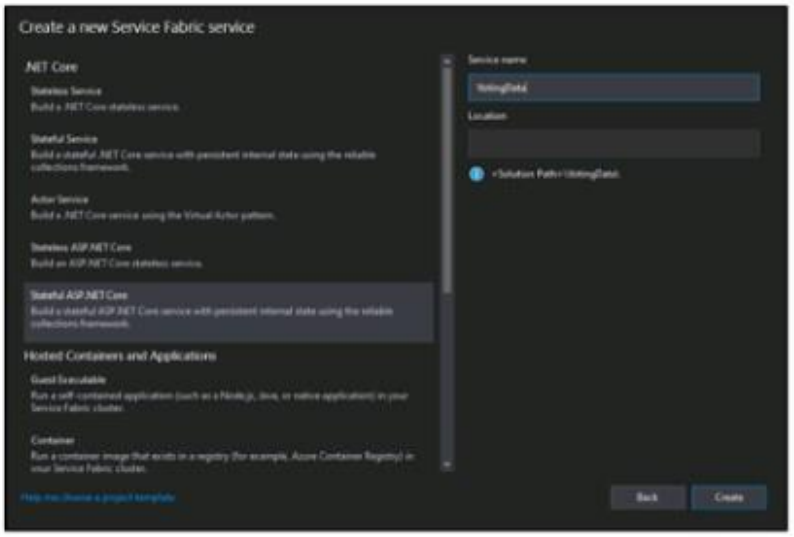
```
        long partitionKey = this.GetPartitionKey(name);
        string proxyUrl =
$"{proxyAddress}/api/VoteData/{name}?PartitionKey={partitionKey}&PartitionKind=Int64Range";

        StringContent putContent = new StringContent($"{{ 'name' : '{name}' }}", Encoding.UTF8,
"application/json");
        putContent.Headers.ContentType = new MediaTypeHeaderValue("application/json");

        using (HttpResponseMessage response = await this.httpClient.PutAsync(proxyUrl, putContent))
        {
          return new ContentResult()
          {
            StatusCode = (int) response.StatusCode,
            Content = await response.Content.ReadAsStringAsync()
          };
        }
      }

      // DELETE: api/Votes/name
      [HttpDelete("{name}")]
      public async Task<IActionResult> Delete(string name)
      {
        Uri serviceName = VotingWeb.GetVotingDataServiceName(this.serviceContext);
        Uri proxyAddress = this.GetProxyAddress(serviceName);
        long partitionKey = this.GetPartitionKey(name);
        string proxyUrl =
$"{proxyAddress}/api/VoteData/{name}?PartitionKey={partitionKey}&PartitionKind=Int64Range";

        using (HttpResponseMessage response = await this.httpClient.DeleteAsync(proxyUrl))
        {
          if (response.StatusCode != System.Net.HttpStatusCode.OK)
          {
            return this.StatusCode((int) response.StatusCode);
          }
        }
```

```
            return new OkResult();
        }

        /// <summary>
        /// Constructs a reverse proxy URL for a given service.
        /// Example: http://localhost:19081/VotingApplication/VotingData/
        /// </summary>
        /// <param name="serviceName"></param>
        /// <returns></returns>
        private Uri GetProxyAddress(Uri serviceName)
        {
            return new Uri($"{this.reverseProxyBaseUri}{serviceName.AbsolutePath}");
        }

        /// <summary>
        /// Creates a partition key from the given name.
        /// Uses the zero-based numeric position in the alphabet of the first letter of the name (0-25).
        /// </summary>
        /// <param name="name"></param>
        /// <returns></returns>
        private long GetPartitionKey(string name)
        {
            return Char.ToUpper(name.First()) - 'A';
        }
    }
}
```

13. **Add a stateful back-end service to your application**

    In Solution Explorer, right-click Services within the Voting application project and choose Add -> New Service Fabric Service....

    In the New Service Fabric Service dialog, choose Stateful ASP.NET Core, name the service VotingData, then click 'Create' button.



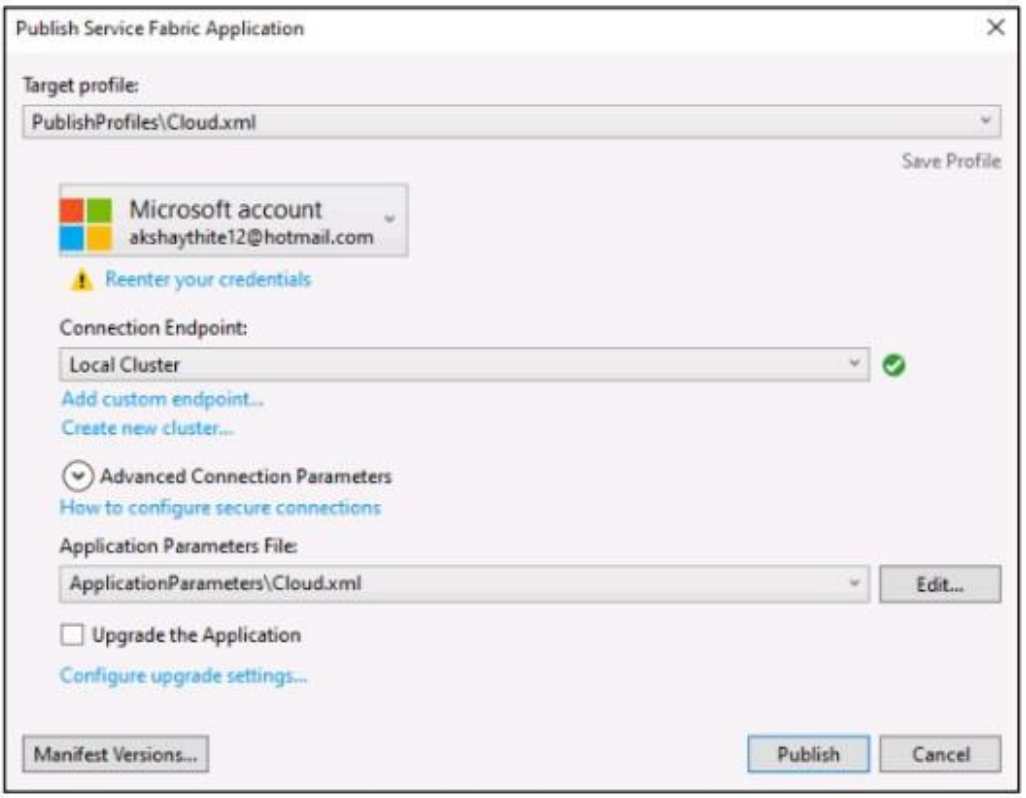
14. Once your service project is created, you have two services in your application. As you continue to build your application, you can add more services in the same way. Each can be independently versioned and upgraded.
    The next page provides a set of ASP.NET Core project templates. choose API.
    Visual Studio creates the VotingData service project and displays it in Solution Explorer.

15. **Add the VoteDataController.cs file**
    In the VotingData project, right-click on the Controllers folder, then select Add->New item->Class.
    Name the file VoteDataController.cs and click Add.
    Replace the file contents with the following, then save your changes.

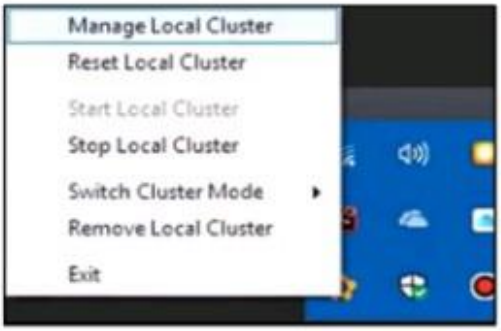
```
namespace VotingData.Controllers
{
  using System.Collections.Generic;
  using System.Threading;
  using System.Threading.Tasks;
  using Microsoft.AspNetCore.Mvc;
  using Microsoft.ServiceFabric.Data;
  using Microsoft.ServiceFabric.Data.Collections;

  [Route("api/[controller]")]
  public class VoteDataController : Controller
  {
    private readonly IReliableStateManager stateManager;

    public VoteDataController(IReliableStateManager stateManager)
    {
      this.stateManager = stateManager;
    }
    // GET api/VoteData
    [HttpGet]
    public async Task<IActionResult> Get()
    {
```

```
        CancellationToken ct = new CancellationToken();
        IReliableDictionary<string, int> votesDictionary = await
this.stateManager.GetOrAddAsync<IReliableDictionary<string, int>>("counts");
        using (ITransaction tx = this.stateManager.CreateTransaction())
        {
          Microsoft.ServiceFabric.Data.IAsyncEnumerable<KeyValuePair<string, int>> list = await
votesDictionary.CreateEnumerableAsync(tx);
          Microsoft.ServiceFabric.Data.IAsyncEnumerator<KeyValuePair<string, int>> enumerator =
list.GetAsyncEnumerator();
          List<KeyValuePair<string, int>> result = new List<KeyValuePair<string, int>>();
          while (await enumerator.MoveNextAsync(ct))
          {
            result.Add(enumerator.Current);
          }
          return this.Json(result);
        }
      }
      // PUT api/VoteData/name
      [HttpPut("{name}")]
      public async Task<IActionResult> Put(string name)
      {
        IReliableDictionary<string, int> votesDictionary = await
this.stateManager.GetOrAddAsync<IReliableDictionary<string, int>>("counts");

        using (ITransaction tx = this.stateManager.CreateTransaction())
        {
          await votesDictionary.AddOrUpdateAsync(tx, name, 1, (key, oldvalue) => oldvalue + 1);
          await tx.CommitAsync();
        }
        return new OkResult();
      }
      // DELETE api/VoteData/name
      [HttpDelete("{name}")]
      public async Task<IActionResult> Delete(string name)
      {
        IReliableDictionary<string, int> votesDictionary = await
this.stateManager.GetOrAddAsync<IReliableDictionary<string, int>>("counts");
        using (ITransaction tx = this.stateManager.CreateTransaction())
        {
          if (await votesDictionary.ContainsKeyAsync(tx, name))
          {
            await votesDictionary.TryRemoveAsync(tx, name);
            await tx.CommitAsync();
            return new OkResult();
          }
          else  { return new NotFoundResult(); }              }        }        }        }
```

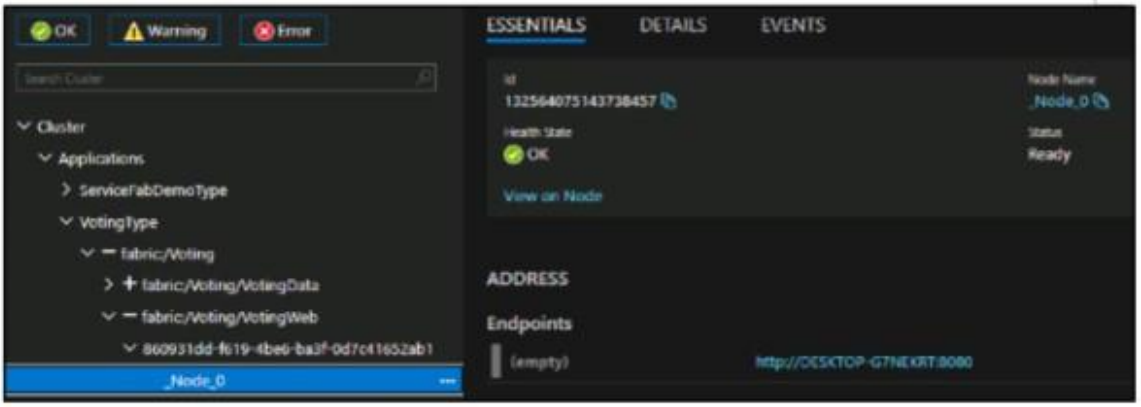
16. **Build the solution by pressing the F5.**
17. **Once the solution is built successfully, Publish Service Fabric application**
    In the solution Explorer Right click on the Voting and select Publish. The Publish dialog box appears.



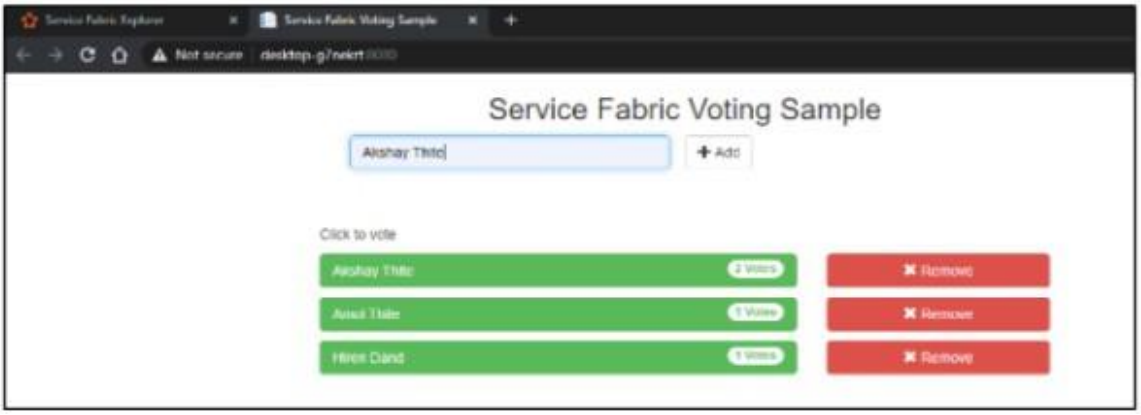
18. Once the application is ready, open the 'Service Fabric Explorer' from system tray.



19. Expand the web application which are present under 'Cluster' tab and double click on last node which present under cluster.
20. Click the URL displayed in **'Endpoints'** section.



21. Enter the user name and one vote will be added.



Create a basic ASP.NET web app

1. Launch Visual Studio 2019.
2. Select **File** > **New** > **Project**.
3. Select **ASP.NET Web Application(.NET Framework) C#**.
4. Enter a project name > **Select Create**.
5. Select **MVC** > **Create**.

Add Application Insights automatically

Automatically adding Application Insights to a template-based ASP.NET web a
within your ASP.NET web app project in Visual Studio:

1. Select **Add Application Insights Telemetry** > **Application Insights Sdk (local)** > **Next** > **Finish** > **Close**.
2. Open the ApplicationInsights.config file.
3. Before the closing </ApplicationInsights> tag add a line containing the instrumentation key for your Application Insights resource. Your instrume key can be found on the overview pane of your newly created Application resource that you created as part of the prerequisites for this article.

   XMLCopy
   ```
   <InstrumentationKey>your-instrumentation-key-goes-here</InstrumentationKey>
   ```

4. Select **Project** > **Manage NuGet Packages** > **Updates** > Update each Microsoft.ApplicationInsights NuGet package to the latest stable release
5. Run your application by selecting **IIS Express**. A basic ASP.NET app will la you navigate the pages on the site telemetry will be sent to Application In

Add Application Insights manually

This section will guide you through manually adding Application Insights to a te based ASP.NET web app. This section assumes you are using a web app base standard ASP.NET Framework MVC web app template.

1. Add the following NuGet packages and their dependencies to your projec
   - Microsoft.ApplicationInsights.WindowsServer
   - Microsoft.ApplicationInsights.Web
   - Microsoft.AspNet.TelemetryCorrelation

2. In some cases, the ApplicationInsights.config file will be created for you autor If the file is already present, skip to step #4. If it is not created automatica

```yaml
metadata:
  name: azure-vote-back
spec:
  replicas: 1
  selector:
    matchLabels:
      app: azure-vote-back
  template:
    metadata:
      labels:
        app: azure-vote-back
    spec:
      nodeSelector:
        "beta.kubernetes.io/os": linux
      containers:
      - name: azure-vote-back
        image: mcr.microsoft.com/oss/bitnami/redis:6.0.8
        env:
        - name: ALLOW_EMPTY_PASSWORD
          value: "yes"
        resources:
          requests:
            cpu: 100m
            memory: 128Mi
          limits:
            cpu: 250m
            memory: 256Mi
        ports:
        - containerPort: 6379
          name: redis
---
apiVersion: v1
kind: Service
metadata:
  name: azure-vote-back
spec:
  ports:
  - port: 6379
  selector:
    app: azure-vote-back
---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: azure-vote-front
```

```
yProcessor, Microsoft.AI.ServerTelemetryChannel">
      <MaxTelemetryItemsPerSecond>5</MaxTelemetryItemsPerSecond>
      <IncludedTypes>Event</IncludedTypes>
     </Add>
    </TelemetryProcessors>
    <TelemetryChannel
Type="Microsoft.ApplicationInsights.WindowsServer.TelemetryChannel.ServerTelemetryChanne
Microsoft.AI.ServerTelemetryChannel" />
  </Add>
 </TelemetrySinks>
 <!--
  Learn more about Application Insights configuration with ApplicationInsights.config here:
  http://go.microsoft.com/fwlink/?LinkID=513840
 -->
 <InstrumentationKey>your-instrumentation-key-here</InstrumentationKey>
</ApplicationInsights>
```

4. Before the closing </ApplicationInsights> tag, add your instrumentation key for your Application Insights resource. Your instrumentation key can be found on the overview pane of your newly created Application Insights resource that you created as part of the prerequisites for this article.

   XMLCopy
   ```
   <InstrumentationKey>your-instrumentation-key-goes-here</InstrumentationKey>
   ```

5. At the same level of your project as the ApplicationInsights.config file, create a folde called ErrorHandler with a new C# file called AiHandleErrorAttribute.cs. The contents o the file will look as follows:

   C#Copy
   ```
   using System;
   using System.Web.Mvc;
   using Microsoft.ApplicationInsights;

   namespace WebApplication10.ErrorHandler //namespace will vary based on your project name
   {
     [AttributeUsage(AttributeTargets.Class | AttributeTargets.Method, Inherited = true, AllowMulti
   = true)]
     public class AiHandleErrorAttribute : HandleErrorAttribute
     {
       public override void OnException(ExceptionContext filterContext)
       {
         if (filterContext != null && filterContext.HttpContext != null && filterContext.Exception != nu
         {
           //If customError is Off, then AI HTTPModule will report the exception
   ```

```
            if (filterContext.HttpContext.IsCustomErrorEnabled)
            {
              var ai = new TelemetryClient();
              ai.TrackException(filterContext.Exception);
            }
          }
          base.OnException(filterContext);
        }
      }
    }
```

6. In the App_Start folder, open the FilterConfig.cs file and change it to match the sa

C#Copy

```
using System.Web;
using System.Web.Mvc;

namespace WebApplication10 //Namespace will vary based on project name
{
  public class FilterConfig
  {
    public static void RegisterGlobalFilters(GlobalFilterCollection filters)
    {
      filters.Add(new ErrorHandler.AiHandleErrorAttribute());
    }
  }
}
```

7. Update the Web.config file as follows:

XMLCopy

```
<?xml version="1.0" encoding="utf-8"?>
<!--
 For more information on how to configure your ASP.NET application, please visit
 https://go.microsoft.com/fwlink/?LinkId=301880
 -->
<configuration>
 <appSettings>
  <add key="webpages:Version" value="3.0.0.0" />
  <add key="webpages:Enabled" value="false" />
  <add key="ClientValidationEnabled" value="true" />
  <add key="UnobtrusiveJavaScriptEnabled" value="true" />
 </appSettings>
 <system.web>
```

```
    <compilation debug="true" targetFramework="4.7.2" />
    <httpRuntime targetFramework="4.7.2" />
    <httpModules>
      <add name="TelemetryCorrelationHttpModule"
type="Microsoft.AspNet.TelemetryCorrelation.TelemetryCorrelationHttpModule,
Microsoft.AspNet.TelemetryCorrelation" />
      <add name="ApplicationInsightsWebTracking"
type="Microsoft.ApplicationInsights.Web.ApplicationInsightsHttpModule, Microsoft.AI.Web" />
    </httpModules>
  </system.web>
  <runtime>
    <assemblyBinding xmlns="urn:schemas-microsoft-com:asm.v1">
      <dependentAssembly>
        <assemblyIdentity name="Antlr3.Runtime" publicKeyToken="eb42632606e9261f" />
        <bindingRedirect oldVersion="0.0.0.0-3.5.0.2" newVersion="3.5.0.2" />
      </dependentAssembly>
      <dependentAssembly>
        <assemblyIdentity name="Newtonsoft.Json" publicKeyToken="30ad4fe6b2a6aeed" />
        <bindingRedirect oldVersion="0.0.0.0-12.0.0.0" newVersion="12.0.0.0" />
      </dependentAssembly>
      <dependentAssembly>
        <assemblyIdentity name="System.Web.Optimization" publicKeyToken="31bf3856ad364e3
        <bindingRedirect oldVersion="1.0.0.0-1.1.0.0" newVersion="1.1.0.0" />
      </dependentAssembly>
      <dependentAssembly>
        <assemblyIdentity name="WebGrease" publicKeyToken="31bf3856ad364e35" />
        <bindingRedirect oldVersion="0.0.0.0-1.6.5135.21930" newVersion="1.6.5135.21930" />
      </dependentAssembly>
      <dependentAssembly>
        <assemblyIdentity name="System.Web.Helpers" publicKeyToken="31bf3856ad364e35" />
        <bindingRedirect oldVersion="1.0.0.0-3.0.0.0" newVersion="3.0.0.0" />
      </dependentAssembly>
      <dependentAssembly>
        <assemblyIdentity name="System.Web.WebPages" publicKeyToken="31bf3856ad364e35"
        <bindingRedirect oldVersion="1.0.0.0-3.0.0.0" newVersion="3.0.0.0" />
      </dependentAssembly>
      <dependentAssembly>
        <assemblyIdentity name="System.Web.Mvc" publicKeyToken="31bf3856ad364e35" />
        <bindingRedirect oldVersion="1.0.0.0-5.2.7.0" newVersion="5.2.7.0" />
      </dependentAssembly>
      <dependentAssembly>
        <assemblyIdentity name="System.Memory" publicKeyToken="cc7b13ffcd2ddd51"
culture="neutral" />
        <bindingRedirect oldVersion="0.0.0.0-4.0.1.1" newVersion="4.0.1.1" />
      </dependentAssembly>
```

```
    Requests to the following hostnames will not be modified by adding correlation headers.
    Add entries here to exclude additional hostnames.
    NOTE: this configuration will be lost upon NuGet upgrade.
    -->
    <Add>core.windows.net</Add>
    <Add>core.chinacloudapi.cn</Add>
    <Add>core.cloudapi.de</Add>
    <Add>core.usgovcloudapi.net</Add>
   </ExcludeComponentCorrelationHttpHeadersOnDomains>
   <IncludeDiagnosticSourceActivities>
    <Add>Microsoft.Azure.EventHubs</Add>
    <Add>Microsoft.Azure.ServiceBus</Add>
   </IncludeDiagnosticSourceActivities>
  </Add>
  <Add
Type="Microsoft.ApplicationInsights.Extensibility.PerfCounterCollector.PerformanceCollectorMo
le, Microsoft.AI.PerfCounterCollector">
   <!--
   Use the following syntax here to collect additional performance counters:

   <Counters>
    <Add PerformanceCounter="\Process(??APP_WIN32_PROC??)\Handle Count"
ReportAs="Process handle count" />
    ...
   </Counters>

   PerformanceCounter must be either \CategoryName(InstanceName)\CounterName or
\CategoryName\CounterName

   NOTE: performance counters configuration will be lost upon NuGet upgrade.

   The following placeholders are supported as InstanceName:
    ??APP_WIN32_PROC?? - instance name of the application process  for Win32 counters.
    ??APP_W3SVC_PROC?? - instance name of the application IIS worker process for IIS/ASP.NE
counters.
    ??APP_CLR_PROC?? - instance name of the application CLR process for .NET counters.
   -->
  </Add>
  <Add
Type="Microsoft.ApplicationInsights.Extensibility.PerfCounterCollector.QuickPulse.QuickPulseTe
metryModule, Microsoft.AI.PerfCounterCollector" />
  <Add
Type="Microsoft.ApplicationInsights.WindowsServer.AppServicesHeartbeatTelemetryModule,
Microsoft.AI.WindowsServer" />
  <Add
```

```
  </Add>
  <Add Type="Microsoft.ApplicationInsights.Web.RequestTrackingTelemetryModule,
Microsoft.AI.Web">
   <Handlers>
    <!--
    Add entries here to filter out additional handlers:

    NOTE: handler configuration will be lost upon NuGet upgrade.
    -->

<Add>Microsoft.VisualStudio.Web.PageInspector.Runtime.Tracing.RequestDataHttpHandler</
>
    <Add>System.Web.StaticFileHandler</Add>
    <Add>System.Web.Handlers.AssemblyResourceLoader</Add>
    <Add>System.Web.Optimization.BundleHandler</Add>
    <Add>System.Web.Script.Services.ScriptHandlerFactory</Add>
    <Add>System.Web.Handlers.TraceHandler</Add>
    <Add>System.Web.Services.Discovery.DiscoveryRequestHandler</Add>
    <Add>System.Web.HttpDebugHandler</Add>
   </Handlers>
  </Add>
  <Add Type="Microsoft.ApplicationInsights.Web.ExceptionTrackingTelemetryModule,
Microsoft.AI.Web" />
  <Add Type="Microsoft.ApplicationInsights.Web.AspNetDiagnosticTelemetryModule,
Microsoft.AI.Web" />
 </TelemetryModules>
 <ApplicationIdProvider
Type="Microsoft.ApplicationInsights.Extensibility.Implementation.ApplicationId.ApplicationInsi
ApplicationIdProvider, Microsoft.ApplicationInsights" />
 <TelemetrySinks>
  <Add Name="default">
   <TelemetryProcessors>
    <Add
Type="Microsoft.ApplicationInsights.Extensibility.PerfCounterCollector.QuickPulse.QuickPulse
metryProcessor, Microsoft.AI.PerfCounterCollector" />
    <Add Type="Microsoft.ApplicationInsights.Extensibility.AutocollectedMetricsExtractor,
Microsoft.ApplicationInsights" />
    <Add
Type="Microsoft.ApplicationInsights.WindowsServer.TelemetryChannel.AdaptiveSamplingTele
yProcessor, Microsoft.AI.ServerTelemetryChannel">
     <MaxTelemetryItemsPerSecond>5</MaxTelemetryItemsPerSecond>
     <ExcludedTypes>Event</ExcludedTypes>
    </Add>
    <Add
Type="Microsoft.ApplicationInsights.WindowsServer.TelemetryChannel.AdaptiveSamplingTele
```

```
Type="Microsoft.ApplicationInsights.WindowsServer.AzureInstanceMetadataTelemetryM
Microsoft.AI.WindowsServer">
    <!--
    Remove individual fields collected here by adding them to the
ApplicationInsighs.HeartbeatProvider
    with the following syntax:

    <Add
Type="Microsoft.ApplicationInsights.Extensibility.Implementation.Tracing.DiagnosticsTel
odule, Microsoft.ApplicationInsights">
      <ExcludedHeartbeatProperties>
        <Add>osType</Add>
        <Add>location</Add>
        <Add>name</Add>
        <Add>offer</Add>
        <Add>platformFaultDomain</Add>
        <Add>platformUpdateDomain</Add>
        <Add>publisher</Add>
        <Add>sku</Add>
        <Add>version</Add>
        <Add>vmId</Add>
        <Add>vmSize</Add>
        <Add>subscriptionId</Add>
        <Add>resourceGroupName</Add>
        <Add>placementGroupId</Add>
        <Add>tags</Add>
        <Add>vmScaleSetName</Add>
      </ExcludedHeartbeatProperties>
    </Add>

    NOTE: exclusions will be lost upon upgrade.
    -->
  </Add>
  <Add
Type="Microsoft.ApplicationInsights.WindowsServer.DeveloperModeWithDebuggerAttach
etryModule, Microsoft.AI.WindowsServer" />
  <Add Type="Microsoft.ApplicationInsights.WindowsServer.UnhandledExceptionTelemet
Microsoft.AI.WindowsServer" />
  <Add
Type="Microsoft.ApplicationInsights.WindowsServer.UnobservedExceptionTelemetryMod
Microsoft.AI.WindowsServer">
    <!--</Add>
  <Add
Type="Microsoft.ApplicationInsights.WindowsServer.FirstChanceExceptionStatisticsTeler
ule, Microsoft.AI.WindowsServer">-->
```

To add client-side monitoring, open the _Layout.cshtml file

2. Deploy an Azure Kubernetes Service (AKS) cluster using the Azure portal

Azure Kubernetes Service (AKS) is a managed Kubernetes service that lets you quic deploy and manage clusters. In this quickstart, you deploy an AKS cluster using the Azure portal. A multi-container application that includes a web front end and a Redis instance is run in the cluster.

Sign in to Azure

Sign in to the Azure portal at https://portal.azure.com.

Create an AKS cluster

To create an AKS cluster, complete the following steps:

1. On the Azure portal menu or from the **Home** page, select **Create a resource**.
2. Select **Containers** > **Kubernetes Service**.
3. On the **Basics** page, configure the following options:
    - **Project details**: Select an Azure **Subscription**, then select or create an Azure **Resource group**, such as *myResourceGroup*.
    - **Cluster details**: Enter a **Kubernetes cluster name**, such as *myAKSCluster*. Selec a **Region** and **Kubernetes version** for the AKS cluster.
    - **Primary node pool**: Select a VM **Node size** for the AKS nodes. The VM size *can'* changed once an AKS cluster has been deployed. - Select the number of nodes t deploy into the cluster. For this quickstart, set **Node count** to *1*. Node count *can* adjusted after the cluster has been deployed.

Create Kubernetes cluster

Basics | Node pools | Authentication | Networking | Integrations | Tags

Azure Kubernetes Service (AKS) manages your hosted Kubernetes environment, making it
manage containerized applications without container orchestration expertise. It also elimi
operations and maintenance by provisioning, upgrading, and scaling resources on demar
offline. Learn more about Azure Kubernetes Service

Project details

Select a subscription to manage deployed resources and costs. Use resource groups like f
your resources.

Subscription *

Resource group * (New) myResourceGroup

Create new

Cluster details

Kubernetes cluster name * myAKSCluster

Region * (US) East US

Availability zones Zones 1,2,3

Kubernetes version * 1.17.11 (default)

Primary node pool

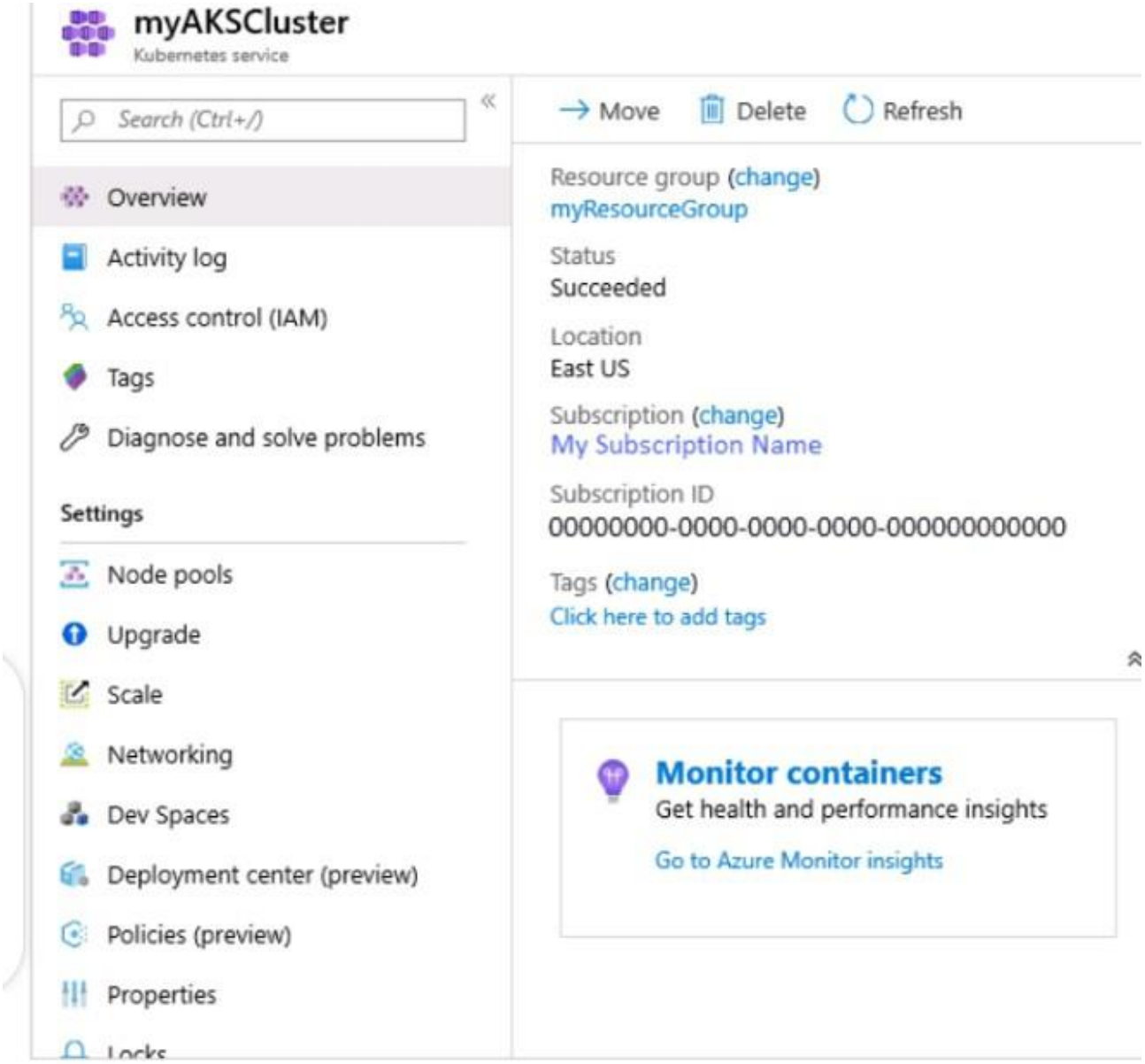
The number and size of nodes in the primary node pool in your cluster. For production w
recommended for resiliency. For development or test workloads, only one node is require
node pools or to see additional configuration options for this node pool, go to the 'Node
add additional node pools after creating your cluster. Learn more about node pools in A

Node size * **Standard DS2 v2**

Change size

Node count *

Review + create | < Previous | Next : Node pools >



Connect to the cluster

To manage a Kubernetes cluster, you use kubectl, the Kubernetes command-line clie
The kubectl client is pre-installed in the Azure Cloud Shell.

Open Cloud Shell using the >_ button on the top of the Azure portal.

Select **Next: Node pools** when complete.

4. On the **Node pools** page, keep the default options. At the bottom of the scree click **Next: Authentication**.

   Caution

   Creating new AAD Service Principals may take multiple minutes to propagate become available causing Service Principal not found errors and validation fai in Azure portal. If you hit this please visit here for mitigation.

5. On the **Authentication** page, configure the following options:
   - Create a new service principal by leaving the **Service Principal** field with **(new) default service principal**. Or you can choose *Configure service principal* to use existing one. If you use an existing one, you will need to provide the SPN client and secret.
   - Enable the option for Kubernetes role-based access control (Kubernetes RBAC) This will provide more fine-grained control over access to the Kubernetes resou deployed in your AKS cluster.

   Alternatively, you can use a managed identity instead of a service principal. See use managed identities for more information.

By default, *Basic* networking is used, and Azure Monitor for containers is enabled. Click **Review + create** and then **Create** when validation completes.

It takes a few minutes to create the AKS cluster. When your deployment is complet click **Go to resource**, or browse to the AKS cluster resource group, such as *myResourceGroup*, and select the AKS resource, such as *myAKSCluster*. The AK cluster dashboard is shown, as in this example:

The following example output shows the Deployments and Services created successfully:

OutputCopy

```
deployment "azure-vote-back" created
service "azure-vote-back" created
deployment "azure-vote-front" created
service "azure-vote-front" created
```

Test the application

When the application runs, a Kubernetes service exposes the application front en the internet. This process can take a few minutes to complete.

To monitor progress, use the kubectl get service command with the --watch argun

ConsoleCopy

```
kubectl get service azure-vote-front --watch
```

Initially the *EXTERNAL-IP* for the *azure-vote-front* service is shown as *pending*.

OutputCopy

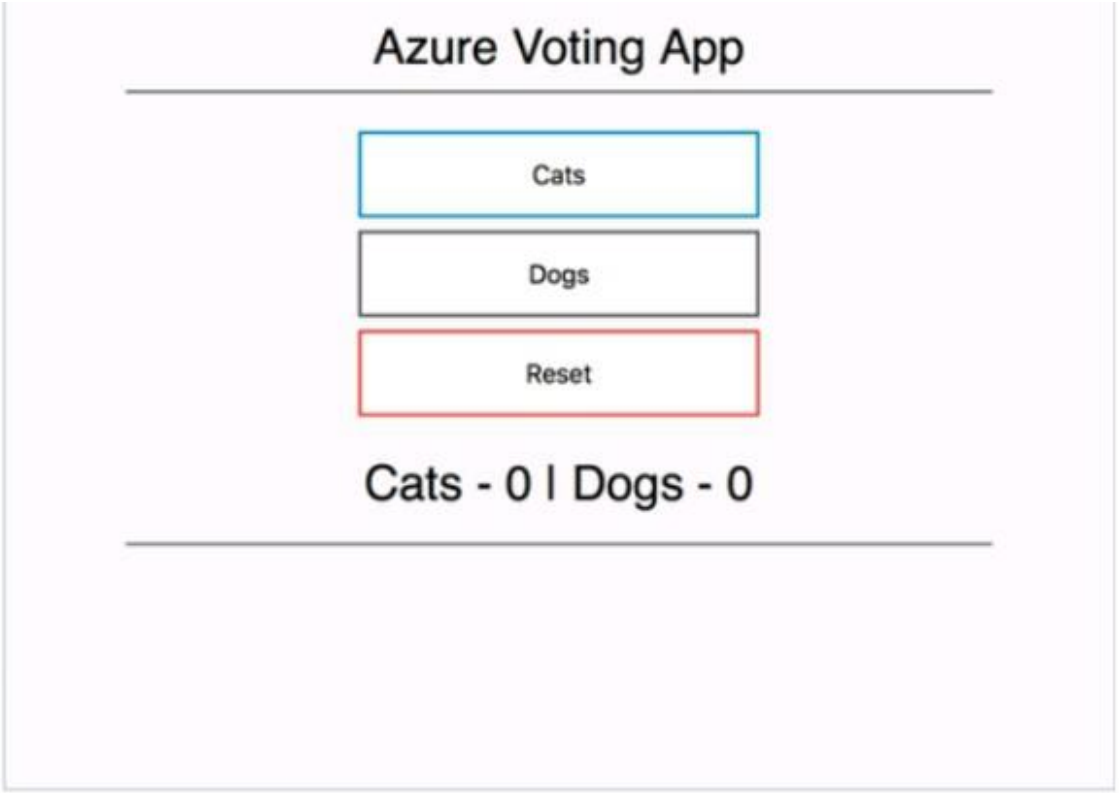
```
NAME              TYPE           CLUSTER-IP    EXTERNAL-IP   PORT(S)        AGE
azure-vote-front  LoadBalancer   10.0.37.27    <pending>     80:30572/TCP   6s
```

When the *EXTERNAL-IP* address changes from *pending* to an actual public IP ad use CTRL-C to stop the kubectl watch process. The following example output show valid public IP address assigned to the service:

OutputCopy

```
azure-vote-front  LoadBalancer   10.0.37.27    52.179.23.131   80:30572/TCP   2m
```

To see the Azure Vote app in action, open a web browser to the external IP addre your service.



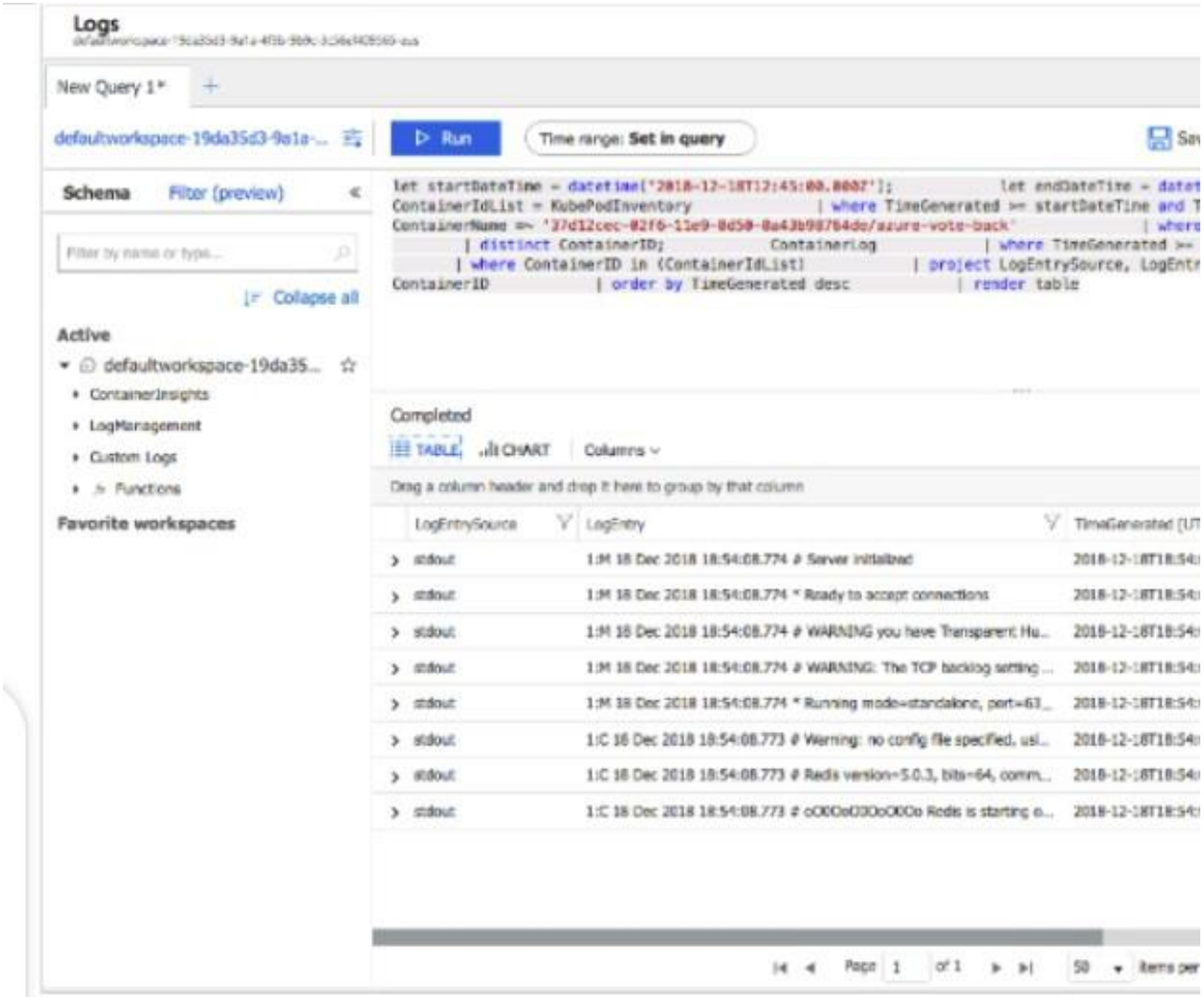
Monitor health and logs

When you created the cluster, Azure Monitor for containers was enabled. This monitoring feature provides health metrics for both the AKS cluster and pods runnir on the cluster.

It may take a few minutes for this data to populate in the Azure portal. To see curre status, uptime, and resource usage for the Azure Vote pods, browse back to the AK resource in the Azure portal, such as *myAKSCluster*. You can then access the healt status as follows:

1. Under **Monitoring** on the left-hand side, choose **Insights**
2. Across the top, choose to **+ Add Filter**
3. Select *Namespace* as the property, then choose *<All but kube-system>*
4. Choose to view the **Containers**.

The *azure-vote-back* and *azure-vote-front* containers are displayed, as shown in the following example:



Delete cluster

When the cluster is no longer needed, delete the cluster resource, which delete associated resources. This operation can be completed in the Azure portal by s the **Delete** button on the AKS cluster dashboard. Alternatively, the az aks delete command can be used in the Cloud Shell:

Azure CLICopy

```
az aks delete --resource-group myResourceGroup --name myAKSCluster --no-wait
```

3. Create an ASP.NET Core Web API and configure monitoring.
Page No. 58

Create a basic ASP.NET web app

1. Launch Visual Studio 2019.
2. Select **File** > **New** > **Project**.
3. Select **ASP.NET Web Application(.NET Framework) C#**.
4. Enter a project name > **Select Create**.
5. Select **MVC** > **Create**.

Add Application Insights automatically

Automatically adding Application Insights to a template-based ASP.NET web app. I within your ASP.NET web app project in Visual Studio:

1. Select **Add Application Insights Telemetry** > **Application Insights Sdk (local)** > **Next** > **Finish** > **Close**.
2. Open the ApplicationInsights.config file.
3. Before the closing </ApplicationInsights> tag add a line containing the instrumentation key for your Application Insights resource. Your instrumentat key can be found on the overview pane of your newly created Application Insi resource that you created as part of the prerequisites for this article.

   XMLCopy
   ```
   <InstrumentationKey>your-instrumentation-key-goes-here</InstrumentationKey>
   ```

4. Select **Project** > **Manage NuGet Packages** > **Updates** > Update each Microsoft.ApplicationInsights NuGet package to the latest stable release.
5. Run your application by selecting **IIS Express**. A basic ASP.NET app will launc you navigate the pages on the site telemetry will be sent to Application Insigh

Add Application Insights manually

This section will guide you through manually adding Application Insights to a temp based ASP.NET web app. This section assumes you are using a web app based on standard ASP.NET Framework MVC web app template.

1. Add the following NuGet packages and their dependencies to your project:
   - Microsoft.ApplicationInsights.WindowsServer
   - Microsoft.ApplicationInsights.Web
   - Microsoft.AspNet.TelemetryCorrelation

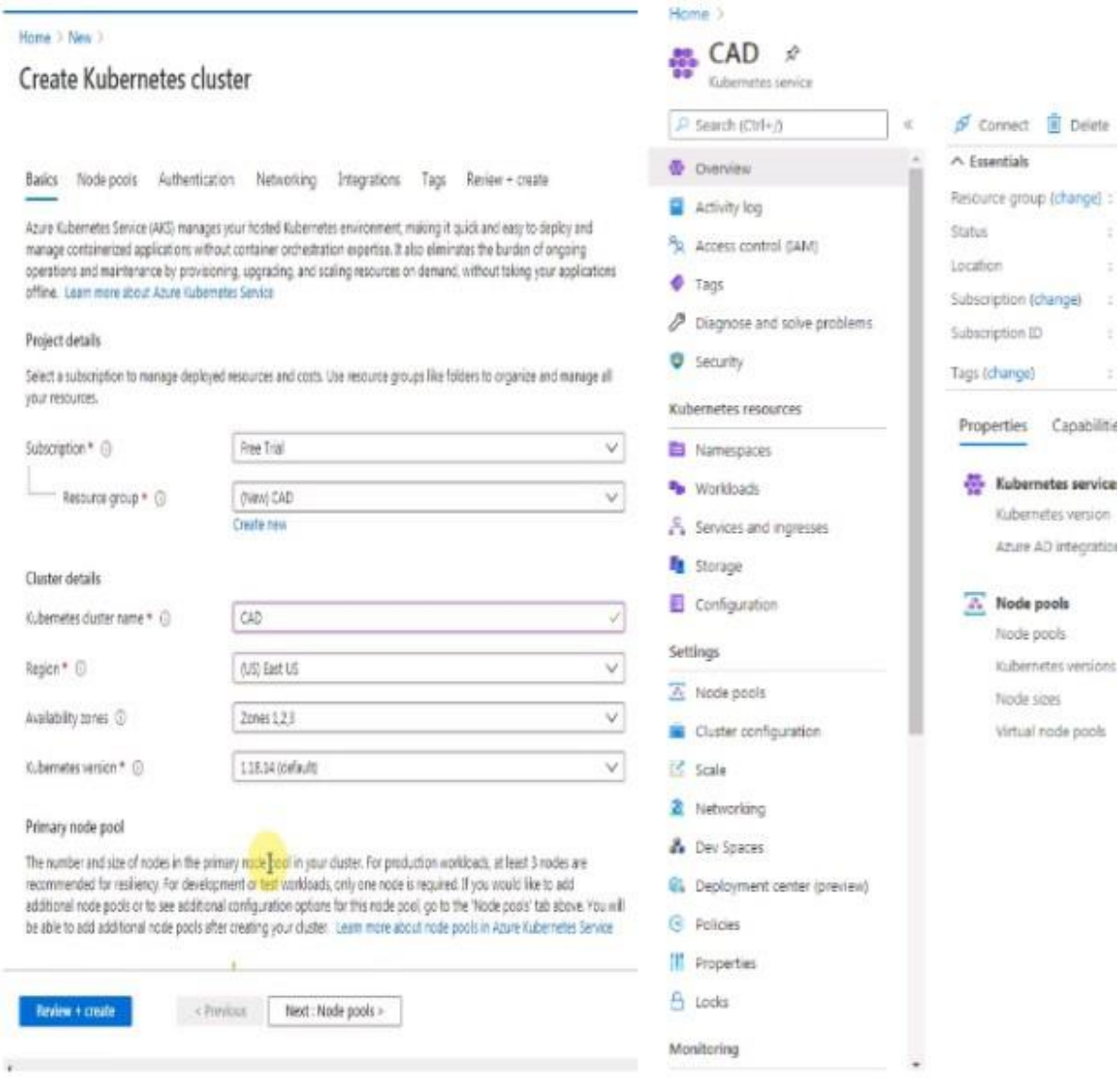
2. In some cases, the ApplicationInsights.config file will be created for you automati If the file is already present, skip to step #4. If it is not created automatically,

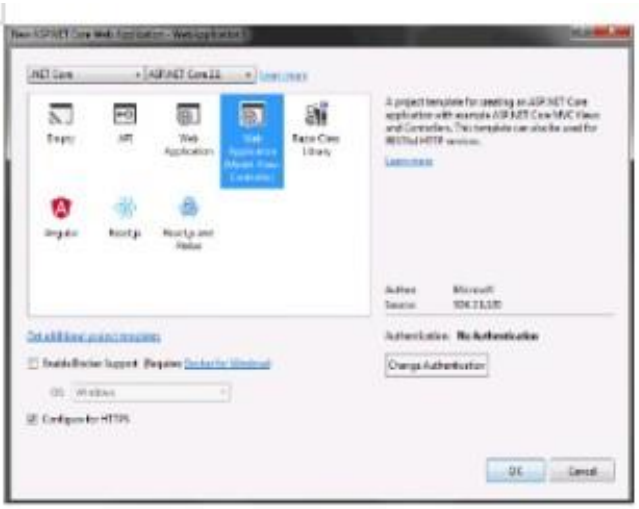
you will need to create it yourself. At the same level in your project as the Global.asax file, create a new file called ApplicationInsights.config
3. Copy the following XML configuration into your newly created file:

Practical No.4A - Create an Azure Kubernetes Service Cluster

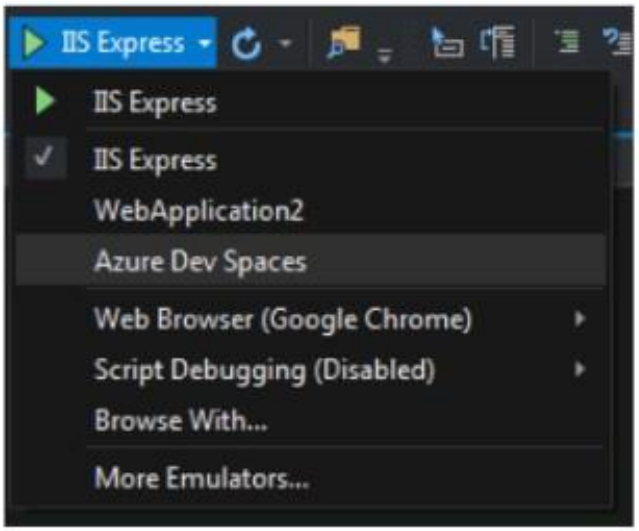
Steps –

1. Sign in Azure Portal (https://portal.azure.com/)
2. Create Resource by clicking on Create Resource option.
3. Select Kubernetes Services
4. Enter the subscription, resource group, kubernetes, Cluster name, Region, K
   DNS Name prefix
5. Click on Review + Create Button
6. Click on Create Button





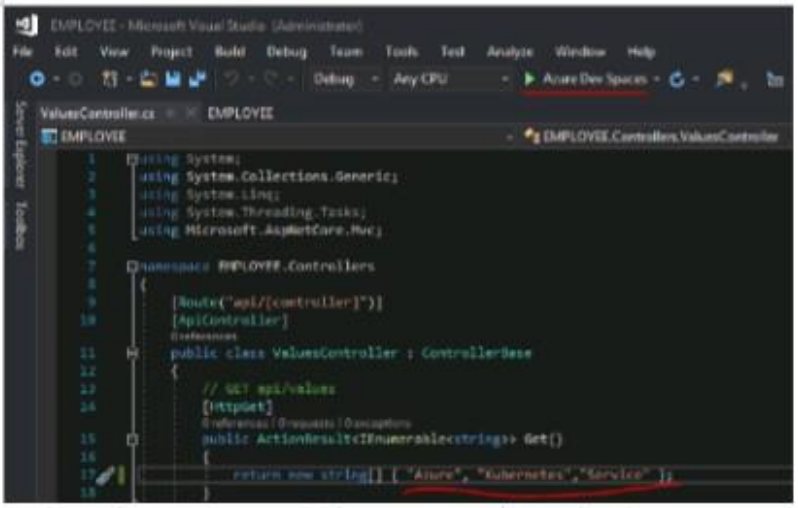
11. Click On Down Arrow of IIS Express
12. We can see option of Azure Dev Space



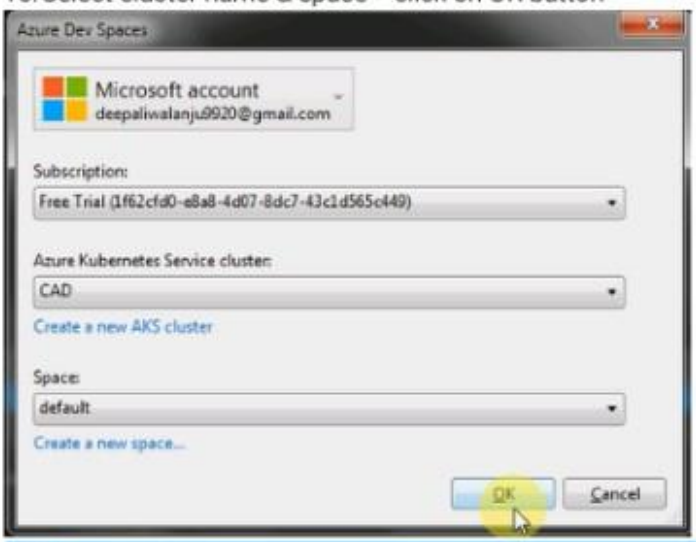
Practical No.4D - Configure Visual Studio Code to work with an azure kubernetes services Cluster

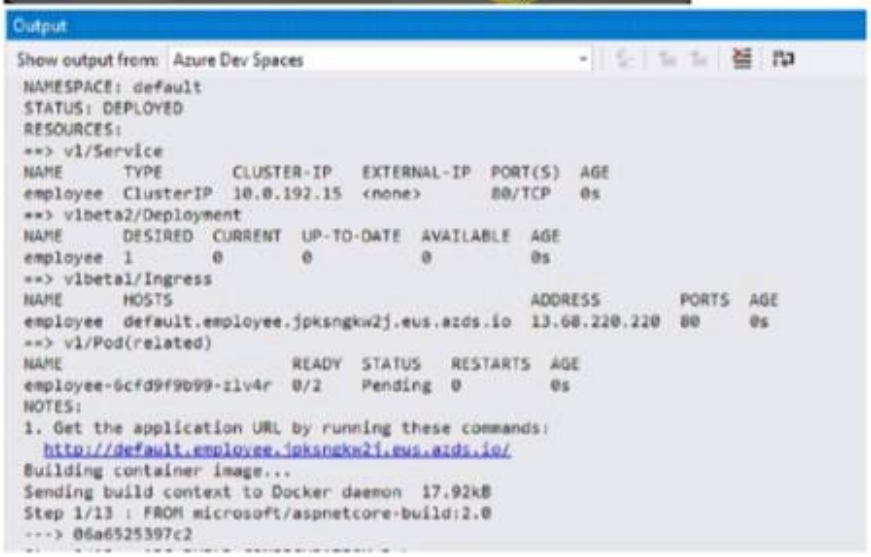
Steps –

1. Install visual studio code
2. Open extension window
3. Search for Azure Dev Space
4. Click Install



9. Save changes & press F5 button to run the application
10. Select cluster name & space > click on OK button





2.Node.js API

Steps –

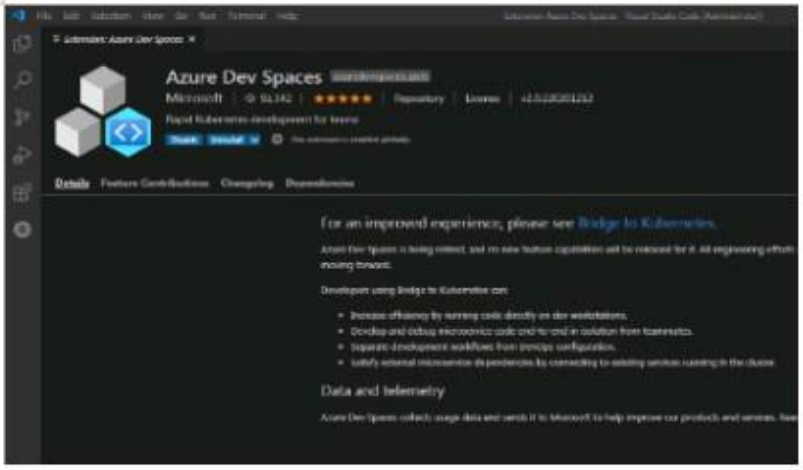
1. Create MYAPP folder
2. Open visual studio code
3. Open folder MYAPP in visual studio code
4. Create new file server.js & pacakge.json
5. From windows explorer create PUBLIC folder in MYAPP folder
6. Now create new file using public folder by using visual studio code
7. Create file index.html & app.css
8. Open command palette from view menu (ctrl+shif+p)
9. Enter azure dev space & click on it
10. Click on configure
11. Click DEBUG icon on left & then click on LAUNCH SERVER(AZDS)
12. OUTPUT will display in Output window

Server.js

```
var express = require('express');
var app = express();
app.use(express.static(__dirname + '/public'));
app.get('/', function (req, res) {
res.sendFile(__dirname + '/public/index.html');
});
app.get('/api', function (req, res) {
res.send('Hello from webfrontend');
});
var port = process.env.PORT || 80;
var server = app.listen(port, function () {
console.log('Listening on port ' + port);
});
process.on("SIGINT", () => {
process.exit(130 /* 128 + SIGINT */);
});
process.on("SIGTERM", () => {
console.log("Terminating...");
server.close();
});
```

Package.json

```
{
"name": "webfrontend",
"version": "0.1.0",
"devDependencies": {
"nodemon": "^1.18.10"
},
"dependencies": {
"express": "^4.16.2",
"request": "2.83.0"
},
"main": "server.js",
"scripts": {
"start": "node server.js"
```



5. Install Azure CLI (https://docs.microsoft.com/en-us/cli/azure/install-azure-cli?view=azure-cli-latest)
6. Open cmd
7. Enter command **az Login**
8. Enter Command to install AZDS utility
   az aks use-dev-spaces –n CAD –g CAD

Practical No.4E - Deploy Application on AKS

1.Core web API

Steps –

1. Open Visual Studio
2. Click on New project
3. Select Cloud Container Application for Kubernetes

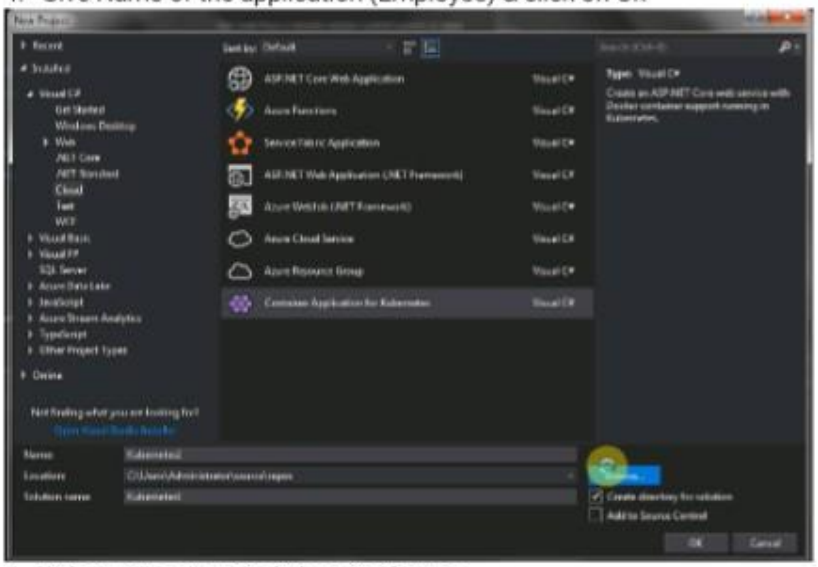
Practical No.4E - Deploy Application on AKS

1.Core web API

Steps –

1. Open Visual Studio
2. Click on New project
3. Select Cloud Container Application for Kubernetes

4. Give Name of the application (Employee) & click on Ok



5. Select API option & click on OK button

6. Make sure Azure Dev Space is selected in menu.
7. Open ValuesController.cs file
8. Edit line number 16 as shown in the screen shot

OUTPUT

The Debug console shows the log output.

```
> Executing task: C:\Program Files\Microsoft SDKs\Azure\Azure
Dev Spaces CLI (Preview)\azds.exe up --port=50521:9229 --await-exec
--keep-alive <
Synchronizing files...4s
Using dev space 'new01' with target 'kuber01'
Installing Helm chart...2s
Waiting for container image build...29s
Building container image...
Step 1/8 : FROM node:lts
Step 2/8 : ENV PORT 80
Step 3/8 : EXPOSE 80
Step 4/8 : WORKDIR /app
Step 5/8 : COPY package.json .
Step 6/8 : RUN npm install
Step 7/8 : COPY . .
Step 8/8 : CMD ["npm", "start"]
Built container image in 45s
Waiting for container...52s
Service 'myapp' port 80 (http) is available via port forwarding
at http://localhost:50764
Terminal will be reused by tasks, press any key to close it.
```

```
}
}
```

Index.html

```
<!doctype html>
<html ng-app="myApp">
<head>
<script src="https://ajax.googleapis.com/ajax/libs/
angularjs/1.5.3/angular.min.js"></script>
<script src="https://cdnjs.cloudflare.com/ajax/
libs/angular.js/1.5.3/angular-route.js"></script>
<script src="app.js"></script>
<link rel="stylesheet" href="app.css">
<link href="https://maxcdn.bootstrapcdn.
com/bootstrap/3.3.6/css/bootstrap.min.css"
rel="stylesheet" integrity="sha384-1q8mTJOASx8j1Au
+a5WDVnPi2lkFfwwEAa8hDDdjZlpLegxhjVME1fgjWPGmkzs7"
crossorigin="anonymous">
<!-- Uncomment the next line -->
<!-- <meta name="viewport" content="width=devicewidth,
initial-scale=1"> -->
</head>
<body style="margin-left:10px; margin-right:10px;">
<div ng-controller="MainController">
<h2>Server Says</h2>
<div class="row">
<div class="col-xs-8 col-md-10">
<div ng-repeat="message in messages
track by $index">
<span class="message">{{message}}</
span>
</div>
</div>
<div class="col-xs-4 col-md-2">
<button class="btn btn-primary"
ng-click="
sayHelloToServer()">Say It
Again</button>
</div>
</div>
</div>
</body>
</html>
```

APP.css

```
.message {
font-family: Courier New, Courier, monospace;
font-weight: bold;
}
```

a) Create an API Management Service.
b) Create an API Gateway Service.

a) Create an API Management Service.

Steps for creating an API management service are mentioned below-

Step 1- Sign-in to your **Azure Subscription Portal**

Step 2- Search for "**API Management**", then select API Manageme order to create a service instance.

Step 3- As shown in Image 1 Select "**API Management service**"

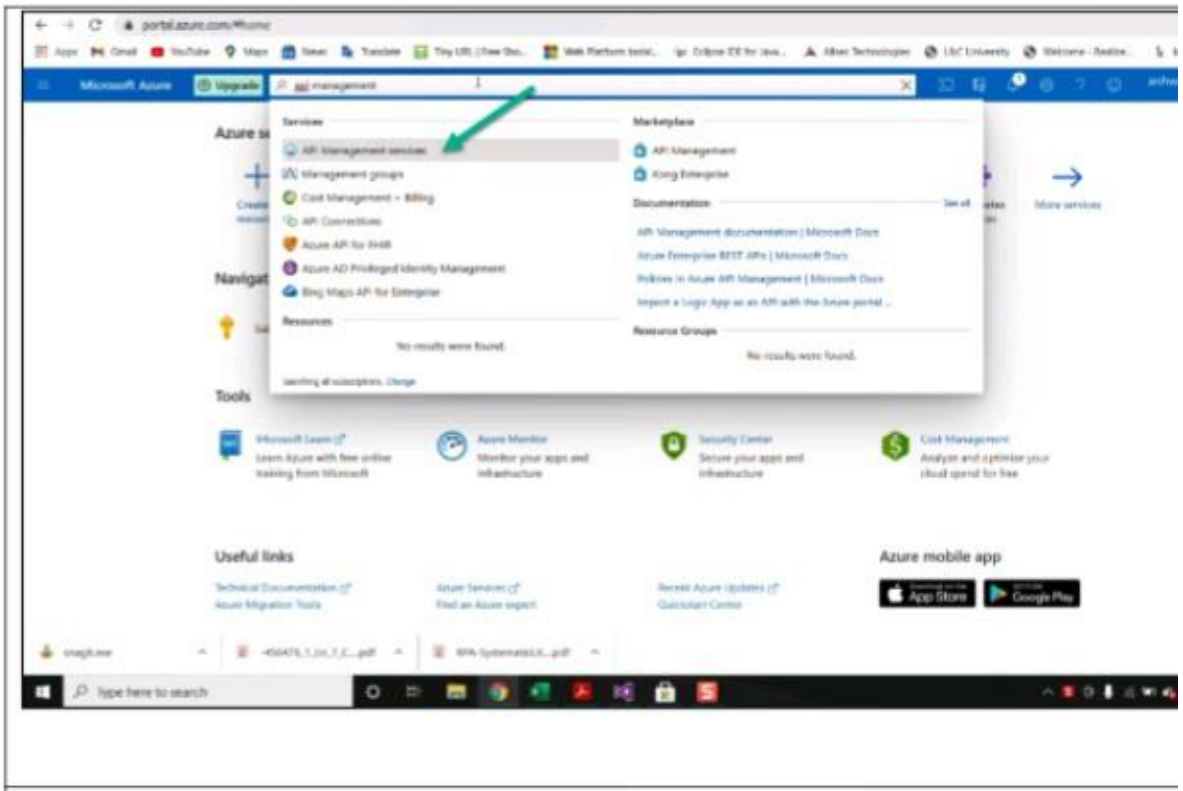


Image 1

Step 4- As API management service page is loaded, select "**Create API management service**" button. As shown in the image 2.

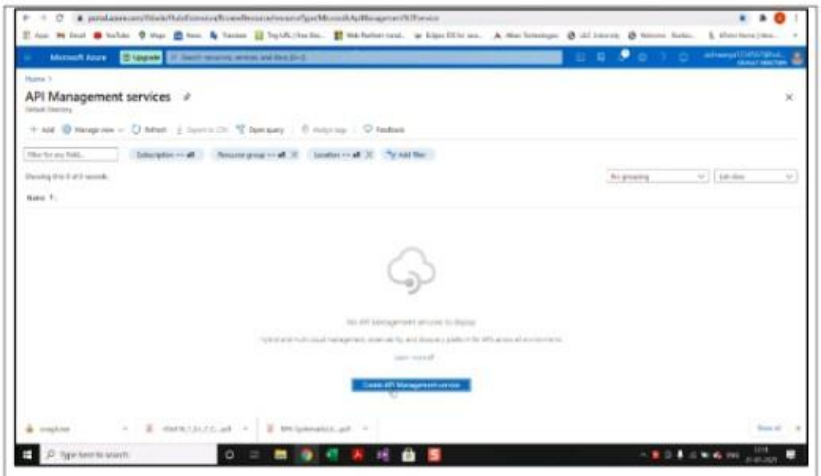


Image 2

Step 5- We will be able to see the **Azure API Management service creation blade** as shown in Image after clicking on the "Create API management service" button

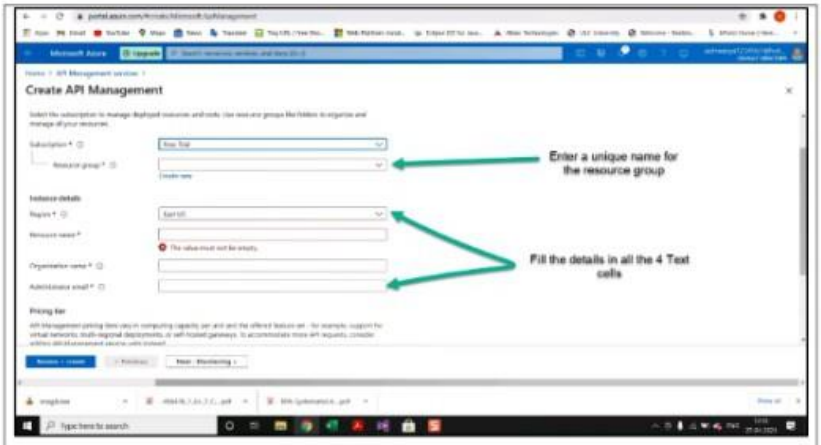


Image 3

Step 6- Provide a **name**. This name sets the URL of the API gateway and portal [**Name- AzureManagementService**]

Step 7-Select the subscription and **resource group** (or create a new resource group), and select the location. [**Resource Name-AzureManagementService, Location- SouthEast Asia]**

Step 8-Specify the **organization name**. This name will appear in the developer portal as the organization that publishes the API. [**Name-CloudApplicationPratical**]

Step 9- Specify the **email address** of the administrator. The user who creates the service instance will be the default administrator, so it's best

Step 13-Once the Validation is done and the label displays "Validation Passed", Click on **create** button to create the **instance of the service**.

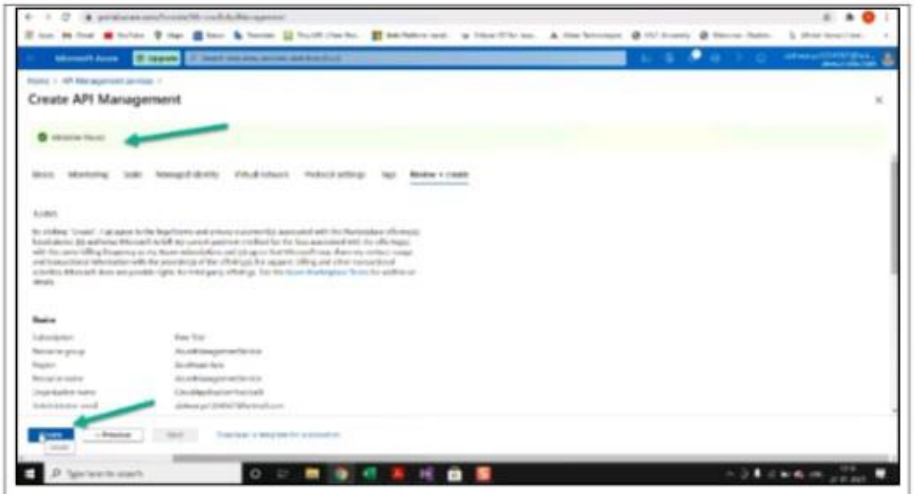


Image 6

Step 14- After clicking on the create button the API management service instance will go to deployment stage as shown in image 7. After the deployment is complete the instance will be shown as in image 8

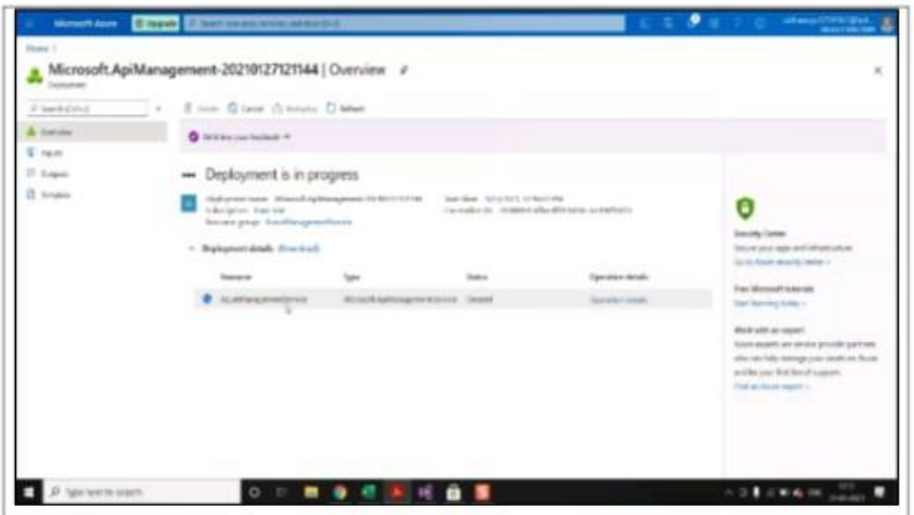


Image 7

Image 6

Step 14- After clicking on the create button the API management service instance will go to deployment stage as shown in image 7. After the deployment is complete the instance will be shown as in image 8

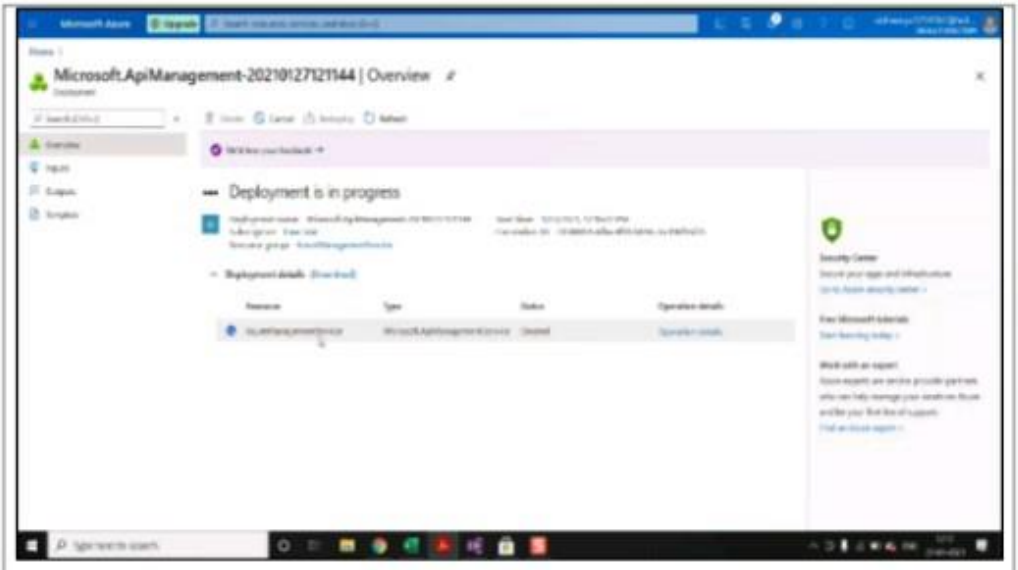


Image 7

Next step is Import an API into API Management and test the API in the Azure portal

Step 15- In the Azure portal, search for and select API Management services.

Step 16- On the API Management services page, select your API Management instance as in image 9.

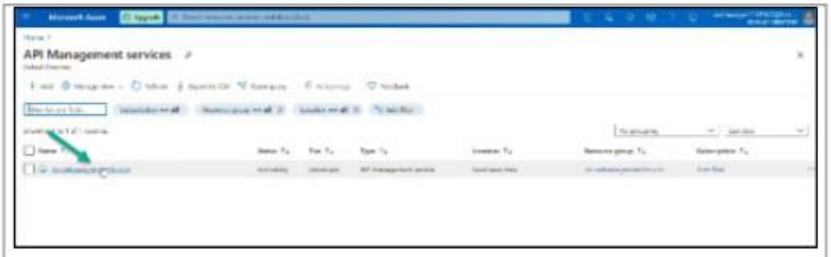


Image 9

Step 17- In the left navigation of **API Management instance**, select APIs.

Step 18- Select the **OpenAPI** tile as shown in image 10.

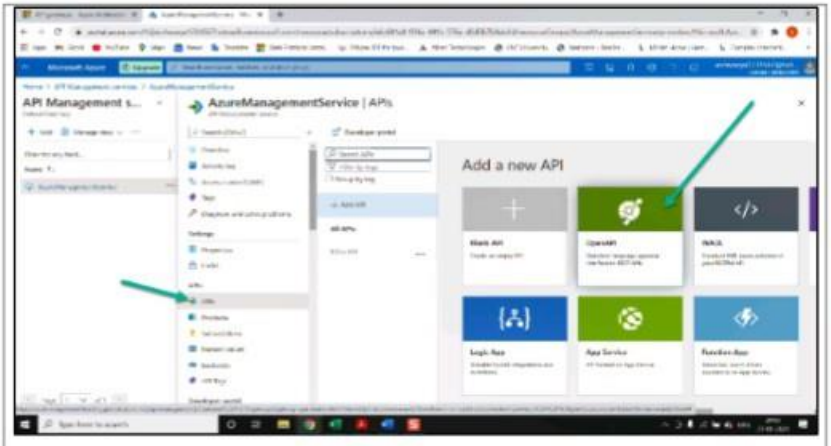


Image 10

Step 19- In the Create from **OpenAPI** specification window, select Full.

Step 20- Enter the values as mentioned below in the form shown in image 11

Setting	Value
OpenAPI specification	https://conferenceapi.azurewebsites.net?format=json
Display name	After you enter the preceding service URL, API Management fills out this field based on the JSON. .(automatic)
Name	After you enter the preceding service URL, API Management fills out this field based on the JSON. .(automatic)
Description	After you enter the preceding service URL, API Management fills out this field based on the JSON.(automatic)

Gateways	Managed

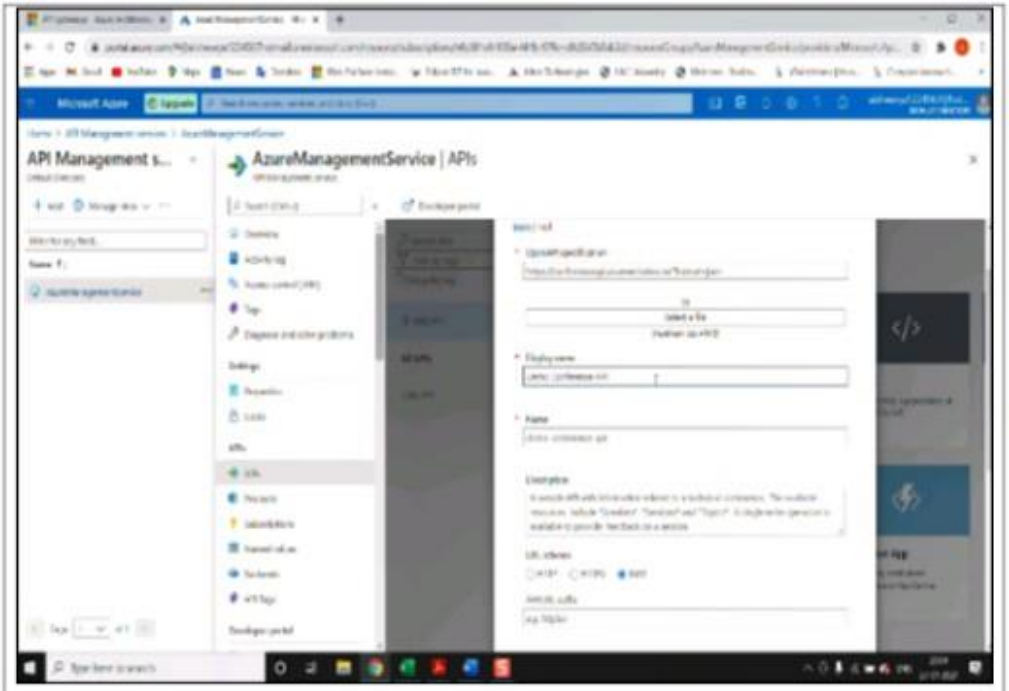


Image 11

Next steps are to Test the new API in the Azure portal

Step 21- In the left navigation of your API Management instance, select APIs > **Demo Conference API.**

Step 22- Select the Test tab, and then select **GetSpeakers**. The page shows Query parameters and Headers, if any. The Ocp-Apim-Subscription-Key is filled in automatically for the subscription key associated with this API.

Step 22- Select **Send** as shown in image 12.

Output -

b) Create an API Gateway Service.

Steps for creating an API gateway service are mentioned below-

Step 1- Sign in to you **AWS account**.

Step 2- search **for API Gateway**, and create an AWS Gateway instance as shown in Image 1.

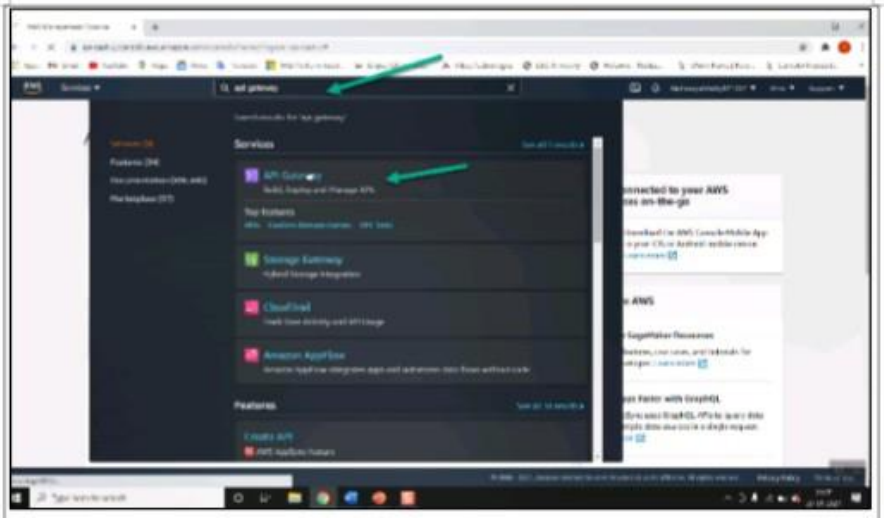


Image 1

Step 3- Select Import from the REST API selection as shown in image 2.

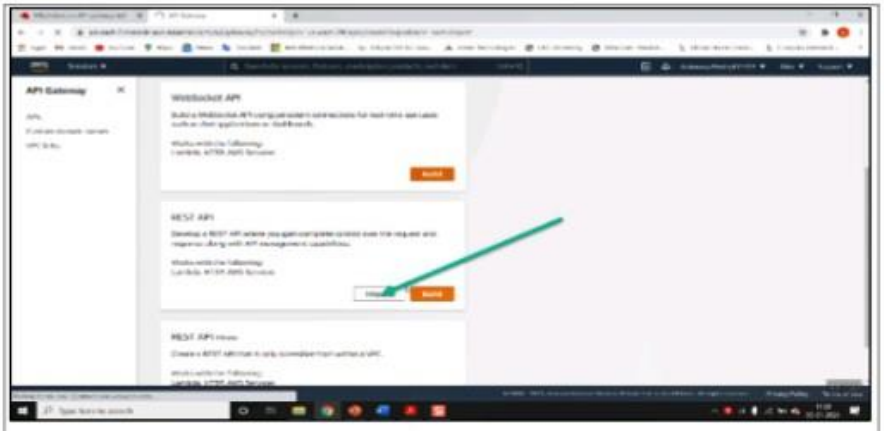


Image 2

Step 4- Select Import from swagger and copy or select the swagger file as shown in image 3.

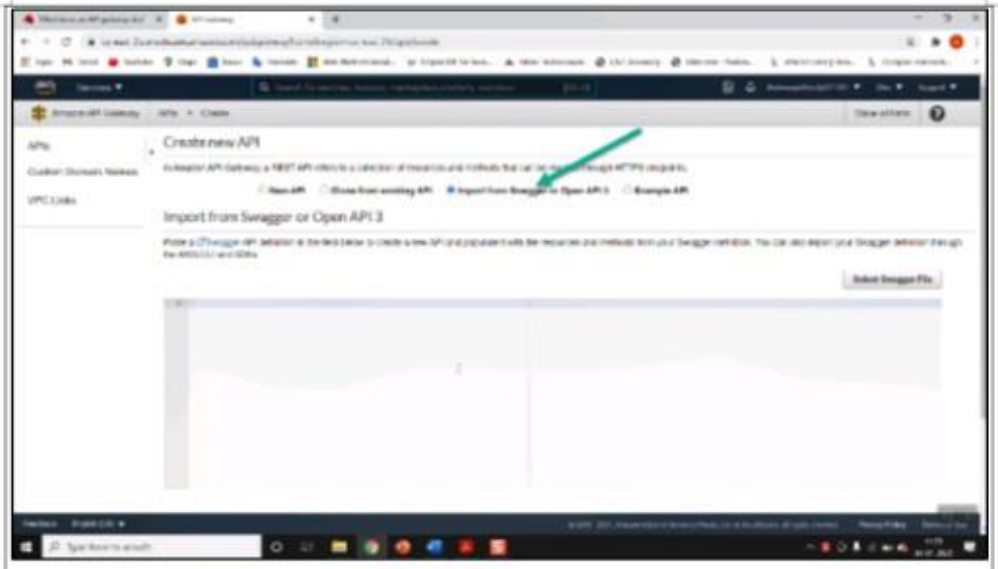


Image 3

Step 5- To Create an API definition in Swagger. First login to the swagger account. As depicted in image 4.

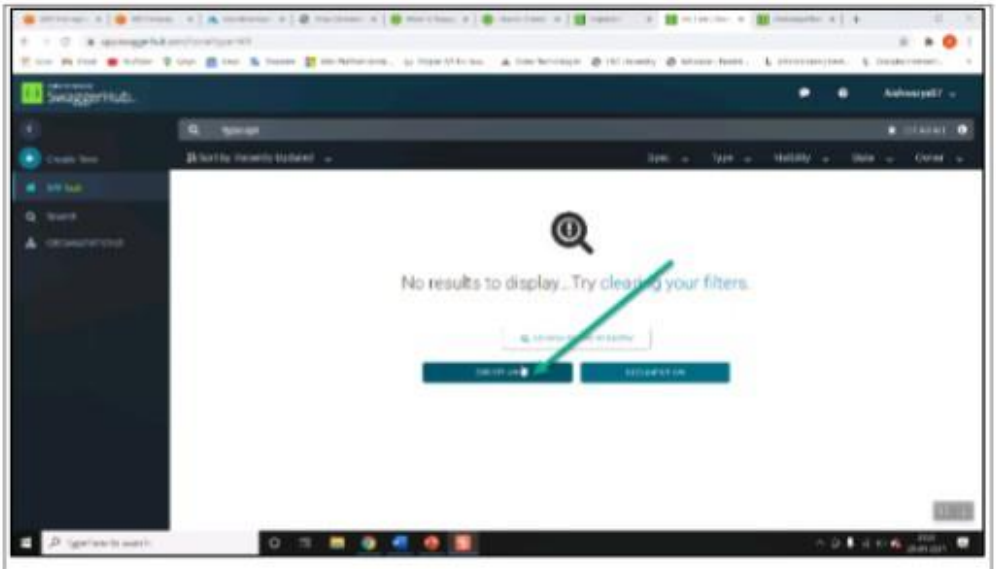


Image 4

Step 6- Then fill the Form which includes the version, name and other details click on Create API button. As depicted in image 5.

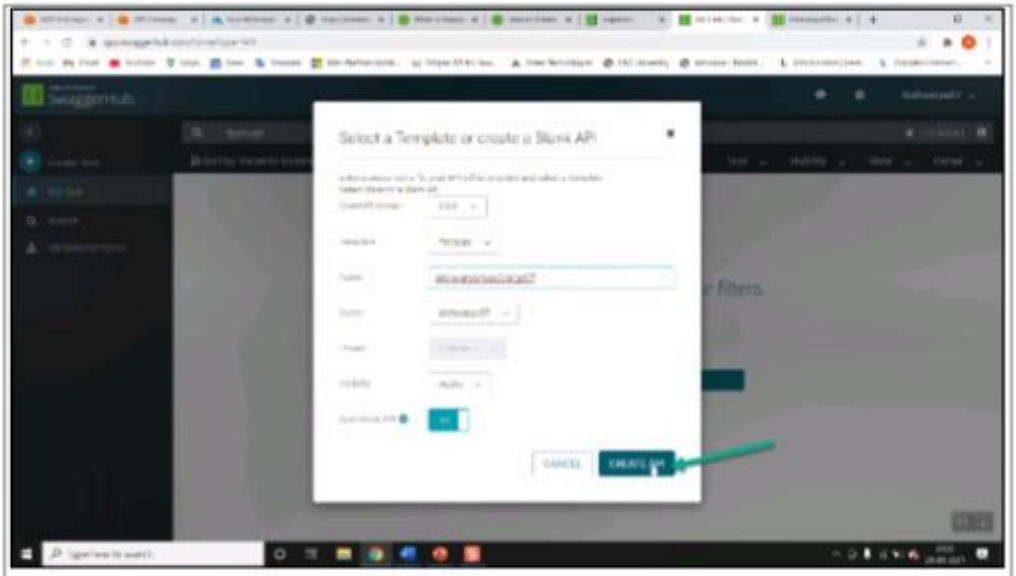
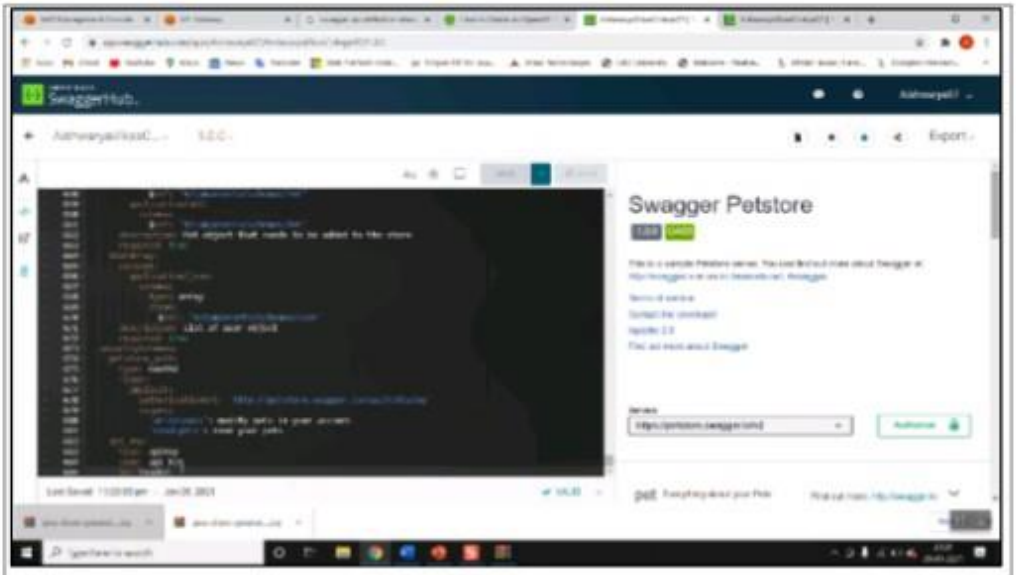


Image 5

Step 7- Copy the API and definition from swagger as shown in image 6



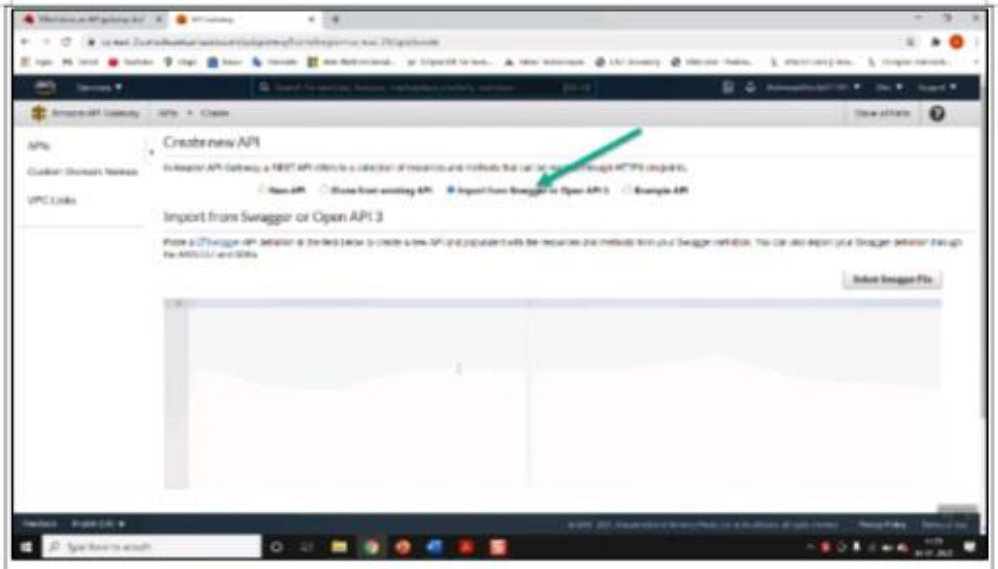


Image 3

Step 5- To Create an API definition in Swagger. First login to the swagger account. As depicted in image 4.

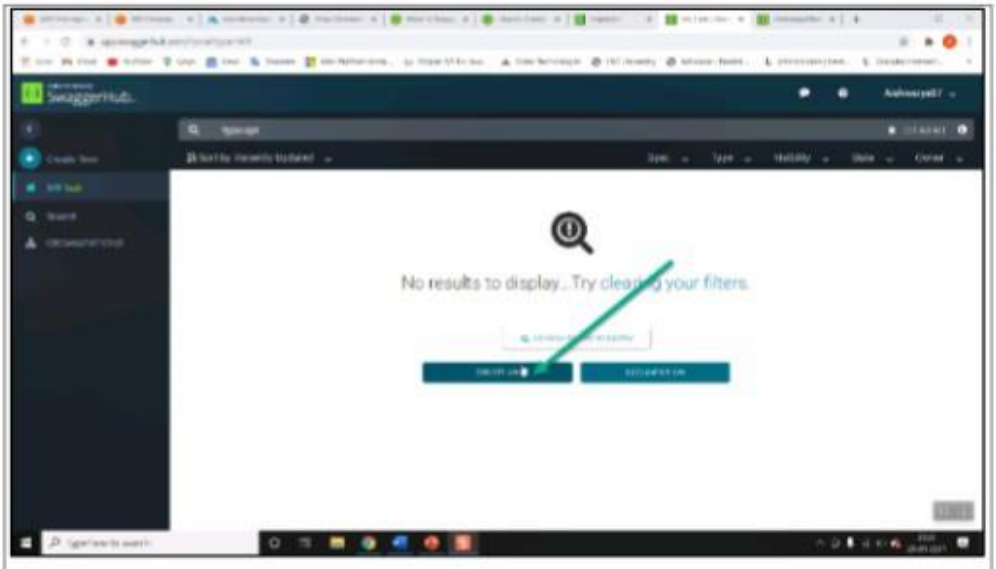


Image 4

Step 6- Then fill the Form which includes the version, name and other details click on Create API button. As depicted in image 5.

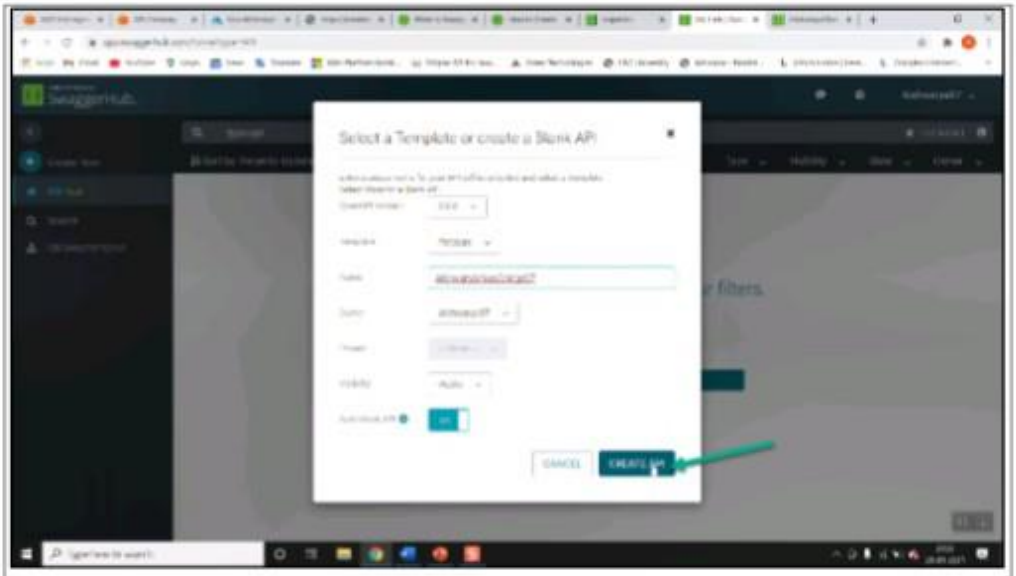


Image 5

Step 7- Copy the API and definition from swagger as shown in image 6

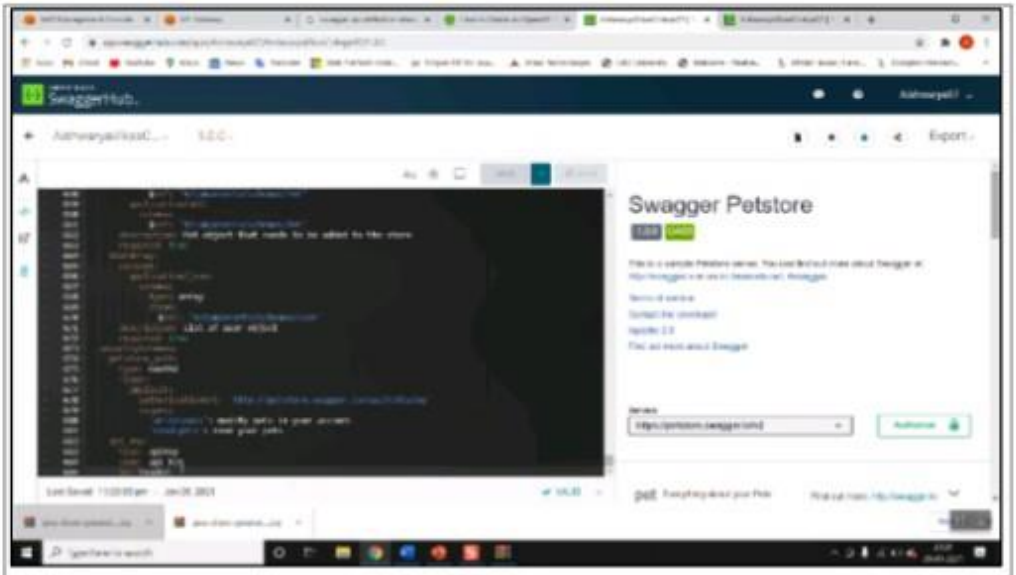


Image 6

Step 8-Paste the definition and in In the Settings section, select the endpoint type. Select "**Edge Optimized**" option and then click on import button as shown in image 7

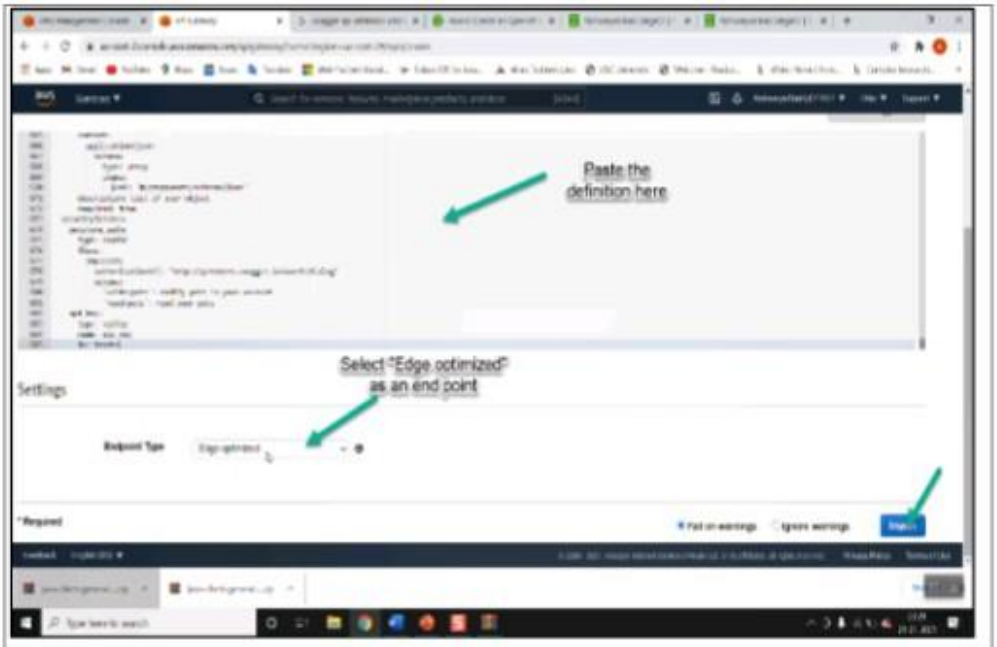


Image 7

API definition from swagger is mentioned below-

```
openapi: 3.0.0
info:
  description: |
    This is a sample Petstore server.  You can find
    out more about Swagger at
    [http://swagger.io](http://swagger.io) or on
    [irc.freenode.net, #swagger](http://swagger.io/irc/).
  version: "1.0.0"
  title: Swagger Petstore
```

```
  termsOfService: 'http://swagger.io/terms/'
  contact:
    email: apiteam@swagger.io
  license:
    name: Apache 2.0
    url: 'http://www.apache.org/licenses/LICENSE-2.0.html'
servers:
  # Added by API Auto Mocking Plugin
  - description: SwaggerHub API Auto Mocking
    url:
https://virtserver.swaggerhub.com/Aishwarya07/AishwaryaVikasColege
07/1.0.0
  - url: 'https://petstore.swagger.io/v2'
tags:
  - name: pet
    description: Everything about your Pets
    externalDocs:
      description: Find out more
      url: 'http://swagger.io'
  - name: store
    description: Access to Petstore orders
  - name: user
    description: Operations about user
    externalDocs:
      description: Find out more about our store
      url: 'http://swagger.io'
paths:
  /pet:
    post:
```

```
    '404':
      description: Pet not found
  security:
    - api_key: []
post:
  tags:
    - pet
  summary: Updates a pet in the store with form data
  operationId: updatePetWithForm
  parameters:
    - name: petId
      in: path
      description: ID of pet that needs to be updated
      required: true
      schema:
        type: integer
        format: int64
  responses:
    '405':
      description: Invalid input
  security:
    - petstore_auth:
        - 'write:pets'
        - 'read:pets'
  requestBody:
    content:
      application/x-www-form-urlencoded:
        schema:
```

```
        type: object
        properties:
         name:
          description: Updated name of the pet
          type: string
         status:
          description: Updated status of the pet
          type: string
  delete:
   tags:
    - pet
   summary: Deletes a pet
   operationId: deletePet
   parameters:
    - name: api_key
      in: header
      required: false
      schema:
       type: string
    - name: petId
      in: path
      description: Pet id to delete
      required: true
      schema:
       type: integer
       format: int64
   responses:
    '400':
```

```
  tags:
   - pet
  summary: Add a new pet to the store
  operationId: addPet
  responses:
   '405':
     description: Invalid input
  security:
   - petstore_auth:
       - 'write:pets'
       - 'read:pets'
  requestBody:
   $ref: '#/components/requestBodies/Pet'
 put:
  tags:
   - pet
  summary: Update an existing pet
  operationId: updatePet
  responses:
   '400':
     description: Invalid ID supplied
   '404':
     description: Pet not found
   '405':
     description: Validation exception
  security:
   - petstore_auth:
       - 'write:pets'
```

```
    deprecated: true
  '/pet/{petId}':
    get:
      tags:
        - pet
      summary: Find pet by ID
      description: Returns a single pet
      operationId: getPetById
      parameters:
        - name: petId
          in: path
          description: ID of pet to return
          required: true
          schema:
            type: integer
            format: int64
      responses:
        '200':
          description: successful operation
          content:
            application/json:
              schema:
                $ref: '#/components/schemas/Pet'
            application/xml:
              schema:
                $ref: '#/components/schemas/Pet'
        '400':
          description: Invalid ID supplied
```

```
    tags:
     - user
    summary: Delete user
    description: This can only be done by the logged in user.
    operationId: deleteUser
    parameters:
     - name: username
       in: path
       description: The name that needs to be deleted
       required: true
       schema:
        type: string
    responses:
     '400':
       description: Invalid username supplied
     '404':
       description: User not found
externalDocs:
  description: Find out more about Swagger
  url: 'http://swagger.io'
components:
  schemas:
    Order:
     type: object
     properties:
       id:
         type: integer
         format: int64
```

```
    responses:
      default:
        description: successful operation
  '/user/{username}':
    get:
      tags:
        - user
      summary: Get user by user name
      operationId: getUserByName
      parameters:
        - name: username
          in: path
          description: The name that needs to be fetched. Use user1 for
testing.
          required: true
          schema:
            type: string
      responses:
        '200':
          description: successful operation
          content:
            application/json:
              schema:
                $ref: '#/components/schemas/User'
            application/xml:
              schema:
                $ref: '#/components/schemas/User'
        '400':
          description: Invalid username supplied
```

```
    '404':
      description: User not found
  put:
    tags:
     - user
    summary: Updated user
    description: This can only be done by the logged in user.
    operationId: updateUser
    parameters:
     - name: username
       in: path
       description: name that need to be updated
       required: true
       schema:
         type: string
    responses:
     '400':
       description: Invalid user supplied
     '404':
       description: User not found
    requestBody:
     content:
       application/json:
         schema:
           $ref: '#/components/schemas/User'
     description: Updated user object
     required: true
  delete:
```

```
    - user
    summary: Creates list of users with given input array
    operationId: createUsersWithListInput
    responses:
      default:
        description: successful operation
    requestBody:
      $ref: '#/components/requestBodies/UserArray'
  /user/login:
    get:
      tags:
        - user
      summary: Logs user into the system
      operationId: loginUser
      parameters:
        - name: username
          in: query
          description: The user name for login
          required: true
          schema:
            type: string
        - name: password
          in: query
          description: The password for login in clear text
          required: true
          schema:
            type: string
      responses:
```

```
      '200':
        description: successful operation
        headers:
          X-Rate-Limit:
            description: calls per hour allowed by the user
            schema:
              type: integer
              format: int32
          X-Expires-After:
            description: date in UTC when token expires
            schema:
              type: string
              format: date-time
        content:
          application/json:
            schema:
              type: string
          application/xml:
            schema:
              type: string
      '400':
        description: Invalid username/password supplied
  /user/logout:
    get:
      tags:
        - user
      summary: Logs out current logged in user session
      operationId: logoutUser
```

```
      description: Invalid ID supplied
    '404':
      description: Order not found
  delete:
   tags:
    - store
   summary: Delete purchase order by ID
   description: >-
    For valid response try integer IDs with positive integer value.\ \
    Negative or non-integer values will generate API errors
   operationId: deleteOrder
   parameters:
    - name: orderId
      in: path
      description: ID of the order that needs to be deleted
      required: true
      schema:
       type: integer
       format: int64
       minimum: 1
   responses:
    '400':
      description: Invalid ID supplied
    '404':
      description: Order not found
 /user:
  post:
   tags:
```

```
requestBodies:
  Pet:
    content:
      application/json:
        schema:
          $ref: '#/components/schemas/Pet'
      application/xml:
        schema:
          $ref: '#/components/schemas/Pet'
    description: Pet object that needs to be added to the store
    required: true
  UserArray:
    content:
      application/json:
        schema:
          type: array
          items:
            $ref: '#/components/schemas/User'
    description: List of user object
    required: true
securitySchemes:
  petstore_auth:
    type: oauth2
    flows:
      implicit:
        authorizationUrl: 'http://petstore.swagger.io/oauth/dialog'
        scopes:
          'write:pets': modify pets in your account
```

```
    - user
    summary: Create user
    description: This can only be done by the logged in user.
    operationId: createUser
    responses:
      default:
        description: successful operation
    requestBody:
      content:
        application/json:
          schema:
            $ref: '#/components/schemas/User'
      description: Created user object
      required: true
  /user/createWithArray:
    post:
      tags:
        - user
      summary: Creates list of users with given input array
      operationId: createUsersWithArrayInput
      responses:
        default:
          description: successful operation
      requestBody:
        $ref: '#/components/requestBodies/UserArray'
  /user/createWithList:
    post:
      tags:
```

```
    - api_key: []
/store/order:
  post:
    tags:
     - store
    summary: Place an order for a pet
    operationId: placeOrder
    responses:
     '200':
       description: successful operation
       content:
         application/json:
           schema:
             $ref: '#/components/schemas/Order'
         application/xml:
           schema:
             $ref: '#/components/schemas/Order'
     '400':
       description: Invalid Order
    requestBody:
     content:
       application/json:
         schema:
           $ref: '#/components/schemas/Order'
     description: order placed for purchasing the pet
     required: true
'/store/order/{orderId}':
  get:
```

```
    type: object
    properties:
      id:
        type: integer
        format: int64
      name:
        type: string
    xml:
      name: Tag
  Pet:
    type: object
    required:
      - name
      - photoUrls
    properties:
      id:
        type: integer
        format: int64
      category:
        $ref: '#/components/schemas/Category'
      name:
        type: string
        example: doggie
      photoUrls:
        type: array
        xml:
          name: photoUrl
          wrapped: true
```

```
tags:
 - store
summary: Find purchase order by ID
description: >-
 For valid response try integer IDs with value >= 1 and <= 10.\ \ Other
 values will generated exceptions
operationId: getOrderById
parameters:
 - name: orderId
   in: path
   description: ID of pet that needs to be fetched
   required: true
   schema:
    type: integer
    format: int64
    minimum: 1
    maximum: 10
responses:
 '200':
   description: successful operation
   content:
    application/json:
     schema:
      $ref: '#/components/schemas/Order'
    application/xml:
     schema:
      $ref: '#/components/schemas/Order'
 '400':
```

```
      items:
        type: string
      tags:
        type: array
        xml:
          name: tag
          wrapped: true
        items:
          $ref: '#/components/schemas/Tag'
      status:
        type: string
        description: pet status in the store
        enum:
          - available
          - pending
          - sold
    xml:
      name: Pet
  ApiResponse:
    type: object
    properties:
      code:
        type: integer
        format: int32
      type:
        type: string
      message:
        type: string
```

```
      description: Invalid ID supplied
    '404':
      description: Pet not found
  security:
    - petstore_auth:
        - 'write:pets'
        - 'read:pets'
'/pet/{petId}/uploadImage':
  post:
    tags:
      - pet
    summary: uploads an image
    operationId: uploadFile
    parameters:
      - name: petId
        in: path
        description: ID of pet to update
        required: true
        schema:
          type: integer
          format: int64
    responses:
      '200':
        description: successful operation
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/ApiResponse'
```

```
    petId:
      type: integer
      format: int64
    quantity:
      type: integer
      format: int32
    shipDate:
      type: string
      format: date-time
    status:
      type: string
      description: Order Status
      enum:
        - placed
        - approved
        - delivered
    complete:
      type: boolean
      default: false
  xml:
    name: Order
Category:
  type: object
  properties:
    id:
      type: integer
      format: int64
    name:
```

```
    security:
     - petstore_auth:
        - 'write:pets'
        - 'read:pets'
    requestBody:
     content:
      application/octet-stream:
       schema:
        type: string
        format: binary
  /store/inventory:
   get:
    tags:
     - store
    summary: Returns pet inventories by status
    description: Returns a map of status codes to quantities
    operationId: getInventory
    responses:
     '200':
      description: successful operation
      content:
       application/json:
        schema:
         type: object
         additionalProperties:
          type: integer
          format: int32
    security:
```

```
      type: string
    xml:
      name: Category
  User:
    type: object
    properties:
      id:
        type: integer
        format: int64
      username:
        type: string
      firstName:
        type: string
      lastName:
        type: string
      email:
        type: string
      password:
        type: string
      phone:
        type: string
      userStatus:
        type: integer
        format: int32
        description: User Status
    xml:
      name: User
  Tag:
```

```
        'read:pets': read your pets
    api_key:
      type: apiKey
      name: api_key
      in: header
```

Output-

If the import is successful, we can view the ***"API Structure in AWS API Gateway"*** where we can see methods of the API. As shown in image 8

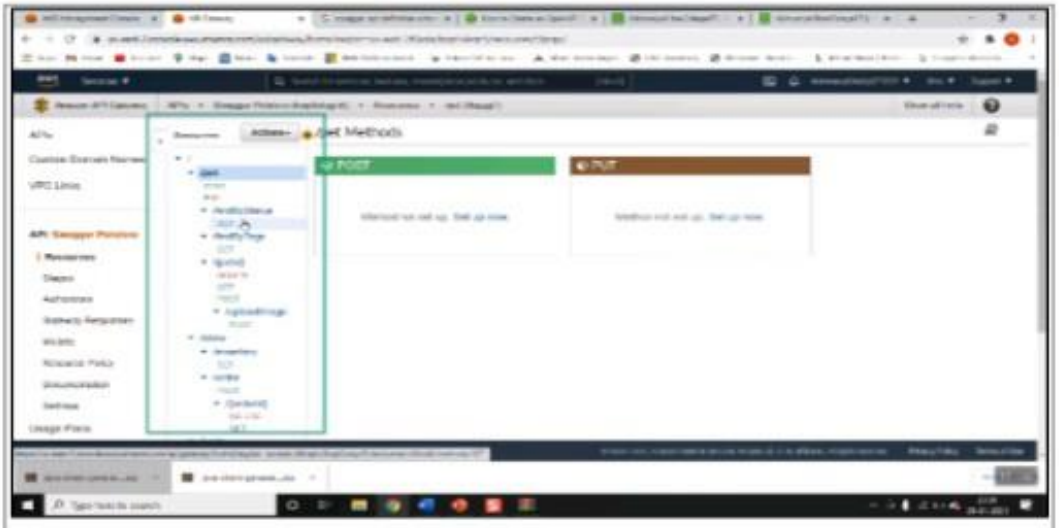


Image 8

Create a basic ASP.NET web app

1. Launch Visual Studio 2019.
2. Select **File** > **New** > **Project**.
3. Select **ASP.NET Web Application(.NET Framework) C#**.
4. Enter a project name > **Select Create**.
5. Select **MVC** > **Create**.

Add Application Insights automatically

Automatically adding Application Insights to a template-based ASP.NET web a within your ASP.NET web app project in Visual Studio:

1. Select **Add Application Insights Telemetry** > **Application Insights Sdk (local)** > **Next** > **Finish** > **Close**.
2. Open the ApplicationInsights.config file.
3. Before the closing </ApplicationInsights> tag add a line containing the instrumentation key for your Application Insights resource. Your instrume key can be found on the overview pane of your newly created Application resource that you created as part of the prerequisites for this article.

   XMLCopy
   ```
   <InstrumentationKey>your-instrumentation-key-goes-here</InstrumentationKey>
   ```

4. Select **Project** > **Manage NuGet Packages** > **Updates** > Update each Microsoft.ApplicationInsights NuGet package to the latest stable release
5. Run your application by selecting **IIS Express**. A basic ASP.NET app will la you navigate the pages on the site telemetry will be sent to Application In

Add Application Insights manually

This section will guide you through manually adding Application Insights to a te based ASP.NET web app. This section assumes you are using a web app base standard ASP.NET Framework MVC web app template.

1. Add the following NuGet packages and their dependencies to your projec
   - Microsoft.ApplicationInsights.WindowsServer
   - Microsoft.ApplicationInsights.Web
   - Microsoft.AspNet.TelemetryCorrelation

2. In some cases, the ApplicationInsights.config file will be created for you autor If the file is already present, skip to step #4. If it is not created automatica

```
        'read:pets': read your pets
    api_key:
      type: apiKey
      name: api_key
      in: header
```

Output-

If the import is successful, we can view the ***"API Structure in AWS API Gateway"*** where we can see methods of the API. As shown in image 8

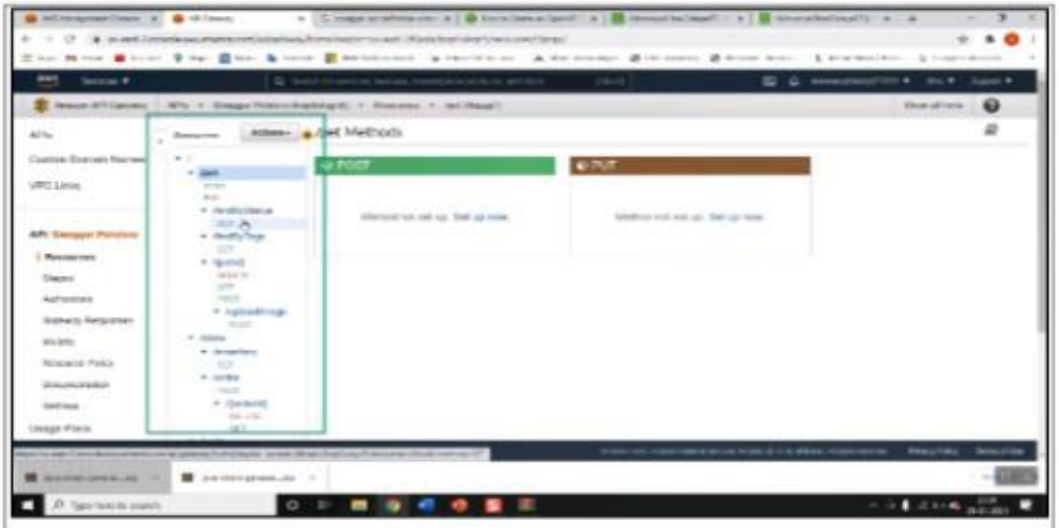


Image 8

PDF Created Using

Camera Scanner

Easily Scan documents & Generate PDF

https://play.google.com/store/apps/details?id=photo.pdf.maker