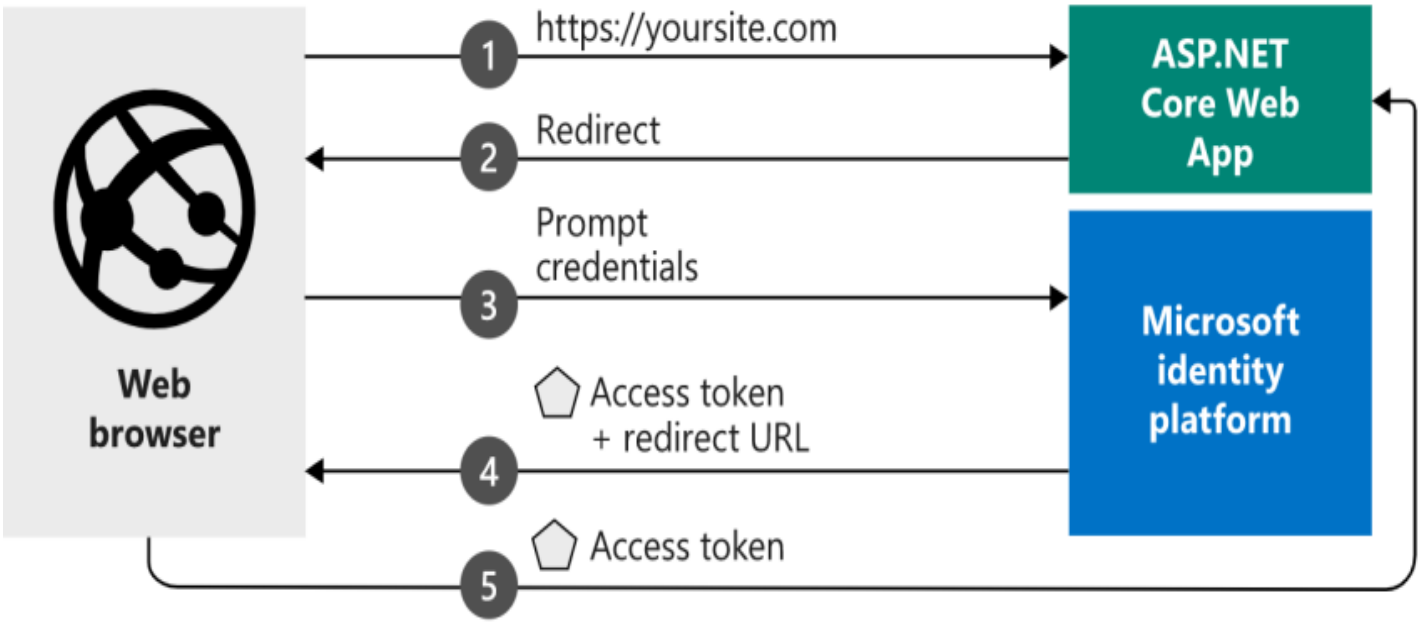
Azure AD Integration With Angular And ASP.NET Core Web API

Umashanker Pandey Updated date Aug 18, 2021 5.6k 6 10

AzureAdDemoApps.zip

Introduction

This blog is going to showcase to you how we can implement Azure AD with web API and Angular application.

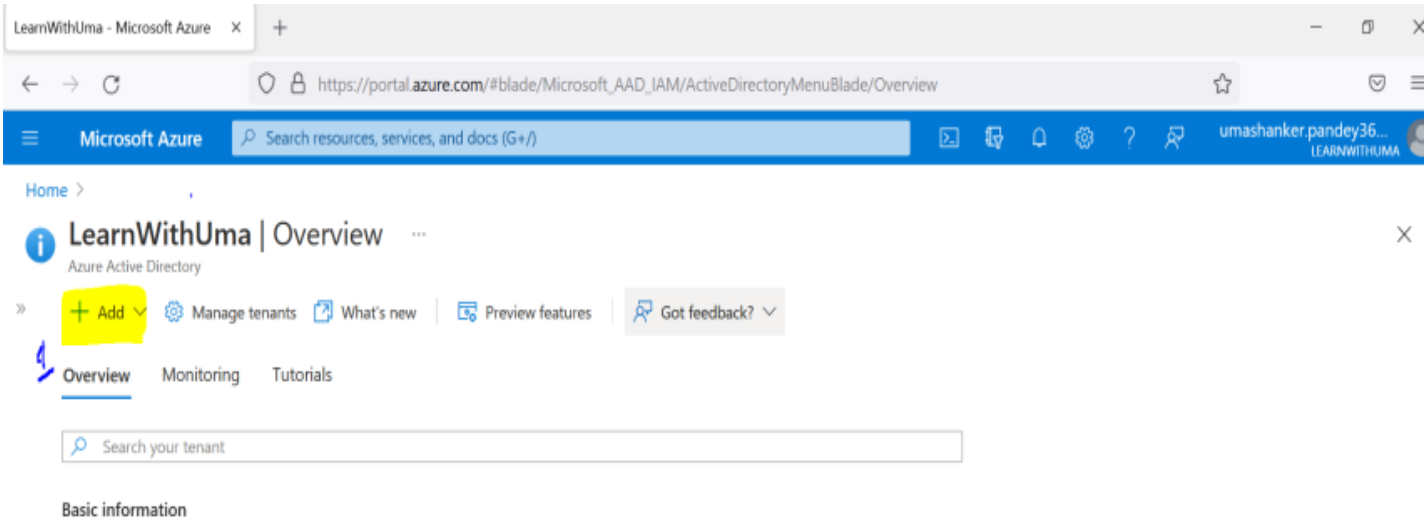


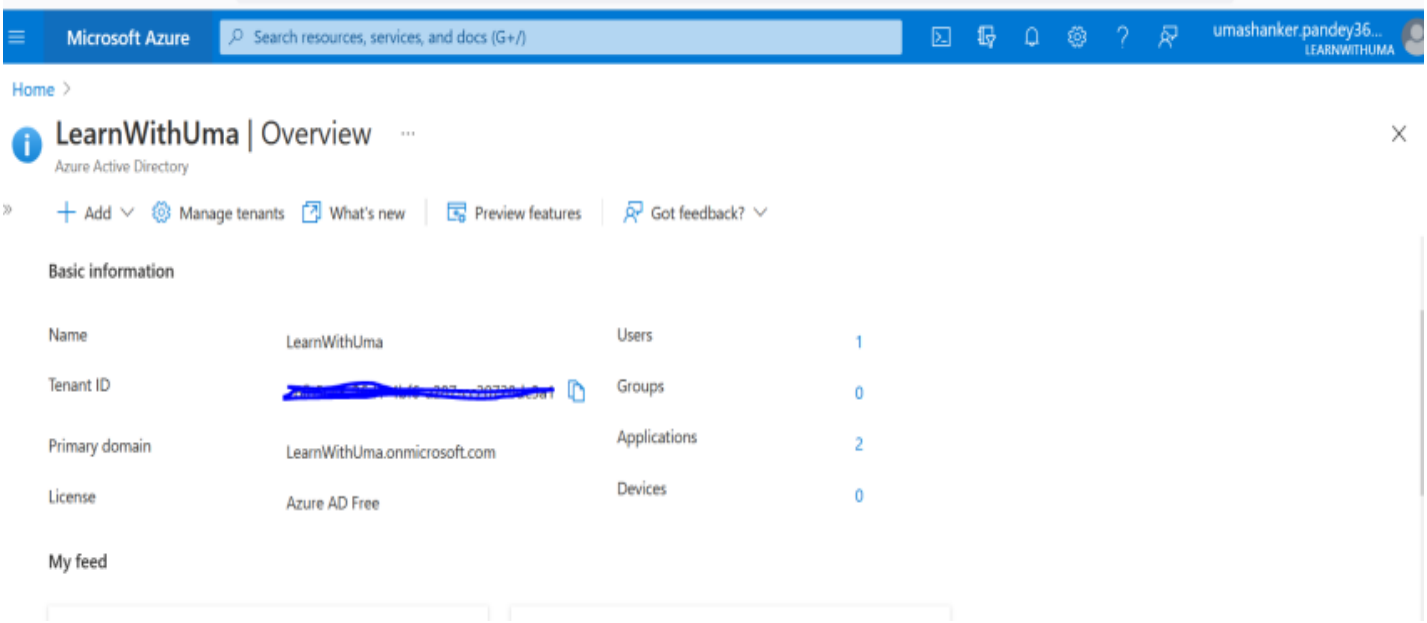
To connect azure ad with angular and asp.net core web API 5.0.

There are four-step processes to implement Azure AD in angular and asp.net core web API.

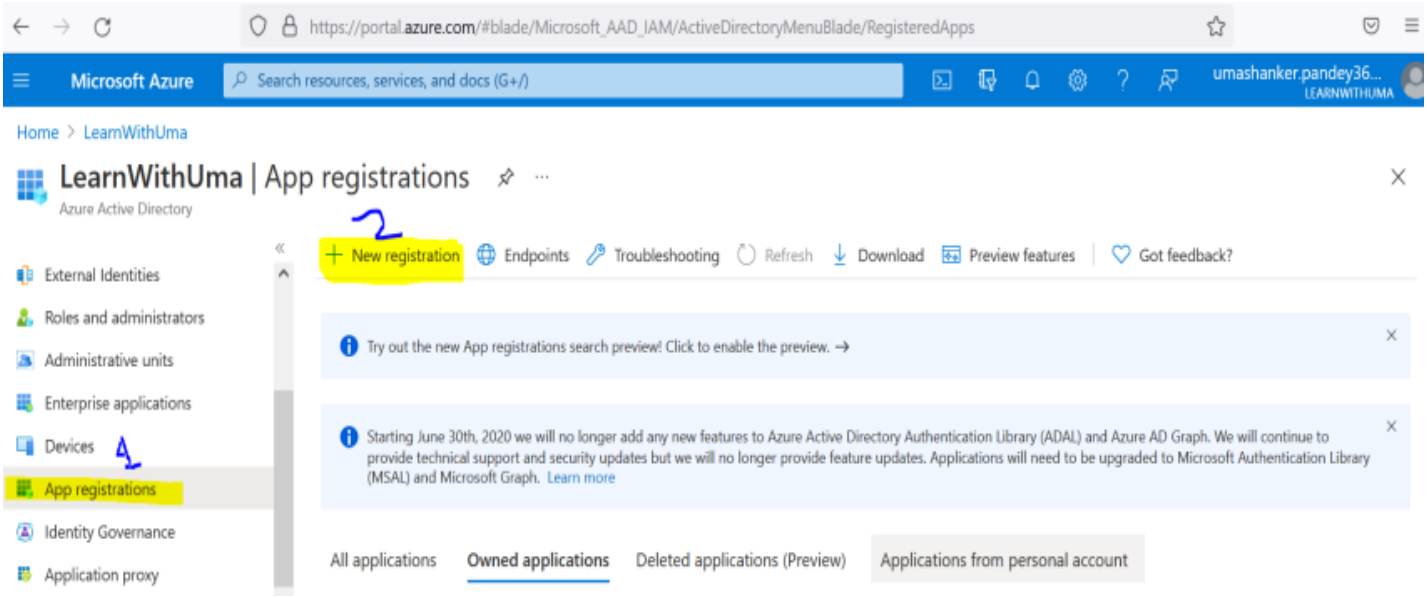
Step 1

Create Azure AD Account and Register the SPA(Single Page Application) application in Azure AD App Registration blade.

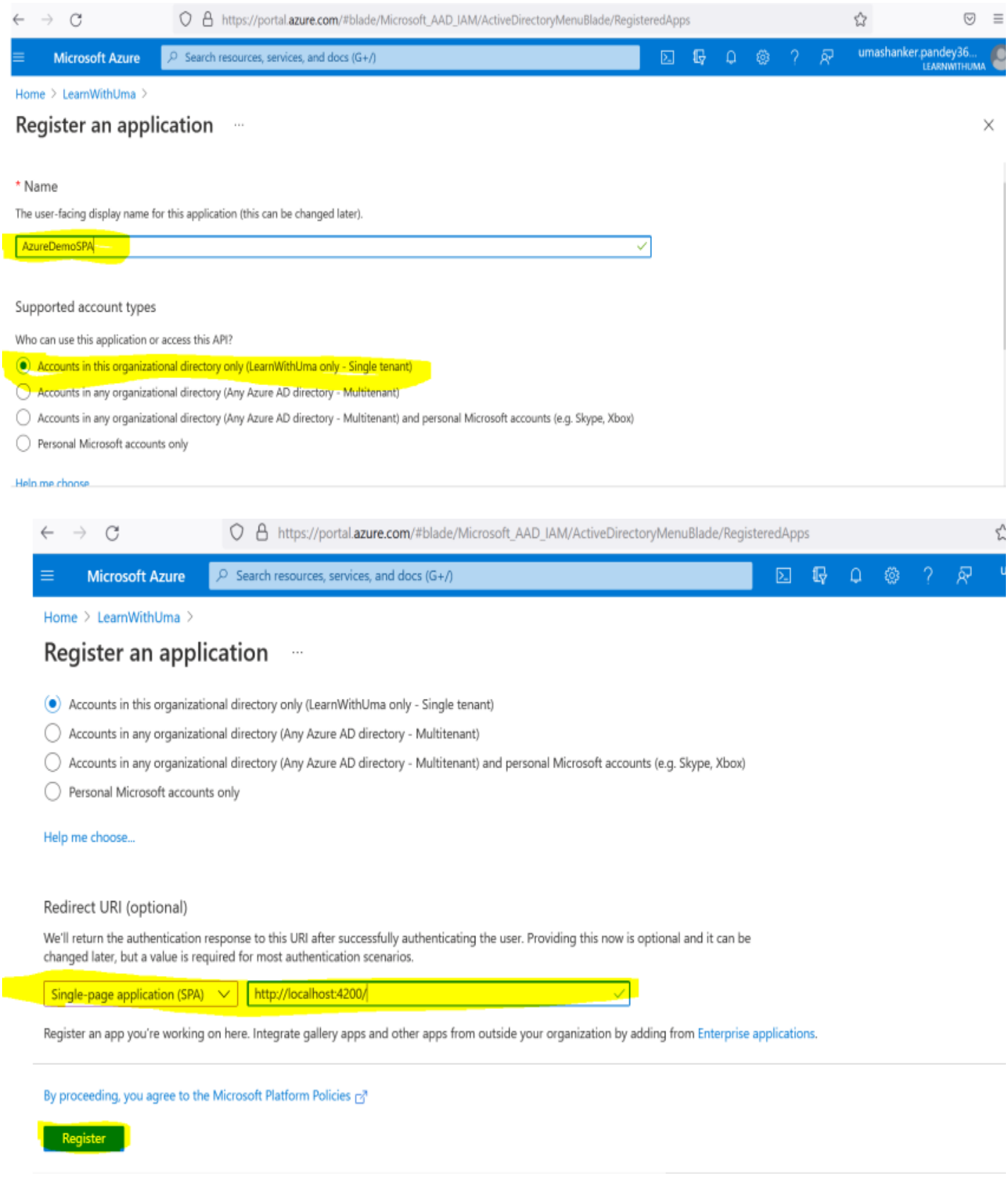




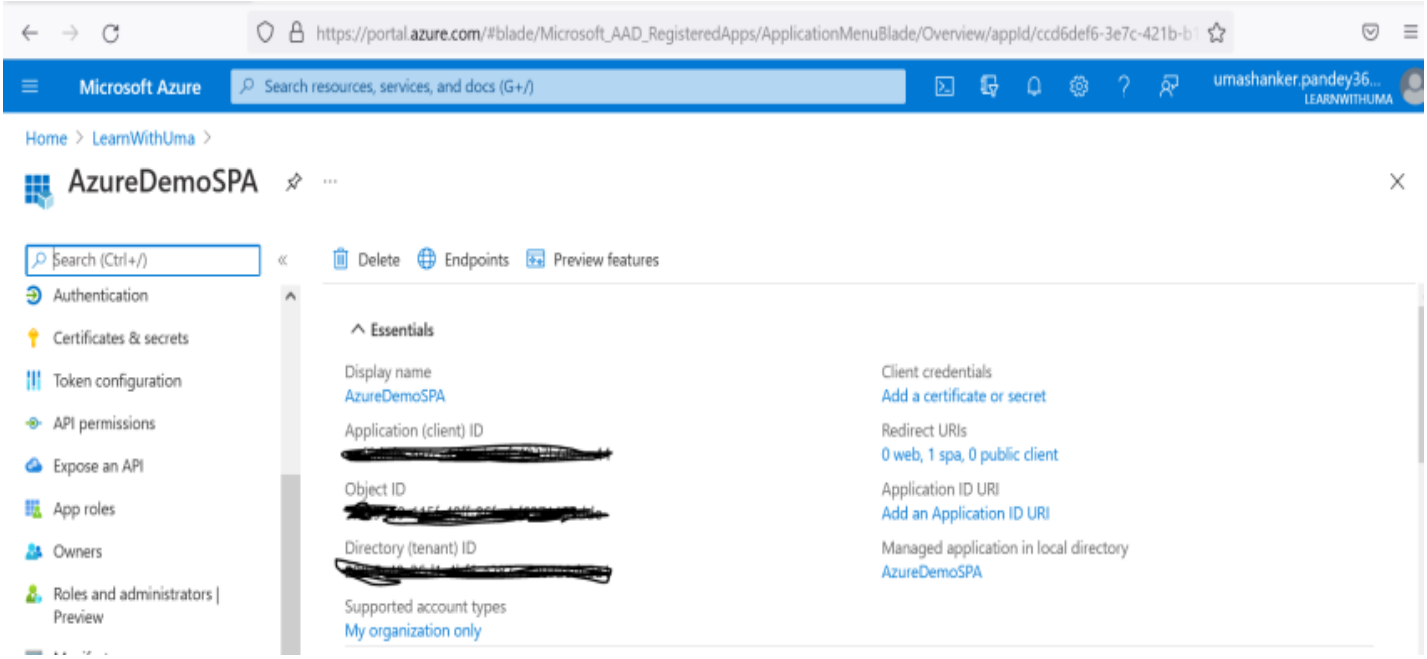
First, click on the App Registration button and then click on New Registration Button.



Fill in the Register Application Details.

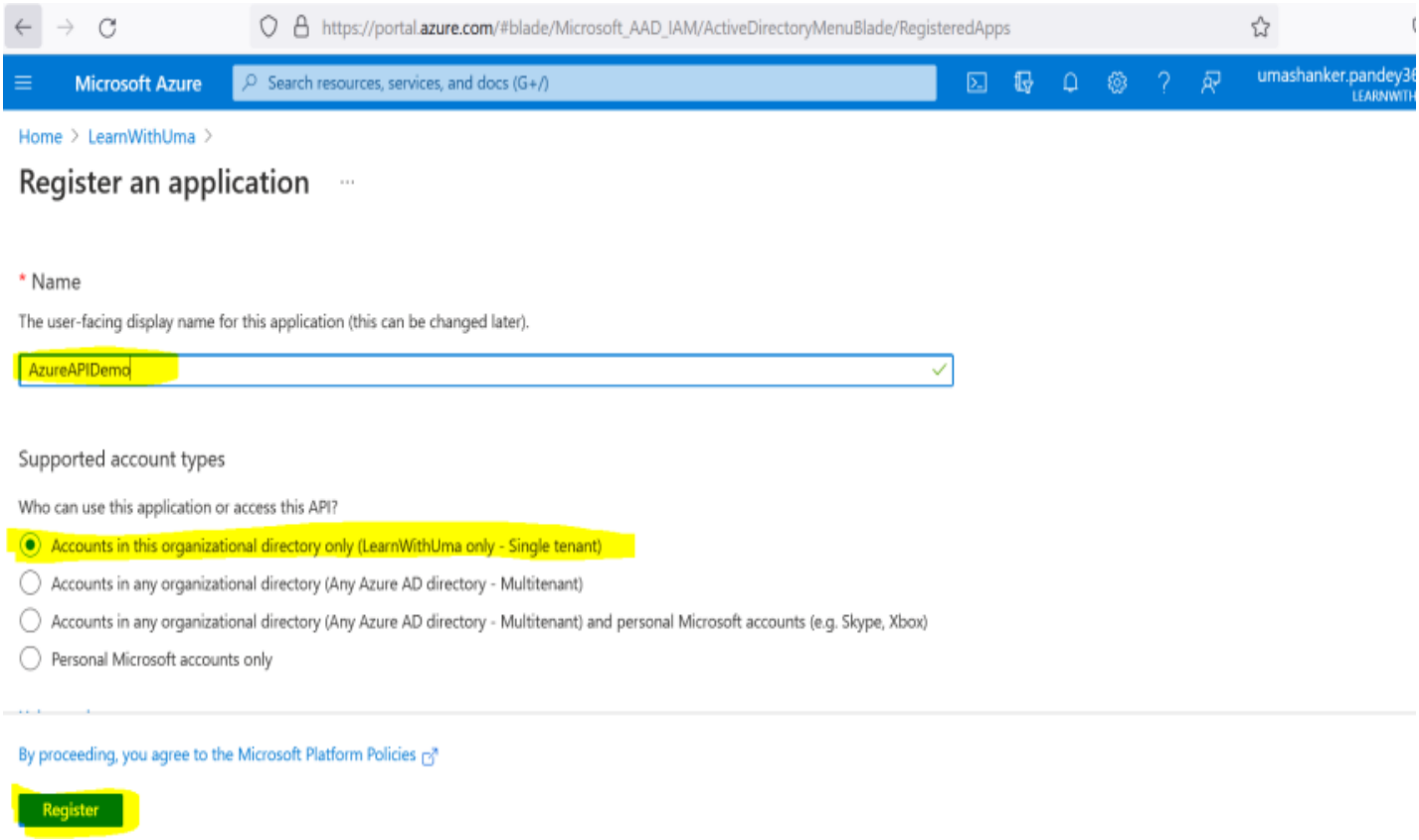


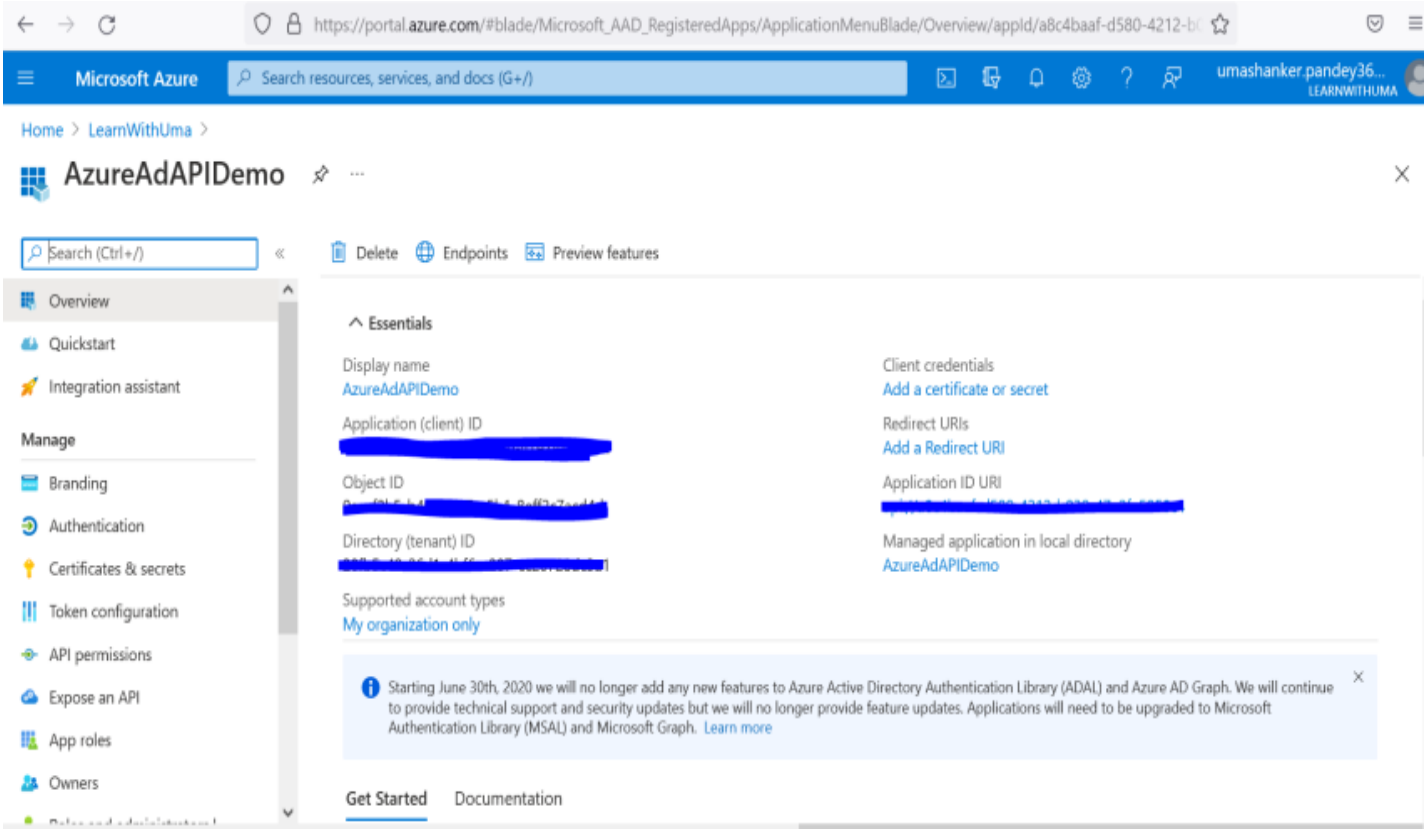
After clicking on the Register button. SPA application successfully gets registered and on the overview page, you get the register application details like Client ID, Tenant ID, etc.



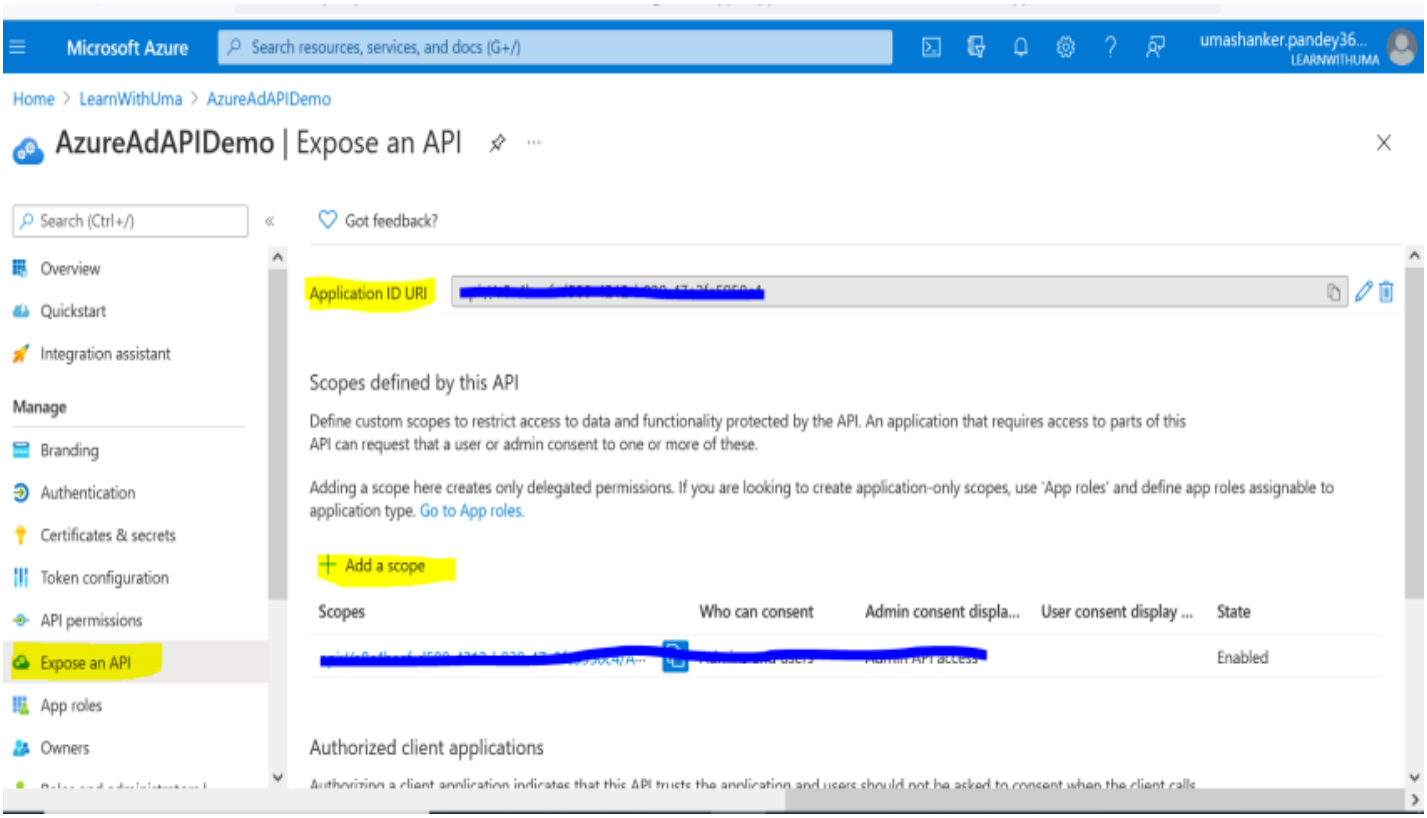
Step 2

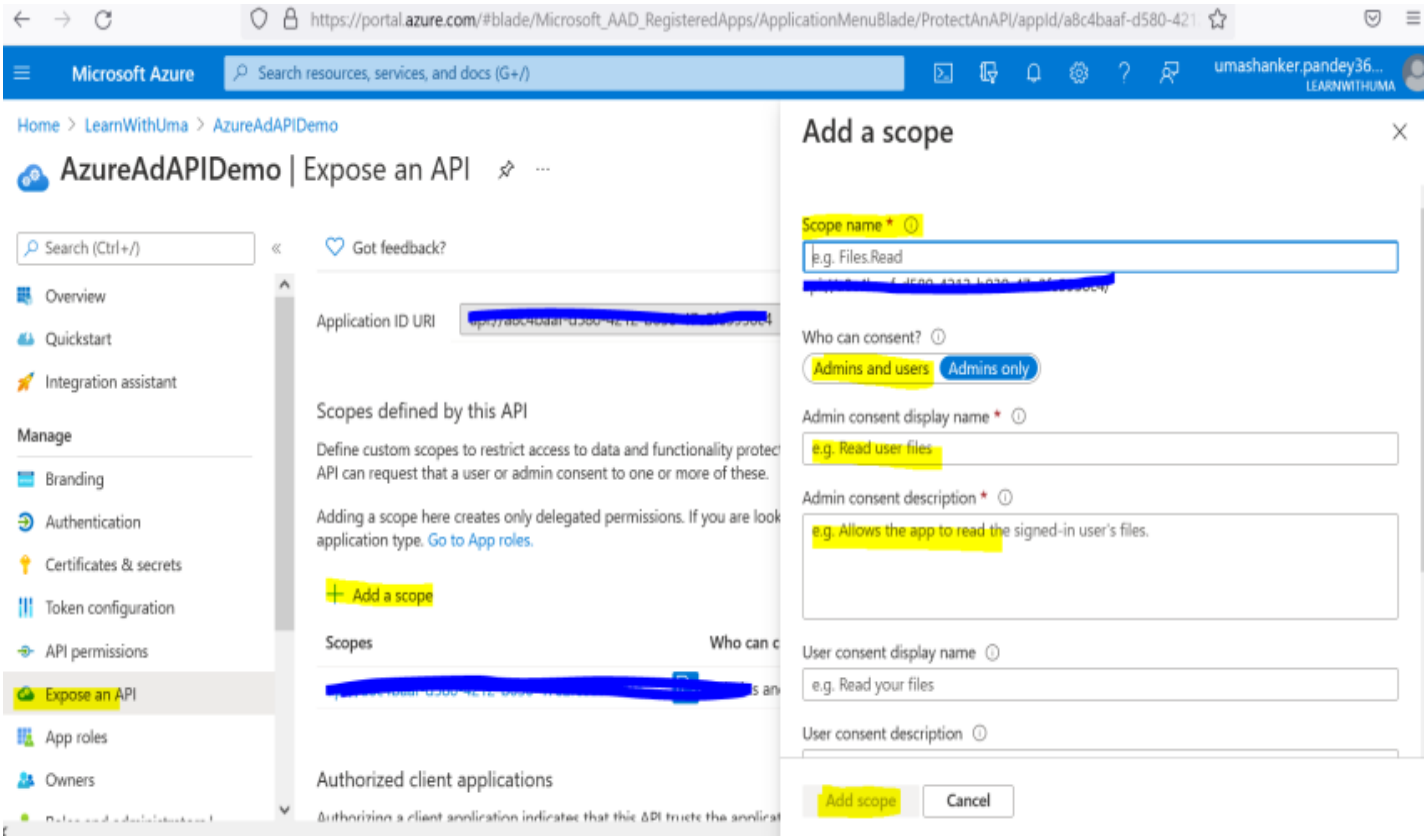
Register Web API applications in the same way. But in the API registration process, we do not need to provide the application redirect URL because our SPA Application is used to redirect the page.



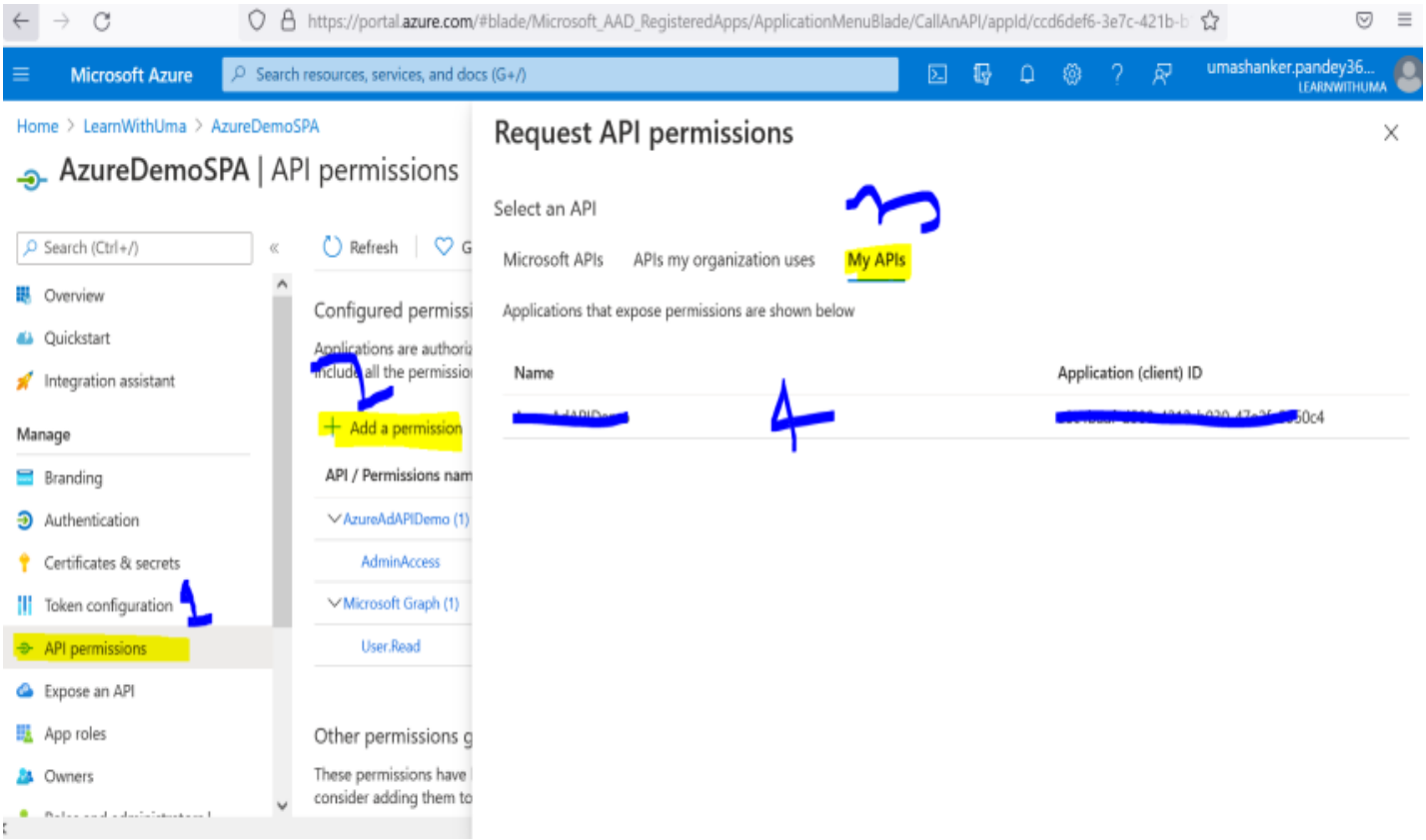


Then need to Expose An API,



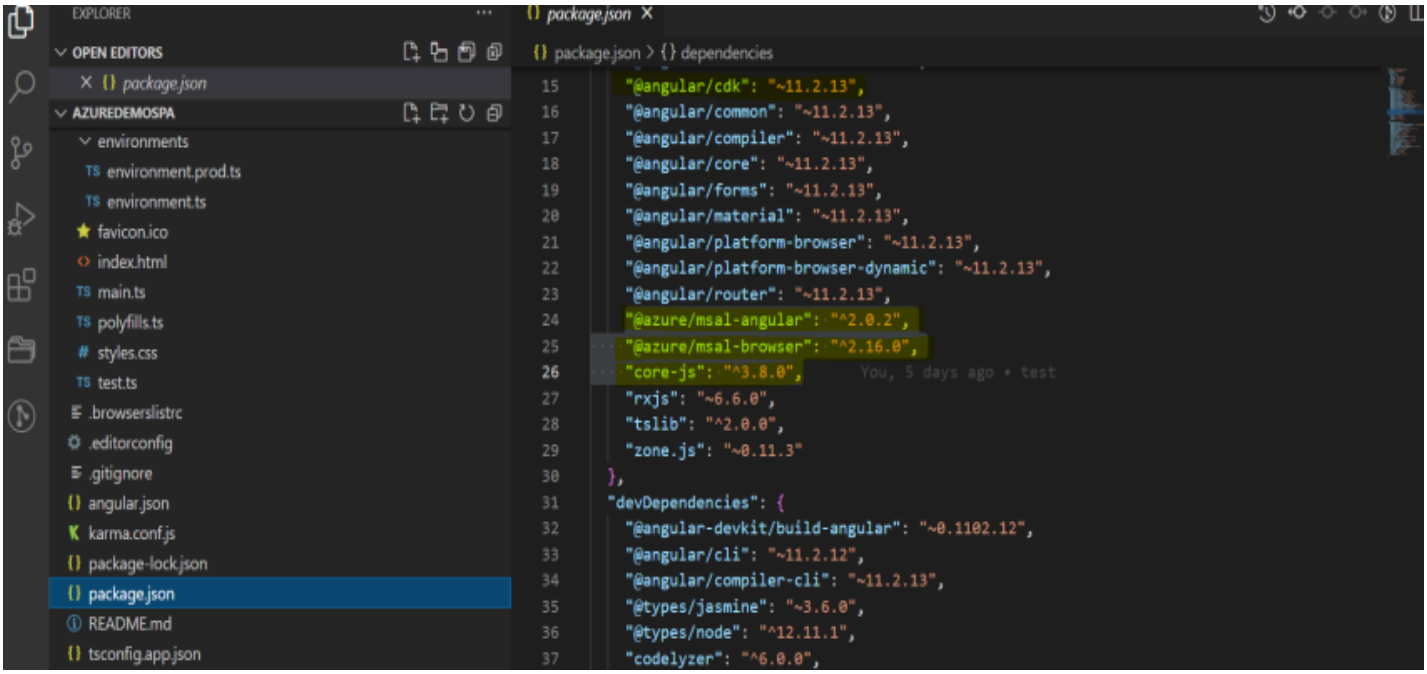


After successfully exposing the API and scope has been added you need to go into the SPA application and add the permission for this API. Follow the process and click as per the number in below pic.

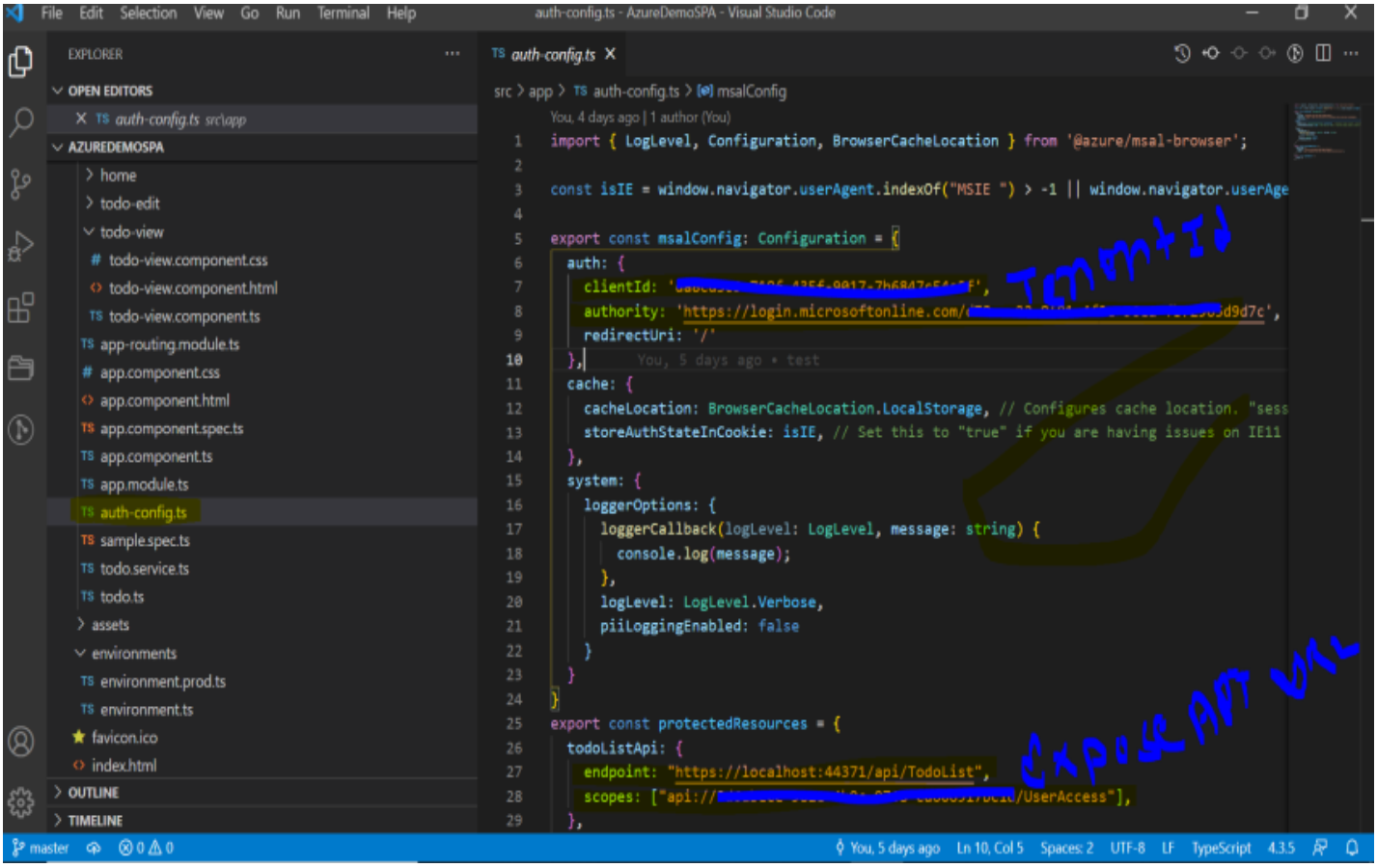


Step 3

Go to VS Code and Create New application in Angular, do the below changes. Add the below packages and do the npm install.



Add Auth-Config File and do the below settings as per the SPA application Registered.



Add below setting in App.Module.ts,

```
import { BrowserModule } from '@angular/platform-browser';
import { BrowserAnimationsModule } from '@angular/platform-browser/animati
import { NgModule } from '@angular/core';
import { FormsModule } from '@angular/forms';
import { AppRoutingModule } from './app-routing.module';
import { AppComponent } from './app.component';
import { HomeComponent } from './home/home.component';
import { TodoEditComponent } from './todo-edit/todo-edit.component';
import { TodoViewComponent } from './todo-view/todo-view.component';
import { TodoService } from './todo.service';
import { HTTP_INTERCEPTORS, HttpClientModule } from '@angular/common/http'
import { IPublicClientApplication, PublicClientApplication, InteractionTyp
import { MsalGuard, MsalInterceptor, MsalBroadcastService, MsalInterceptor
import { msalConfig, loginRequest, protectedResources } from './auth-confi
export function MSALInstanceFactory(): IPublicClientApplication {
    return new PublicClientApplication(msalConfig);
}
export function MSALInterceptorConfigFactory(): MsalInterceptorConfigurati
    const protectedResourceMap = new Map < string,
        Array < string >> ();
    protectedResourceMap.set(protectedResources.todoListApi.endpoint, prot
    return {
        interactionType: InteractionType.Redirect,
        protectedResourceMap
    };
}
export function MSALGuardConfigFactory(): MsalGuardConfiguration {
    return {
        interactionType: InteractionType.Redirect,
        authRequest: loginRequest
    };
}
@NgModule({
    declarations: [
        AppComponent,
        HomeComponent,
        TodoViewComponent,
        TodoEditComponent
    ],
```

```
    imports: [
        BrowserModule,
        BrowserAnimationsModule,
        AppRoutingModule,
        HttpClientModule,
        FormsModule,
        MsalModule
    ],
    providers: [{
            provide: HTTP_INTERCEPTORS,
            useClass: MsalInterceptor,
            multi: true
        }, {
            provide: MSAL_INSTANCE,
            useFactory: MSALInstanceFactory
        }, {
            provide: MSAL_GUARD_CONFIG,
            useFactory: MSALGuardConfigFactory
        }, {
            provide: MSAL_INTERCEPTOR_CONFIG,
            useFactory: MSALInterceptorConfigFactory
        },
        MsalService,
        MsalGuard,
        MsalBroadcastService,
        TodoService
    ],
    bootstrap: [AppComponent, MsalRedirectComponent]
})
export class AppModule {}
```

App.Component Settings,

```
import { Component, OnInit, Inject, OnDestroy } from '@angular/core';
import { MsalService, MsalBroadcastService, MSAL_GUARD_CONFIG, MsalGuardCo
import { AuthenticationResult, InteractionStatus, InteractionType, PopupRe
import { Subject } from 'rxjs';
import { filter, takeUntil } from 'rxjs/operators';
@Component({
    selector: 'app-root',
```

```
    templateUrl: './app.component.html',
    styleUrls: ['./app.component.css']
})
export class AppComponent implements OnInit, OnDestroy {
    title = 'Azure Ad Testing Demo';
    isIframe = false;
    loginDisplay = false;
    private readonly _destroying$ = new Subject < void > ();
    constructor(@Inject(MSAL_GUARD_CONFIG) private msalGuardConfig: MsalGu
    ngOnInit(): void {
        this.isIframe = window !== window.parent && !window.opener;
        /**
         * You can subscribe to MSAL events as shown below. For more info,
         * visit: https://github.com/AzureAD/microsoft-authentication-libr
         */
        this.msalBroadcastService.inProgress$.pipe(filter((status: Interac
            this.setLoginDisplay();
        });
    }
    setLoginDisplay() {
        this.loginDisplay = this.authService.instance.getAllAccounts().ler
    }
    login() {
        if (this.msalGuardConfig.interactionType === InteractionType.Popup
            if (this.msalGuardConfig.authRequest) {
                this.authService.loginPopup({
                        ...this.msalGuardConfig.authRequest
                    }
                    as PopupRequest).subscribe((response: AuthenticationRe
                    this.authService.instance.setActiveAccount(response.ac
                });
            } else {
                this.authService.loginPopup().subscribe((response: Authent
                    this.authService.instance.setActiveAccount(response.ac
                });
            }
        } else {
            if (this.msalGuardConfig.authRequest) {
                this.authService.loginRedirect({
                        ...this.msalGuardConfig.authRequest
                    }
```

```
                    as RedirectRequest);
            } else {
                this.authService.loginRedirect();
            }
        }
    }
    logout() {
        this.authService.logout();
    }
    // unsubscribe to events when component is destroyed
    ngOnDestroy(): void {
        this._destroying$.next(undefined);
        this._destroying$.complete();
    }
}
```

app.component.html settings,

```
<mat-toolbar color="primary">
  <a class="title" href="/">{{ title }}</a>
  <div class="toolbar-spacer"></div>
  <a mat-button [routerLink]="['todo-view']">TodoList</a>
  <button mat-raised-button *ngIf="!loginDisplay" (click)="login()">Login<
  <button mat-raised-button color="accent" *ngIf="loginDisplay" (click)="l
</mat-toolbar>
<div class="container">
  <!--This is to avoid reload during acquireTokenSilent() because of hidde
  <router-outlet *ngIf="!isIframe"></router-outlet>
</div>
<footer *ngIf="loginDisplay">
  <mat-toolbar>
    <div class="footer-text"> How did we do? </div>
  </mat-toolbar>
</footer>
```

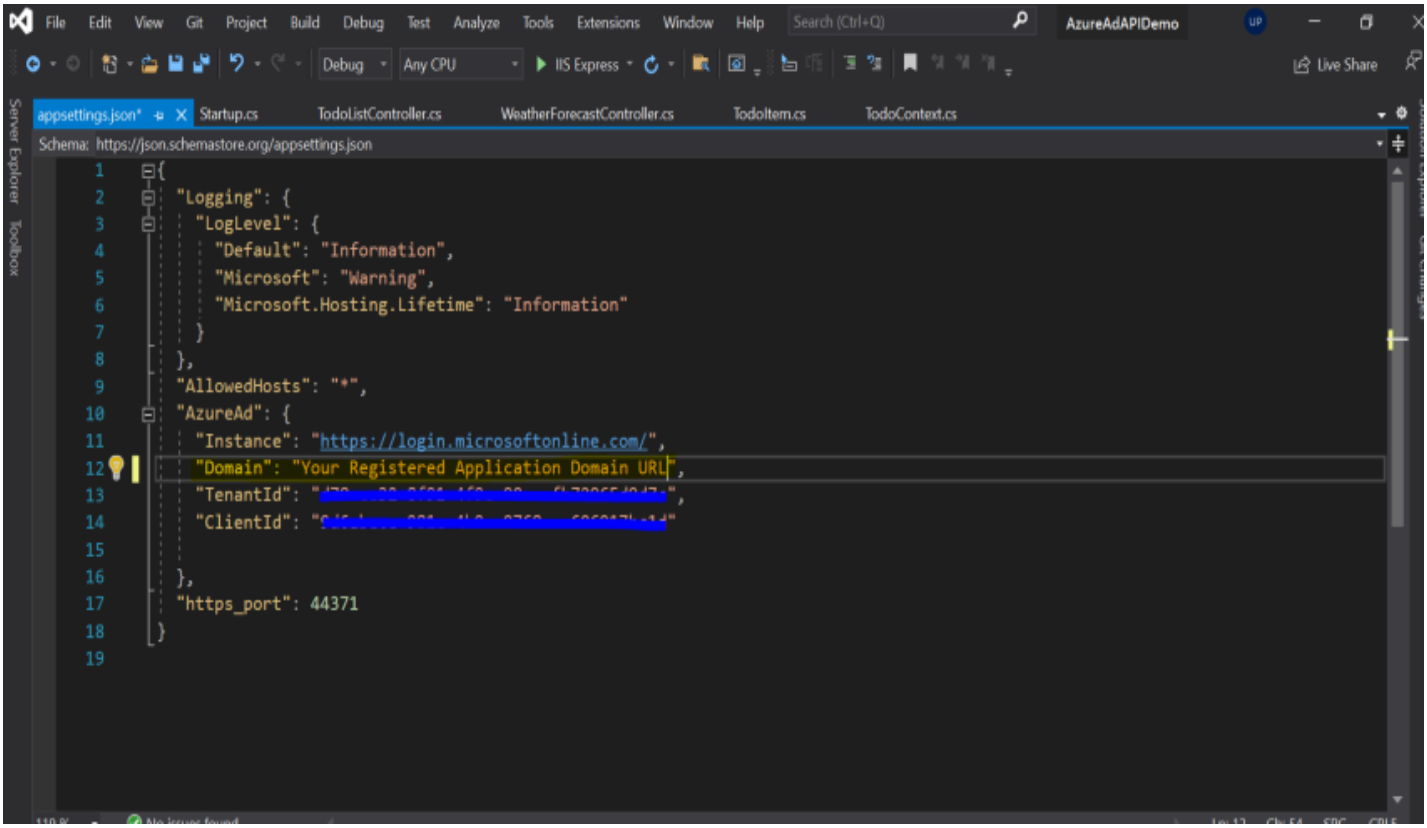
Index.html settings,

```
<!doctype html>
<html lang="en">
  <head>
```

```
    <meta charset="utf-8">
    <title>AzureDemoSPA</title>
    <base href="/">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="icon" type="image/x-icon" href="favicon.svg">
    <link href="https://fonts.googleapis.com/css?family=Roboto:300,400,500
    <link href="https://fonts.googleapis.com/icon?family=Material+Icons" r
  </head>
  <body>
    <app-root></app-root>
    <app-redirect></app-redirect>
  </body>
</html>
```

Step 4 - Web API settings

In AppSettings.json file add your Registered API tenant and Client ID and Domain name information.

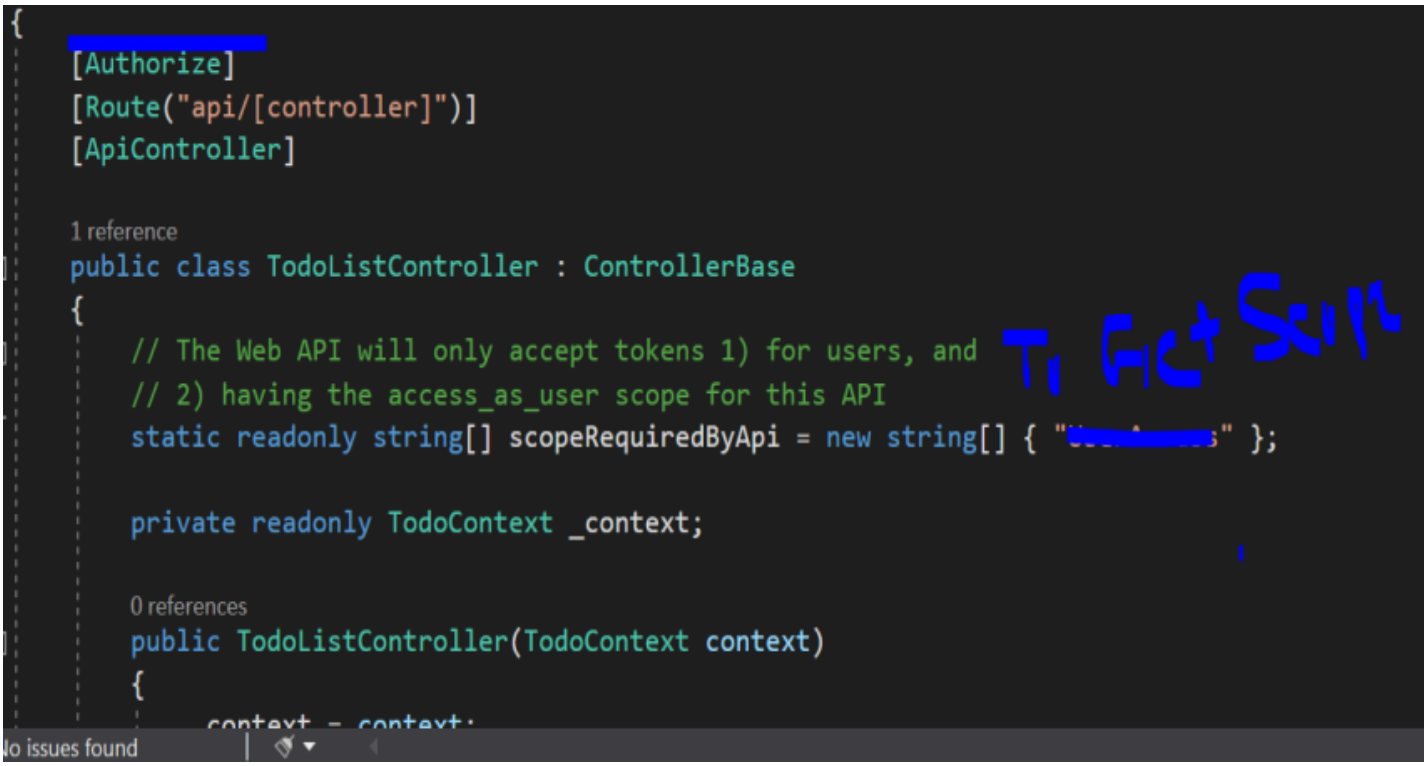


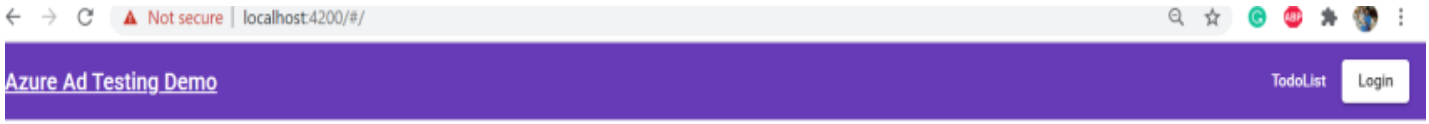
From Nuget Package manager add microsoft.identity.web package and do the changes in startup's file.

```
using AzureAdAPIDemo.Models;
using Microsoft.AspNetCore.Authentication.JwtBearer;
using Microsoft.AspNetCore.Builder;
using Microsoft.AspNetCore.Hosting;
using Microsoft.AspNetCore.HttpsPolicy;
using Microsoft.AspNetCore.Mvc;
using Microsoft.EntityFrameworkCore;
using Microsoft.Extensions.Configuration;
using Microsoft.Extensions.DependencyInjection;
using Microsoft.Extensions.Hosting;
using Microsoft.Extensions.Logging;
using Microsoft.Identity.Web;
using Microsoft.OpenApi.Models;
using System;
using System.Collections.Generic;
using System.Linq;
using System.Threading.Tasks;
namespace AzureAdAPIDemo {
    public class Startup {
        public Startup(IConfiguration configuration) {
            Configuration = configuration;
        }
        public IConfiguration Configuration {
            get;
        }
        // This method gets called by the runtime. Use this method to add
        public void ConfigureServices(IServiceCollection services) {
            // Setting configuration for protected web api
            services.AddAuthentication(JwtBearerDefaults.AuthenticationSch
            // Creating policies that wraps the authorization requirements
            services.AddAuthorization();
            services.AddDbContext < TodoContext > (opt => opt.UseInMemoryD
            services.AddControllers();
            // Allowing CORS for all domains and methods for the purpose o
            // In production, modify this with the actual domains you want
            services.AddCors(o => o.AddPolicy("default", builder => {
                builder.AllowAnyOrigin().AllowAnyMethod().AllowAnyHeader()
            }));
            services.AddSwaggerGen(c => {
                c.SwaggerDoc("v1", new OpenApiInfo {
                    Title = "AzureAdAPIDemo", Version = "v1"
```

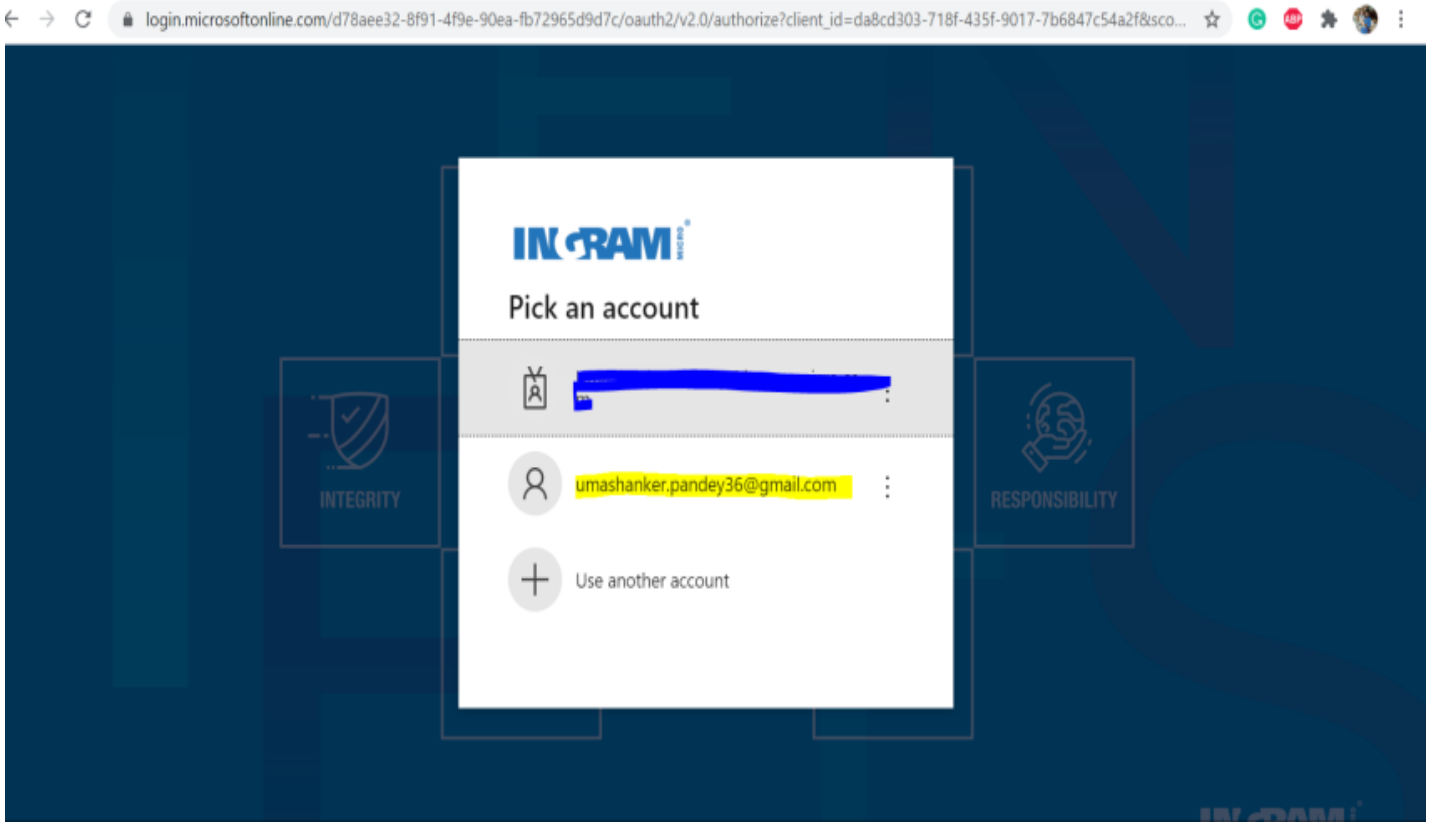
```
                });
            });
        }
        // This method gets called by the runtime. Use this method to conf
        public void Configure(IApplicationBuilder app, IWebHostEnvironment
            if (env.IsDevelopment()) {
                app.UseDeveloperExceptionPage();
                app.UseSwagger();
                app.UseSwaggerUI(c => c.SwaggerEndpoint("/swagger/v1/swagg
            }
            app.UseCors("default");
            app.UseHttpsRedirection();
            app.UseRouting();
            app.UseAuthentication();
            app.UseAuthorization();
            app.UseEndpoints(endpoints => {
                endpoints.MapControllers();
            });
        }
    }
}
```

Then use [Authorize] on any controller.

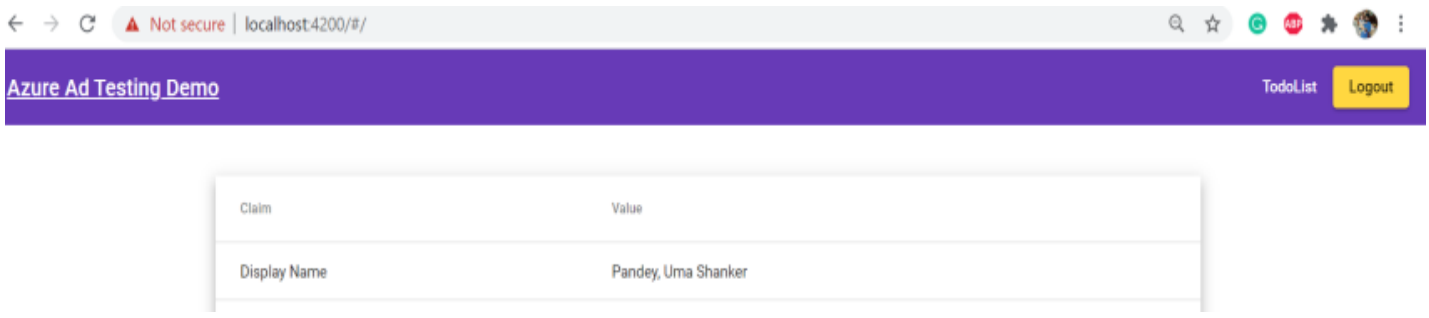




After clicking the login button,



Select the account and log in successfully.



Summary

Follow the above steps and secure your solutions.

.NET 5.0 Angular Azure AD

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Umashanker Pandey
Having more than 9+ years of experience in software development using different tech stacks. .Net Core| Angular| C#| Python| Azure/AWS Cloud| Docker| Kubernetes| Azure DevOps|SQL Server|Mongo db| AI/ML

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