**Program.cs – Annotated Layout for a .NET Web API**

// -----------------------------

// STEP 1: Create a builder object

// -----------------------------

var builder = WebApplication.CreateBuilder(args);

// -----------------------------

// STEP 2: Register services

// These are Dependency Injection (DI) registrations

// -----------------------------

builder.Services.AddControllers(); // Adds MVC controller support

builder.Services.AddDbContext<InventoryDbContext>(options =>

options.UseSqlServer(builder.Configuration.GetConnectionString("DefaultConnection")));

builder.Services.AddScoped<IInventoryRepository, InventoryRepository>();

builder.Services.AddScoped<IInventoryService, InventoryService>();

// Optional for development tooling

builder.Services.AddEndpointsApiExplorer();

builder.Services.AddSwaggerGen();

// -----------------------------

// STEP 3: Build the app

// This compiles everything into a WebApplication instance

// -----------------------------

var app = builder.Build();

// -----------------------------

// STEP 4: Configure Middleware Pipeline

// Use middleware in the order defined

// -----------------------------

if (app.Environment.IsDevelopment())

{

app.UseSwagger(); // Enable Swagger JSON

app.UseSwaggerUI(); // Enable Swagger UI

}

app.UseHttpsRedirection(); // Redirect HTTP to HTTPS

app.UseAuthorization(); // Handle [Authorize] attributes

app.MapControllers(); // Map controller routes

// -----------------------------

// STEP 5: Run the application

// -----------------------------

app.Run();

**🧠 Summary Tip for Your Notes**

| **Phase** | **Purpose** | **Starts With** |
| --- | --- | --- |
| **Configure Services** | Add DI services, EF Core, config | builder.Services.Add... |
| **Build App** | Compile everything | var app = builder.Build(); |
| **Configure Middleware** | Add pipeline steps like Swagger, Routing, Auth | app.Use..., app.Map... |
| **Start the App** | Start listening to requests | app.Run(); |