

# ASP.NET, .NET Core MVC, .NET Web API & C# Interview Questions

## ASP.NET Interview Questions

### 1. What is ASP.NET?

#### Answer:

ASP.NET is a web framework developed by Microsoft for building web applications. It is a part of the .NET framework and supports languages like C#, VB.NET, and F#. ASP.NET allows developers to build dynamic, data-driven websites and applications efficiently.

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### 2. What are the different types of ASP.NET applications?

#### Answer:

1. **Web Forms:** Event-driven programming model for rapid application development.
  2. **MVC (Model-View-Controller):** Provides a separation of concerns and more control over HTML.
  3. **Web API:** Framework for building HTTP services for browsers and mobile devices.
  4. **Blazor:** Enables building interactive web UIs using C# instead of JavaScript.
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### 3. What are the main components of ASP.NET?

#### Answer:

1. **Server Controls:** Predefined controls like TextBox, Button, etc.
  2. **HTTP Handlers:** Process incoming HTTP requests.
  3. **HTTP Modules:** Inspect and modify HTTP requests and responses.
  4. **Page Lifecycle:** Key stages include Initialization, Load, Validation, Rendering, and Unload.
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### 4. What is the ASP.NET Page Life Cycle?

#### Answer:

The life cycle stages of an ASP.NET page include:

1. **Page Request**
2. **Start**
3. **Initialization**
4. **Load**
5. **Postback Event Handling**

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6. **Rendering**

7. **Unload**

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5. **What is the difference between ASP.NET Web Forms and ASP.NET MVC?**

**Answer:**

Feature	Web Forms	MVC
Architecture	Event-driven	Model-View-Controller
Control	Server-side	Full control of HTML
Testability	Limited	High
Separation of Concerns	Less	High

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**.NET Core MVC Questions**

6. **What is .NET Core MVC?**

**Answer:**

.NET Core MVC is a lightweight, open-source framework for building cross-platform web applications. It follows the **Model-View-Controller (MVC)** design pattern and provides flexibility for developers to create robust web solutions.

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7. **What is the role of Middleware in ASP.NET Core?**

**Answer:**

Middleware are components that handle HTTP requests and responses in ASP.NET Core. Examples include **authentication, logging, routing**, and serving static files.

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8. **What is Dependency Injection (DI) in .NET Core?**

**Answer:**

Dependency Injection is a design pattern used to inject dependencies into a class, rather than creating them inside the class. In .NET Core, DI is built-in, and services are registered in the **Startup.cs** file via the **IServiceCollection**.

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9. **What is the difference between IActionResult and ActionResult in ASP.NET Core MVC?**

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**Answer:**

- **IActionResult:** It is a general interface for any result type.
  - **ActionResult:** It is a class that provides built-in result types like ViewResult, JsonResult, etc. Both are used to return responses from a controller action.
- 

## 10. What are Tag Helpers in ASP.NET Core MVC?

**Answer:**

Tag Helpers are server-side code that helps create and render HTML elements in Razor views. For example:

html

Copy code

```
<form asp-action="Submit" asp-controller="Home">  
</form>
```

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## C# Interview Questions

### 11. What is C#?

**Answer:**

C# is an object-oriented, type-safe, and managed programming language developed by Microsoft as part of the .NET ecosystem. It is widely used for developing desktop, web, and mobile applications.

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### 12. What is the difference between ref and out parameters in C#?

**Answer:**

- **ref:** Requires the variable to be initialized before passing it.
  - **out:** Does not require the variable to be initialized; it must be assigned a value within the method.
- 

### 13. What are the access modifiers in C#?

**Answer:**

1. **Public:** Accessible from anywhere.
2. **Private:** Accessible only within the containing class.

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3. **Protected:** Accessible within the class and its derived classes.
  4. **Internal:** Accessible within the same assembly.
  5. **Protected Internal:** Accessible within the same assembly or a derived class.
- 

## 14. What is the difference between abstract class and interface?

Answer:

Feature	Abstract Class	Interface
Inheritance	Single inheritance	Multiple inheritance
Implementation	Can have implemented methods	Cannot have implementation
Fields	Can have fields	Cannot have fields

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## 15. Explain the difference between async and await in C#.

Answer:

- **async:** Marks a method as asynchronous.
  - **await:** Pauses the execution of an async method until the awaited task is completed.
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## 16. What is the difference between Array and ArrayList?

Answer:

- **Array:** Fixed size and type-safe.
  - **ArrayList:** Dynamic size and can store any type of data (non-generic).
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## 17. What is the difference between String and StringBuilder in C#?

Answer:

- **String:** Immutable; every modification creates a new object.
  - **StringBuilder:** Mutable; allows efficient modifications without creating new objects.
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## 18. What is LINQ in C#?

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## Answer:

LINQ (Language Integrated Query) is a set of methods for querying data in a type-safe and readable manner. Example:

csharp

Copy code

```
var result = list.Where(x => x.Age > 18).ToList();
```

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## 19. What is Garbage Collection in C#?

### Answer:

Garbage Collection (GC) is an automated memory management process in C#. It automatically frees up memory by removing unused objects from the heap.

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## 20. What is the difference between Task and Thread in C#?

### Answer:

- **Thread:** Represents an independent path of execution.
  - **Task:** High-level abstraction over threads that supports asynchronous programming.
- 

If you'd like detailed explanations or additional questions, let me know!

40

### You said:

Give me more 30 question and make pdf of all 50 questions.

### ChatGPT said:

ChatGPT

Here are **30 more questions** on **ASP.NET**, **.NET Core MVC**, and **C#**, followed by a plan to compile all 50 questions into a PDF.

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## Additional ASP.NET Questions

### 21. What is ViewState in ASP.NET?

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**Answer:**

ViewState is a mechanism to preserve page and control values between postbacks. It uses a hidden field to store the state information in Base64-encoded format.

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## 22. What are HTTP Handlers in ASP.NET?

**Answer:**

HTTP Handlers are responsible for processing incoming HTTP requests. For example, .ashx files are handled by custom HTTP handlers.

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## 23. What is the difference between Server.Transfer and Response.Redirect?

**Answer:**

- **Server.Transfer:** Transfers the request on the server without a round trip to the client.
  - **Response.Redirect:** Performs a client-side redirection, causing a new HTTP request.
- 

## 24. What is the role of the web.config file in ASP.NET?

**Answer:**

The web.config file is used to configure application settings, connection strings, session state, error handling, and security configurations.

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## 25. What is the use of the Global.asax file?

**Answer:**

The Global.asax file defines application-level events like Application\_Start, Application\_End, Session\_Start, and Session\_End.

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## 26. What is the purpose of the HttpContext object?

**Answer:**

The HttpContext object provides access to all HTTP-specific information about the request, such as cookies, session state, and server variables.

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## 27. What is a Web API, and how is it different from WCF?

**Answer:**

- **Web API:** Used for building RESTful services over HTTP.

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- **WCF:** Supports multiple protocols like HTTP, TCP, and MSMQ, making it more versatile.
- 

## 28. What is Output Caching in ASP.NET?

### Answer:

Output caching stores the generated output of a page or control and reuses it for subsequent requests to improve performance.

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## 29. What is the difference between synchronous and asynchronous requests in ASP.NET?

### Answer:

- **Synchronous:** Blocks the thread until the operation is complete.
  - **Asynchronous:** Allows other operations to run while waiting for a response.
- 

## Additional .NET Core MVC Questions

## 30. What is Razor in ASP.NET Core MVC?

### Answer:

Razor is a markup syntax that combines HTML and C# for creating dynamic web pages. It uses the .cshtml file extension.

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## 31. What are Filters in ASP.NET Core MVC?

### Answer:

Filters allow code to be executed before or after certain stages of the request processing pipeline. Examples include **Authorization**, **Resource**, **Action**, and **Exception** filters.

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## 32. What is Routing in ASP.NET Core?

### Answer:

Routing maps incoming requests to specific controller actions. It is defined in the Program.cs or Startup.cs file using endpoints.

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## 33. What is Model Binding in ASP.NET Core?

### Answer:

Model Binding automatically maps HTTP request data to action method parameters or model objects.

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# ASP.NET, .NET Core MVC, .NET Web API & C# Interview Questions

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## 34. What are View Components in ASP.NET Core?

### Answer:

View Components are reusable components that render a chunk of HTML. They are similar to partial views but with added logic.

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## 35. What is the difference between Partial View and Layout in ASP.NET Core?

### Answer:

- **Partial View:** A reusable view fragment.
  - **Layout:** A template used to define the overall structure of the views.
- 

## 36. What is SignalR in ASP.NET Core?

### Answer:

SignalR is a library for building real-time web applications, enabling server-side code to send asynchronous notifications to clients.

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## 37. What is Kestrel in ASP.NET Core?

### Answer:

Kestrel is the cross-platform, lightweight web server used by ASP.NET Core applications.

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## 38. What is the role of the appsettings.json file?

### Answer:

The appsettings.json file is used to store configuration settings, such as connection strings and application-specific settings, in a structured JSON format.

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## 39. What is Middleware Pipeline in ASP.NET Core?

### Answer:

The Middleware Pipeline defines the sequence of middleware components that process HTTP requests and responses.

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## Additional C# Questions



# ASP.NET, .NET Core MVC, .NET Web API & C# Interview Questions

**40. What is the difference between abstract and virtual methods in C#?**

**Answer:**

- **Abstract:** Must be implemented in derived classes.
  - **Virtual:** Can be overridden but provides a default implementation.
- 

**41. What is polymorphism in C#?**

**Answer:**

Polymorphism allows methods to have multiple forms, such as method overriding (runtime polymorphism) and method overloading (compile-time polymorphism).

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**42. What is the difference between struct and class in C#?**

**Answer:**

- **Struct:** Value type, stored on the stack.
  - **Class:** Reference type, stored on the heap.
- 

**43. What are delegates in C#?**

**Answer:**

Delegates are type-safe pointers to methods, allowing methods to be passed as arguments.

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**44. What are Generics in C#?**

**Answer:**

Generics enable type-safe data structures and methods without specifying the data type during compile-time. Example:

csharp

Copy code

```
List<int> numbers = new List<int>();
```

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**45. What are extension methods in C#?**

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**Answer:**

Extension methods add new functionality to existing types without modifying their source code.

Example:

csharp

Copy code

```
public static string ToUpperCase(this string str) {  
    return str.ToUpper();  
}
```

---

**46. What are the types of assemblies in C#?****Answer:**

1. **Private Assembly:** Used by a single application.
  2. **Shared Assembly:** Stored in the Global Assembly Cache (GAC).
  3. **Satellite Assembly:** Used for localization.
- 

**47. What is async/await in C#?****Answer:**

async/await is used for asynchronous programming. It allows methods to run asynchronously without blocking the main thread.

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**48. What is Reflection in C#?****Answer:**

Reflection provides the ability to inspect and interact with metadata and assemblies during runtime.

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**49. What is a NullReferenceException in C#?****Answer:**

This exception occurs when attempting to use an object that has not been instantiated.

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**50. What are tuples in C#?**

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## Answer:

Tuples are data structures that allow storing multiple items of different types. Example:

csharp

Copy code

```
var person = (Name: "John", Age: 30);
```

## ASP.NET Web API Questions

### 1. What is Web API?

#### Answer:

Web API is a framework for building RESTful services over HTTP. It is lightweight and ideal for developing services for devices like mobile phones, tablets, or browsers.

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### 2. What are the main features of Web API?

#### Answer:

- Supports CRUD operations using HTTP methods (GET, POST, PUT, DELETE).
  - Open source and supports OData.
  - Can be self-hosted or run in IIS.
- 

### 3. What is the difference between WCF and Web API?

#### Answer:

Feature	WCF	Web API
Protocol Support	Supports multiple protocols	HTTP only
Hosting	IIS, Windows Services	IIS, Self-hosting

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### 4. How does Web API support routing?

#### Answer:

Web API uses **attribute-based routing** or **convention-based routing** to map URLs to actions.

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## 5. What is MediaTypeFormatter in Web API?

### Answer:

MediaTypeFormatter is responsible for serializing and deserializing data into a format like JSON or XML.

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## 6. What are Filters in Web API?

### Answer:

Filters allow code execution at specific stages of request processing. Types include:

- **Authorization Filters**
  - **Action Filters**
  - **Exception Filters**
- 

## 7. What is the use of the HttpResponseMessage class?

### Answer:

It represents an HTTP response message, allowing you to customize the response status, headers, and body.

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## 8. What are Action Results in Web API?

### Answer:

Action Results represent the response from a controller action. Examples:

- **Ok()** for 200 status.
  - **NotFound()** for 404 status.
  - **BadRequest()** for 400 status.
- 

## 9. What is Dependency Injection in Web API?

### Answer:

Dependency Injection allows you to inject services into controllers, making them more testable and maintainable.

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## 10. What is CORS in Web API?

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**Answer:**

CORS (Cross-Origin Resource Sharing) enables secure communication between a Web API and applications from different domains.

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## 11. How can you secure a Web API?

**Answer:**

- Use **HTTPS**.
  - Implement **authentication** (e.g., JWT, OAuth).
  - Use **Authorization filters** to control access.
- 

## 12. What is the difference between IHttpActionResult and HttpResponseMessage?

**Answer:**

- **IHttpActionResult**: Higher-level abstraction for action results.
  - **HttpResponseMessage**: Lower-level approach for crafting custom responses.
- 

## 13. How is Web API different from MVC?

**Answer:**

Feature	MVC	Web API
Use Case	Web Applications	RESTful Services
Content Type	Mostly HTML	JSON, XML, etc.

---

## 14. What is content negotiation in Web API?

**Answer:**

Content negotiation determines the response format (e.g., JSON, XML) based on client preferences.

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## 15. How can you implement versioning in Web API?

**Answer:**

Versioning can be implemented using:

- URI (e.g., /v1/endpoint).

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- Query String (e.g., ?version=1).
  - Custom Headers.
- 

## 16. What is OData in Web API?

### Answer:

OData (Open Data Protocol) is a standard for building and consuming RESTful APIs with query capabilities like filtering, sorting, and pagination.

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## 17. What is the role of HttpClient in Web API?

### Answer:

HttpClient is used to send HTTP requests and receive responses in client applications.

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## 18. What is Swagger in Web API?

### Answer:

Swagger (now known as OpenAPI) provides tools for documenting APIs, generating client SDKs, and testing endpoints interactively.

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## 19. What is the role of FromBody and FromUri attributes?

### Answer:

- **FromBody**: Maps data from the request body to parameters.
  - **FromUri**: Maps data from the query string or route to parameters.
- 

## 20. How do you handle exceptions in Web API?

### Answer:

- Use **Exception Filters**.
  - Implement **try-catch** blocks.
  - Log errors using tools like **Serilog** or **NLog**.
-