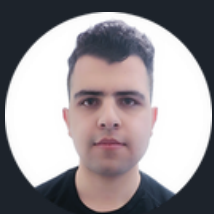# Custom Route Constraint

IRouteConstraint helps validate route parameters against specific criteria.

```csharp
public class LanguageRouteConstraint : IRouteConstraint
{
    private readonly HashSet<string> _validLanguages =
        new() { "en", "fr", "de", "es" };

    public bool Match(
        HttpContext? httpContext,
        IRouter? route,
        string routeKey,
        RouteValueDictionary values,
        RouteDirection routeDirection)
    {
        // Check if the route parameter exists
        if (values.TryGetValue(routeKey, out object? value)
            && value != null)
        {
            string language = value.ToString();
            return _validLanguages.Contains(language);
        }
        return false; // Parameter not found or null
    }
}
```

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Configuring Custom Constraint

The route constraint is first included in route options and then used as a route pattern.

```csharp
builder.Services.Configure<RouteOptions>(routeOptions =>
{
  routeOptions.ConstraintMap.Add(
    "lang", typeof(LanguageRouteConstraint));
});
```

```csharp
app.UseEndpoints(endpoints =>
{
  endpoints.MapControllerRoute(
    name: "languageRoute",
    pattern:
      "{controller=Home}/{action=Index}/{language:lang}");
});
```

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Built-in Route Constraints

Default Route with Optional Parameter
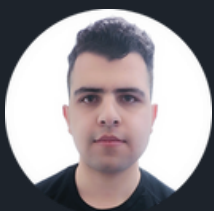
```
app.MapControllerRoute(
    name: "default",
    pattern: "{controller=Home}/{action=Index}/{id?}");
```

Route with Integer Constraint

```
app.MapControllerRoute(
    name: "default",
    pattern: "{controller=Home}/{action=Index}/{id:int}");
```

Route with Length Constraint

```
app.MapControllerRoute(
    name: "default",
    pattern: "{controller=Home}/{action=Index}/{id:length(1,20)}");
```

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Advanced Built-in Route Constraints

Route with Regular Expression Constraint

```
app.MapControllerRoute(
    name: "default",
    pattern: "{controller=Home}/{action=Index}/{id:regex(^\\d{{3}}$)}");
```

Route with Length and Alpha Constraints

```
app.MapControllerRoute(
    name: "default",
    pattern: "{controller=Home}/{action=Index}/{id:length(1,20):alpha}");
```

Route with Catch-All Parameter

```
app.MapControllerRoute(
    name: "default",
    pattern: "{controller=Home}/{action=Index}/{**slug}");
```

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Data Type Constraints

Constraint	Inline	Class	Description
int	{id:int}	IntRouteConstraint	Constrains a route parameter to represent only 32-bit integer values
alpha	{id:alpha}	AlphaRouteConstraint	Constrains a route parameter to contain only lowercase or uppercase letters A through Z in the English alphabet.
bool	{id:bool}	BoolRouteConstraint	Constrains a route parameter to represent only Boolean values.
datetime	{id:datetime}	DateTimeRouteConstraint	Constrains a route parameter to represent only DateTime values.
decimal	{id:decimal}	DecimalRouteConstraint	Constrains a route parameter to represent only decimal values.
double	{id:double}	DoubleRouteConstraint	Constrains a route parameter to represent only 64-bit floating-point values.
float	{id:float}	FloatRouteConstraint	Matches a valid float value (in the invariant culture - see warning)
guid	{id:guid}	GuidRouteConstraint	Matches a valid Guid value

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Value/Range/Length Constraints

Constraint	Inline	Class	Description
length(length)	{id:length(12)}	LengthRouteConstraint	Constrains a route parameter to be a string of a given length or within a given range of lengths.
maxlength(value)	{id:maxlength(8)}	MaxLengthRouteConstraint	Constrains a route parameter to be a string with a maximum length.
minlength(value)	{id:minlength(4)}	MinLengthRouteConstraint	Constrains a route parameter to be a string with a maximum length.
range(min,max)	{id:range(18,120)}	RangeRouteConstraint	Constraints a route parameter to be an integer within a given range of values.
min(value)	{id:min(18)}	MinRouteConstraint	Constrains a route parameter to be a long with a minimum value.
max(value)	{id:max(120)}	MaxRouteConstraint	Constrains a route parameter to be an integer with a maximum value.

Regular Expression Constraint

Constraint	Inline	Class	Description
regex(expression)	{ssn:regex(^\\d{{3}}-\\d{{2}}-\\d{{4}}$)}	RegexRouteConstraint	Constrains a route parameter to match a regular expression.

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