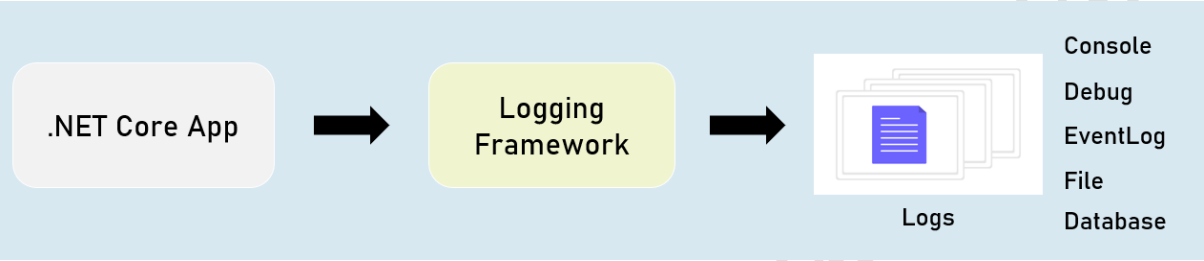
Asp.Net Core – True Ultimate Guide

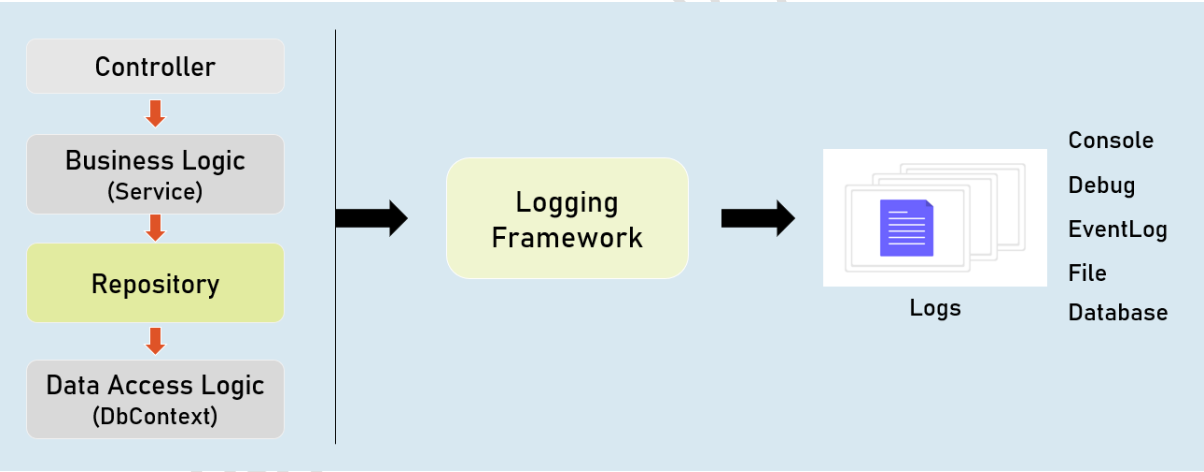
Section 20 – Logging and Serilog – Cheat Sheet

Logging

Logging is the process of recording run-time actions as they happen in real-time.

Helps us to understand the failures and performance bottlenecks of the application.





ILogger

Debug

ILogger.LogDebug("log_message");

Logs that provide details & values of variables for debugging purpose.

Information

ILogger.LogInformation("log_message");

Logs that track the general flow of the application execution.

Warning

ILogger.LogWarning("log_message");

Logs that highlight an abnormal or unexpected event.

Error

ILogger.LogError("log_message");

Logs to indicate that flow of execution is stopped due to a failure.

Critical

ILogger.LogCritical("log_message");

Logs to indicate an unrecoverable application crash.

Logging Configuration

appsettings.json

```
{
 "Logging": {
  "LogLevel": {
   "Default": "Debug | Information | Warning | Error| Critical"
   "Microsoft.AspNetCore": "Debug | Information | Warning | Error | Critical"
  }
 }
}
```

Controller and other classes

```
using Microsoft.AspNetCore.Mvc;
using Microsoft.Extensions.Logging;
```

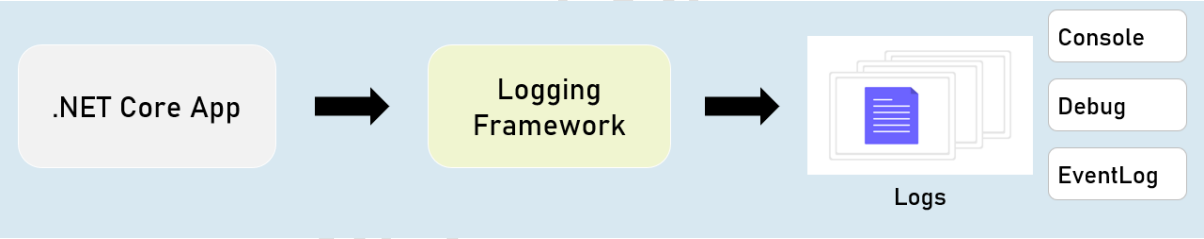
```
public class ControllerName : Controller
{
 private readonly ILogger<ClassName> _logger;

 public ControllerName(ILogger<ClassName> logger)
 {
  _logger = logger;
 }
}
```

Logging Providers

Logging provider specifies where to store / display logs.

The built-in logging providers in asp.net core doesn't support file / database logging providers.



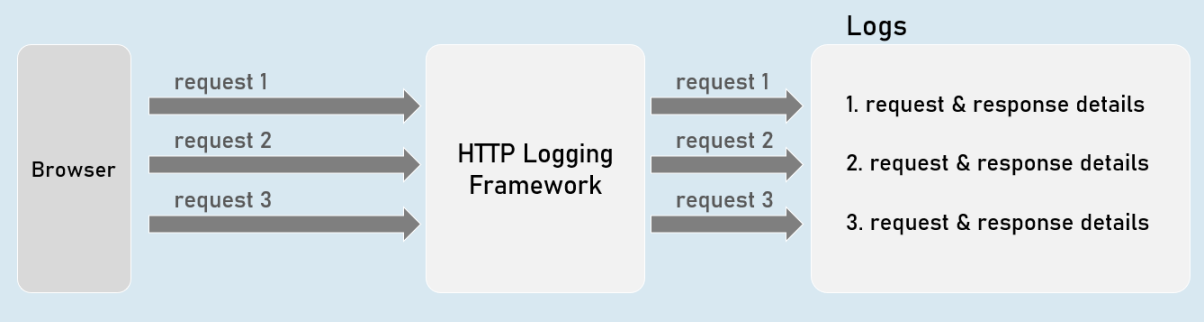
in **Program.cs:**

```
builder.Host.ConfigureLogging(logging =>
{
  logging.ClearProviders();
  logging.AddConsole();
  logging.AddDebug();
  logging.AddEventLog();
});
```

HTTP Logging

Logs details all HTTP requests and responses.

You need to set a value of "HttpLoggingFields" enum to set specify desired details.



HTTP Logging Options

"HttpLoggingFields" enum:

RequestMethod

Method of request. Eg: GET

RequestPath

Path of request. Eg: /home/index

RequestProtocol

Protocol of request. Eg: HTTP/1.1

RequestScheme

Protocol Scheme of request. Eg: http

RequestQuery

Query string Scheme of request. Eg: ?id=1

RequestHeaders

Headers of request. Eg: Connection: keep-alive

RequestPropertiesAndHeaders

Includes all of above (default)

RequestBody

Entire request body. [has performance drawbacks; not recommended]

Request

Includes all of above

"HttpLoggingFields" enum

ResponseStatusCode

Status code of response. Eg: 200

ResponseHeaders

Headers of response. Eg: Content-Length: 20

ResponsePropertiesAndHeaders

Includes all of above (default)

ResponseBody

Entire response body. [has performance drawbacks; not recommended]

Response

Includes all of above

All

Includes all from request and response

HTTP Logging Options

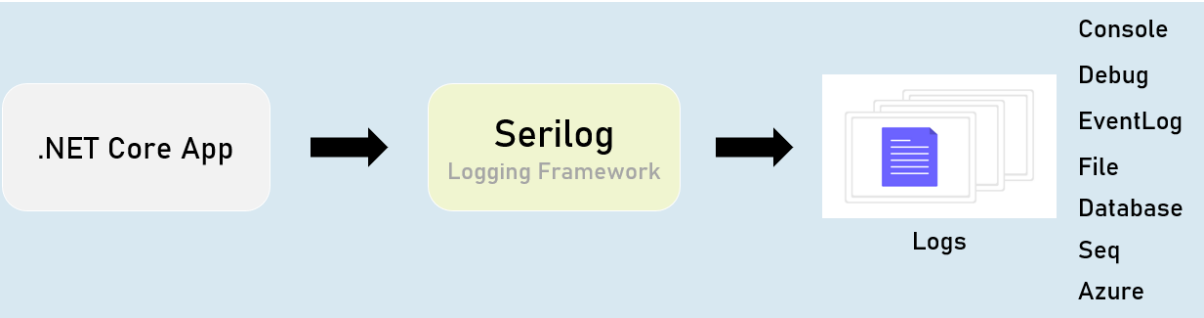
Program.cs:

```
builder.Serices.AddHttpLogging(options =>
{
  options.LoggingFields = Microsoft.AspNetCore.HttpLogging.HttpLoggingFields.YourOption;
});
```

Serilog

Serilog is a structured logging library for Asp.Net Core.

Supports variety of logging destinations, referred as "Sinks" - starts with Console, Azure, DataDog, ElasticSearch, Amazon CloudWatch, Email and Seq.



Serilog - Configuration

appsettings.json

```
{
 "Serilog": {
  "Using": [
    "Serilog.Sinks.YourSinkHere"
  ],
  "MinimumLevel": "Debug | Information | Warning | Error | Critical",
  "WriteTo": [
  {
    "Name": "YourSinkHere",
    "Args": "YourArguments"
  }
  ]
 }
}
```

Serilog - Options

Program.cs:

```
builder.Host.UseSerilog(HostBuilderContext context,
IServiceProvider services, LoggerConfiguration configuration) =>
{
  configuration
  .ReadFrom.Configuration(context.Configuration) //read configuration settings from built-in IConfiguration
  .ReadFrom.Services(services); //read services from built-in IServiceProvider
});
```

Serilog - File Sink

The "Serilog.Sinks.File" logs into a specified file.

You can configure the filename, rolling interval, file size limit etc., using configuration settings.

Serilog - "File Sink" Configuration

appsettings.json

```
{
 "Serilog": {
   "Using": [ "Serilog.Sinks.File" ],
   "MinimumLevel": "Debug | Information | Warning | Error | Critical",
   "WriteTo": [
   {
    "Name": "File",
    "Args": [
     "path": "folder/filename.ext",
     "rollingInterval": "Minute | Hour | Day | Month | Year | Infinite",
    ]
   }
  ]
 }
}
```

Serilog - Database Sink

The "Serilog.Sinks.MSSqlServer" logs into a specified SQL Server database.

You can configure the connection string using configuration settings.

Serilog - 'MSSqlServer' Sink Configuration

appsettings.json

```
{
  "Serilog": {
    "Using": [ "Serilog.Sinks.MSSqlServer" ],
    "MinimumLevel": "Debug | Information | Warning | Error | Critical",
    "WriteTo": [
    {
      "Name": "MSSqlServer",
      "Args": [
        "connectionString": "your_connection_string_here",
        "tableName": "table_name",
      ]
    }
  ]
 }
}
```

Serilog - Seq Sink

The "Serilog.Sinks.Seq" is a real-time search and analysis server for structured application log data.

Seq server can run on Windows, Linux or Docker.

Serilog - 'Seq' Sink - Configuration

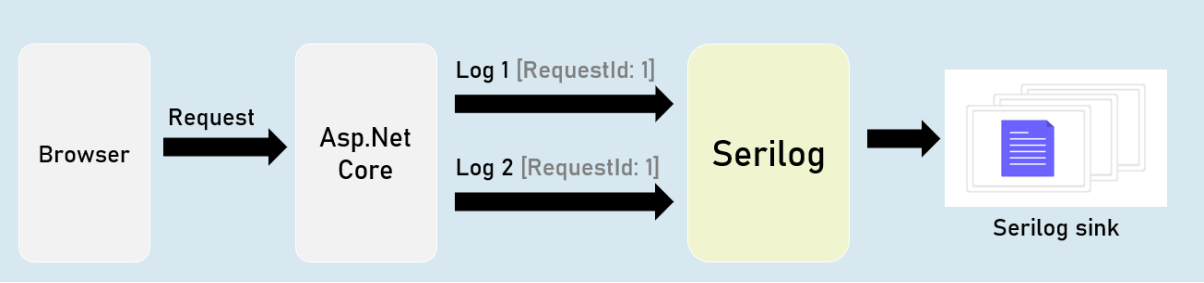
appsettings.json

```
{
  "Serilog": {
    "Using": [ "Serilog.Sinks.Seq" ],
    "MinimumLevel": "Debug | Information | Warning | Error | Critical",
    "WriteTo": [
     {
       "Name": "Seq",
       "Args": [
         "serverUrl": "http://localhost:5341"
       ]
     }
    ]
  }
}
```

Serilog - RequestId

"RequestId" is the unique number (guid) of each individual requests, used to identify to which request the log belongs to.

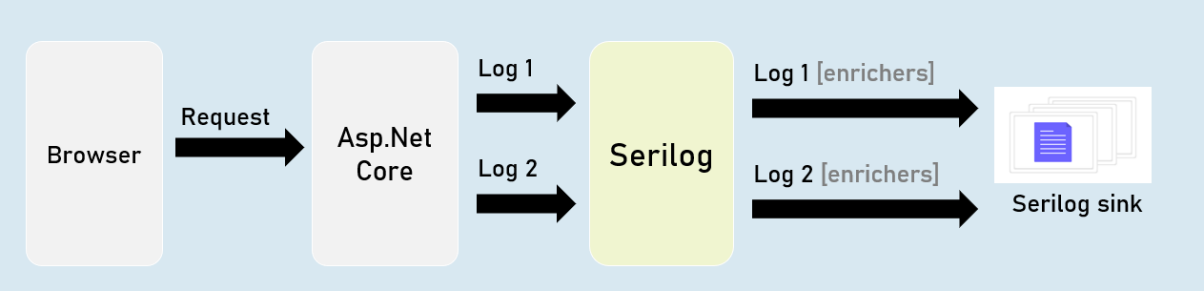
RequestId is "TraceIdentifier" internally, that is generated by Asp.Net Core.



Serilog - Enrichers

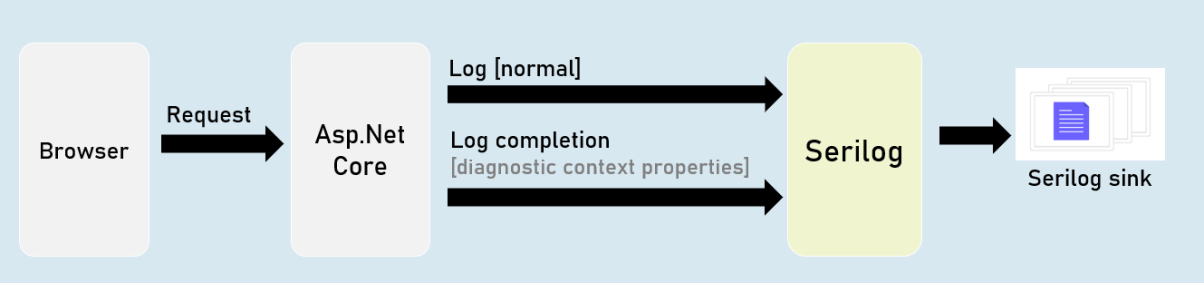
Enrichers are additional details that are added to LogContext; so they're stored in logs.

Eg: MachineName[or]Custom Properties.



Serilog - IDiagnosticContext

Diagnostic context allows you to add additional enrichment properties to the context; and all those properties are logged at once in the final "log completion event" of the request.



Serilog Timings

"SerilogTimings" package records timing of a piece of your soure code, indicating how much time taken for executing it.