

# .NET Roslyn Compiler

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MAGIC NIGHT 2016/09/13

# Announcements

- AWS Magic Night (IoT): September 20th
- AWS Magic Night (Mobile Notifications with AWS SNS): October 18th

# Magic Night Format

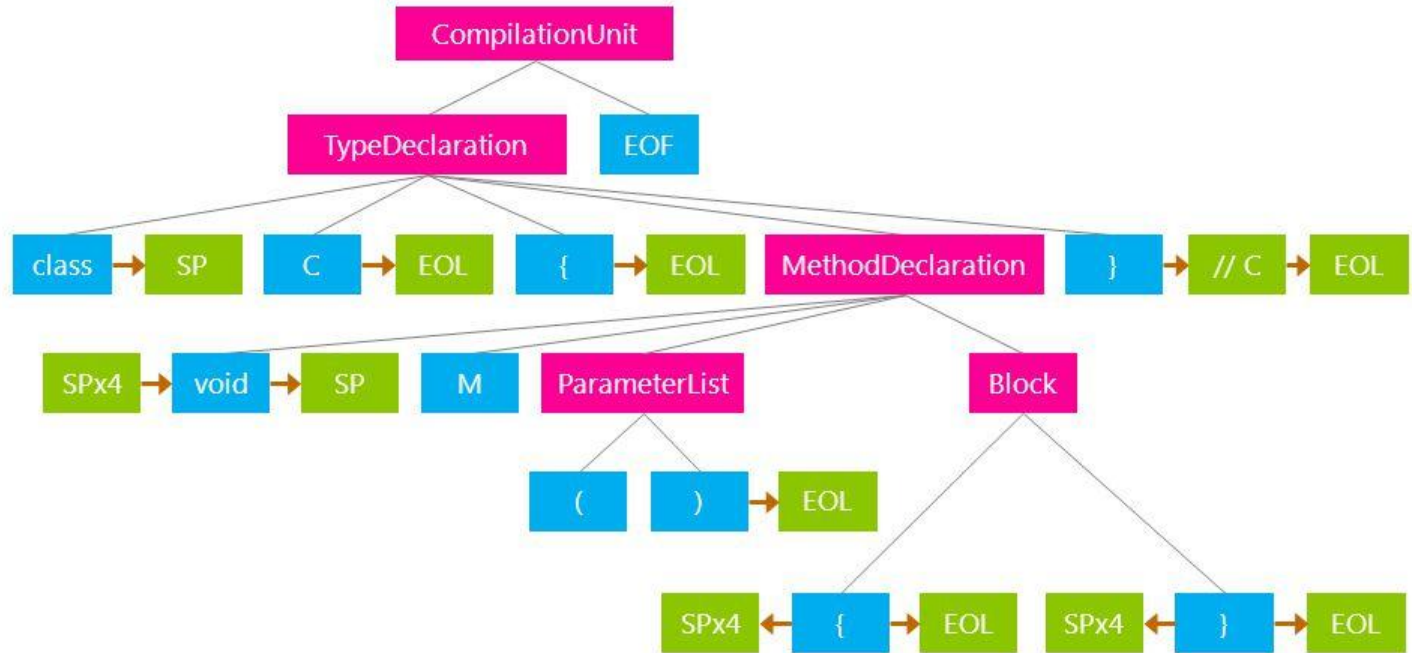
- Hands on experience
- Introduce a challenge
- Team up (random groups)
- Collaborate
- One hour warning
- Showcase your work

# What is “Roslyn”?

- A set of open-source compilers and code analysis API's for C#
- Lexical analysis
- Semantic analysis
- Dataflow analysis
- Dynamic compilation
- Code emission
- Visual Studio integration (issue detection and code fix)

# Syntax Tree API – Trivia

```
class C
{
    void M()
    {
    }
} // C
```



# API's (<https://github.com/dotnet/roslyn/wiki>)

- Syntax API (SyntaxTree)
- Compilation API
  - SemanticModel
    - “What names are in scope at this location?”
    - “What members are accessible from this method?”
    - “What variables are used in this block of text?”
    - “What does this name/expression refer to?”
  - `model.GetSymbolInfo()`
  - `model.GetTypeInfo()`

# Challenge

```
public static void Log(  
    DateTime date,  
    string formatString,  
    params string[] arguments  
) {  
    Console.WriteLine(date + ": " + string.Format(formatString, arguments));  
}
```

```
static void Main(string[] args) {  
    Log(DateTime.Now, "Hello, my name is {0} {1}", "Yuri");  
}
```



**Roslyn to the  
rescue!**

```
[AttributeUsage(AttributeTargets.Method)]
```

```
public class StringFormat : Attribute {
```

```
//--- Fields ---
```

```
public readonly string FormatParam;
```

```
public readonly string ArgsParam;
```

```
//--- Constructors ---
```

```
public StringFormat(string formatParam = "format", string argsParam =  
"args") {
```

```
    this.FormatParam = formatParam;
```

```
    this.ArgsParam = argsParam;
```

```
}
```

```
}
```

```
[StringFormat(  
    formatParam: "formatString",  
    argsParam: "arguments"  
)]  
public static void Log(  
    DateTime date,  
    string formatString,  
    params string[] arguments  
) {  
    Console.WriteLine(date + ": " + string.Format(formatString, arguments));  
}
```

# Demo

# References

1. Code: <https://github.com/yurigorokhov/MagicNightRoslyn>
2. Docs: <https://github.com/dotnet/roslyn/wiki>
3. Tutorials: <https://msdn.microsoft.com/en-us/library/mt162308.aspx>
4. Syntax Visualizer:  
<https://roslyn.codeplex.com/wikipage?title=Syntax%20Visualizer>



Have Fun!