Lecture 5 – C#, XAML Language

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Outlines

- What is C#?
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What is C#?

- C# is type-safe object-oriented language
- Enables developers to build a variety of secure and robust applications
- It was developed by Microsoft within the .NET Framework
- You can use C# to create traditional Windows client applications, XML Web services, distributed components, client-server applications, database applications, Mobile Applications, etc…

C# - History

- Was created in 1999 by principal designer and lead architect of Microsoft Anders Hejlsberg.

- Has gone through several versions currently at version 9.0(released 2020)

C# - Features

- Very similar in syntax to C, C++, and Java.
- Build Top-Down with Hot Reload
- Key features: nullable value type, enumerations, delegates, lambda expressions, and direct memory access

C# - Advantages

- Interoperability
  - “Interop” process enables C# programs to do almost anything that a native C++ application can do.
- Ease of Use
  - Syntax allows for users familiar with C, C++, or Java to easily start coding in C# very effortlessly.
- Reliability
  - Progression of versions gives the user the feeling of reliable mature standard.
- Support of Community
  - It approval from the ISO and ECMA as well as development support from Microsoft give the standard elite standing.

C# - Disadvantages

1. C# is slower to run. This is somewhat taken care of when using WPF, although currently the launching of WPF application is still a bit slow. However, after the program is launched, the animation effects are all very smooth.

2. C# is less flexible than C++. C# depends greatly on .NET framework, anything that is not found in the .NET framework will be difficult to implement.

C# - Applications

1. Cloud native apps and services
2. Windows client applications
3. Windows libraries and components
4. Windows services
5. Web applications
6. Web services and Web API
7. Native iOS and Android mobile apps
8. Backend services
9. Azure cloud applications and services
10. Backend database using ML/Data tools
11. Interoperability software such as Office, SharePoint, SQL Server and so on.
12. Artificial Intelligence and Machine learning
13. Blockchains and distributed ledger technology including cryptocurrency
14. Internet of Things (IoT) devices
15. Gaming consoles and gaming systems
16. Video games

What is XAML

- XAML, which stands for eXtensible Application Markup Language, is Microsoft's variant of XML for describing a GUI. In previous GUI frameworks, like WinForms, a GUI was created in the same language that you would use for interacting with the GUI, e.g. C# or VB.NET and usually maintained by the designer (e.g. Visual Studio), but with XAML, Microsoft is going another way. Much like with HTML, you are able to easily write and edit your GUI.

XAML - History

- Was created in 2003 and developed by Microsoft that is used for initializing structured values and objects.

- Has gone through several versions currently at version v2009(released 2010)

XAML - Features

- XAML enables a workflow where separate parties can work on the UI and the logic of an app, using potentially different tools.

- XAML 2009 Support in WPF and Visual Studio

- When represented as text, XAML files are XML files that generally have the .xaml extension. The files can be encoded by any XML encoding, but encoding as UTF-8 is typical.

XAML - Advantages

- Easy designing of a UI (User Interface).
- Shorter code then the previous designing techniques.
- The UIs are easier to transfer and present in other environments. E.g: A UI can be presented. on the web or a Windows Client with ease.
- Designing a dynamic UI is absolutely easier with XAML.
- XAML allows creating visible UI elements and separate the UI definition from the programming logic.

XAML - Disadvantages

1.XAML cannot contain code.

2.XAML cannot contain loops for repetitive processing.

3.XAML cannot contain conditional processing

Any Questions?