C#
Microsoft's Java

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HISTORY OF C#

Who created C#?

- Microsoft - Anders Hejlsberg [1]
- V1.0 released in 2002 alongside .NET
- Closed-source originally, but the first main compiler/runtime environment ended up being Mono, which is open-source and cross-platform. [4]
- Fancier tools like VSCode and Roslyn soon followed, which were also open-source and not limited to Windows. [4]

Why was C# created?

- A “simple, modern, general-purpose object-oriented language” was the goal [5]
  - Essentially, Microsoft wanted their own Java, so they decided that borderline-plagiarism was the solution.
- Microsoft decided to compete with Sun and created their own modern OOP language [2]
- Microsoft wanted all of the benefits of an object-oriented, high level language without the need for manual memory handling and structs.

FUN FACT THAT YOU SHOULD ABSOLUTELY KNOW ABOUT C#:

It was originally called COOL, or “C-like Object-Oriented Language,” but they couldn’t keep the name because of trademark issues. [4]

And the world is a darker place because of those trademark issues.

What is C# used for?

- Game development
  - Used in Unity, the most popular game engine in the world for cross-platform game development
- Windows application development
  - Can be compiled by default into .exe files, and is both created by and supported by Microsoft for this primary purpose
- Website development
  - Less used than javascript, but still used in conjunction with .NET for this purpose

.NET

- Open-source developer platform, allows you to create all kinds of applications like games, mobile apps, web apps, and IoT
  - *(Platform: Collection of languages and libraries)*
- .NET is useful and popular because it allows you to build impressive projects with C# (as well as other languages such as F# and Visual Basic).

Q & A

How would you describe the language?

Rebekah:

It's Java, but more annoying to run and set up namespaces for - Namespaces (for categorizing classes mainly) make it so there's just more fluff you have to type before you can get into actually coding your project.

Orlie:

C# is basically Microsoft's Java, but is geared towards running on Windows-based systems (some .NET applications won't work on non-windows servers) [6]

Did you enjoy using the language? Why or why not?

Rebekah:

It definitely could have been worse; I like Java, so C# was not hard to learn for the most part. The worst bits were figuring out namespaces - and why they're even in there in the first place - and figuring out how to compile and run our code.

It's not like almost every other language I've used where you can just run it, you have to make sure you have the .NET SDK installed and either compile it into a .exe file or use the terminal to do it.

The only other language I've used that requires you to get an SDK is Java.

I enjoyed using it, but not as much as Java.

Orlie:

I actually really enjoyed it, it seems very useful, and coming from a Java background, I found it super easy to pick up on fast. I was glad that a lot of my coding style carried over almost seamlessly.

I will agree that the namespaces seemed completely unnecessary, but I did some research and it turns out that they're used to make sure you don't have conflicting definitions of things that have the same names across different classes.

Overall it was fun and I am interested in getting into game development with C# again.

Do you think the language is useful?

Rebekah:

Absolutely, it’s one of the biggest languages used for game development and Microsoft desktop application development. Namespaces can be annoying, but something being annoying doesn’t mean it’s not useful.

Orlie:

Of course, it’s used extensively in app and game development, and I am definitely considering going deeper myself and getting into game development now.

Compare and contrast the language to other languages you are familiar with.

Rebekah:

It's high-level, so it's easier to read, immediately understand, and debug than ML or MIPS, it has straightforward operators, and if you've coded in Java, it's trivial to switch to C#. It's object-oriented, and while Java is **just** object-oriented, C# is also component-oriented (so you don't need to know how specific bits work to use them).

It supports operator overloading and pointers if you really want to, which Java can't, it has more everyday use than Python or MIPS. Also, while C# executes more slowly than some languages, it's easier to go straight from code to .exe with it, since it was made for that purpose.

Orlie:

It feels like a Java clone (which is ok because that's the point). It's definitely easier than the lower-level languages I've learned. Java programmers should have little to no trouble migrating to C# development.

I like being able to make executables that just run independently, unlike Java which needs the JVM on whichever machine you're using it on.

Would you recommend this language to other programmers?

Rebekah:

Absolutely, especially if they're interested in game or Windows application development. As an added bonus, since it's incredibly easy to learn C# after Java, it's going to be super easy for anyone who's taken a Java course to pick it up and have another well-known language under their belt to add to their resume.

Orlie:

I recommend this to anyone who is serious about OOP and application development.

It was super easy to program in, coming from Java, and I don't think it would take much more effort to make standalone applications.

Aspects we wanted to cover more

Rebekah:

I would have liked to mess with GUI and application development a bit more. In 335 we used JavaFX to make an application even though JavaFX is essentially obsolete, so I think it would be interesting to make something with a language which is built for the purpose, still maintained, and still considered a good modern solution for application development.

Orlie:

Wanted to explore App and GUI development more, but that would have required a quite a bit more time to be able to do competently.

It would have been nice to make a small video game.

Sources

[1] https://en.wikipedia.org/wiki/C_Sharp_(programming_language)

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[4] https://hackr.io/blog/c-sharp-vs-java

[5] https://docs.microsoft.com/en-us/dotnet/csharp/whats-new/csharp-version-history

[6] https://www.guru99.com/java-vs-c-sharp-key-difference.html#7