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Biography

OF THE BJARNE STROUSTRUP

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The general biography:

Bjarne Stroustrup is the computer scientist who fully developed the C++ programming language, which compels programmers to write their algorithms with high-level of abstraction and a huge amount of possibilities, compare to classic C language. Nowadays it one of the most popular and efficient programming languages in the world. He was born in the second largest city in Denmark, which called Aarhus in the 1950s. In early 1975 he finished the University of Aarhus and got a master's in mathematics and computer science. After that, he started studying at the Cambridge University of United Kingdom and become Ph.D. in computer science in the 1979s. And finally, after all his degrees he started work in the Computer Science Research Centre "Bell Labs" in Murray Hill, New Jersey in United States. In addition, he was head of Labs Large-Scaled Programming Research Department from 1995 until late 2002 at AT&T Inc. with some breaks. Nowadays, he professor of Computer Science at Texas A&M University, and his duty is supporting the connection between AT&T Inc. Labs and Information and Systems Software Research Lab. Also, he is a managing director in the technology division at multinational investment bank "Morgan Stanley" in New York City and a visiting professor at Columbia University. His research interests include creative designing, programming techniques, information distributing systems, algorithm performance, and security system development. (Computer History Museum, 2015)

The language discussion:

At the beginning of the late 1970s, Dr. Stroustrup start developing the beginning concepts and the C++ programming language itself and through his involvement in the project during work at Bell Labs Inc. on queuing theory tasks (as applied to model telephone calls), he found that attempts to use existing modeling languages at that time were ineffective and using high-performance machine languages was too difficult because of their limited expressiveness. So, the Simula language has features that would be very useful for developing large software, but it works not so efficient, and BCPL is fast enough but too close to low-level languages and not suitable for developing large software. Recalling the experience of his research, he decided to supplement the C language as BCPL successor with the features available in Simula language. In turn, the C language, being the base language of the UNIX system on which the Bell Labs Inc. worked, is fast, multifunctional and portable. In addition, the choice of C as the basis for creating a new programming language is explained by the facts that are a multi-purpose, concise and relatively low-level language and has a high suitability for most system tasks. Also, performed everywhere and on everything and mainly fits in with the UNIX programming environment, like was mention before. Despite several of well-known drawbacks of the C language, Stroustrup went on using it as a main core, and he mentioned that "C has its own problems, but they would have had a language developed from scratch, and we know C problems." In addition, this made it possible to use a prototype compiler called "CFront", which only translated the added syntax elements into the original C language and was developed by himself. The concept of "CFront", was a simplicial translator at processes the source code C with classes into the source code of simple C. This allowed him to work on the new language and use it in practice, using the existing infrastructure in UNIX to develop C. However, he did not plan to create a programming language C ++. Early versions of the C ++ language, known as the "C with Classes," began to appear in the 1980s. In addition, it included several improvements to the C programming language for its own needs. Like an ability to work with classes and objects, thereby giving birth to the prerequisites of new features, based on C syntax, a programming language. C ++ syntax was based on C syntax since Bjorn Stroustrup sought to maintain compatibility with the C language. In 1983, the language was renamed from "C with Classes" to "C ++ Programming Language", which resulting language name to come from the "++" unary postfix increment operator

(increasing the value of a variable by one). In addition, some new features have been added to it, like virtual functions, overloading of functions and operators, references, constants, and much more. Before the commercial release, the language was developed mainly by Bjarne Stroustrup alone with ideas requests from the programmer community. The function of standard language descriptions was performed by Stroustrup written papers on C ++, like language description, reference manual, and so on. Its first commercial release took place in October 1985. Overall, during development he has several aims, which was implemented and lightly mention before, these are to create a universal language with static data types, efficiency, and portability of C, directly and comprehensively support a multitude of programming styles, including procedural programming, data abstraction, object-oriented programming, and generic programming. Also, to give the programmer the freedom to choose, even if it gives him the opportunity to choose the wrong one and maximum maintain compatibility with C, thereby making it possible to easily switch from programming to C, avoid discrepancies between C and C ++: any construction that is permissible in both languages must in each of them denote the same and lead to the same program behaviour and avoid features that are platform specific or not universal. In addition, "Do not pay for what is not used" - no language tool should not lead to a decrease in the performance of programs that do not use it. Finally, do not require too complicated programming environment. (Stroustrup, Interview with Bjarne Stroustrup, 2003)

The standards discussion:

Bjarne Stroustrup is quite famous for his development of language ISO standards effort, books, and his many academic and popular papers, which helped a huge number of programmers among beginners and experts. In 1985, the first edition of the programming Language was released, providing the first description of this language, which was extremely important due to the lack of an official standard. At the beginning of 1989, the new C ++ version, which called “2.0” was released. Its new features included multiple inheritance, abstract classes, static member functions, constant functions, and protected members and many others. In 1990, the “C ++ Commented Reference Guide” was published, which later became the basis of the esthetical coding standard. Recent updates have included patterns, exceptions, namespaces, new types of type conversions and a boolean type of variables. The standard library also developed with language. The first addition to the standard library became input/output streams, providing the means to replace the traditional C functions ‘printf’ and ‘scanf’ to ‘cout’ with an addition of ‘<<’. Later, the most vital development of the standard library was the inclusion of the Standard Template Library. In 1998, the ISO/IEC 14882:1998 language standard, which was known as “C ++ 98” was released, developed by the C ++ Standardization Committee. The C ++ standard does not describe methods for naming objects, some of the details of exception handling, and other possibilities associated with implementation details, which makes object code created by different compilers incompatible. However, for this third parties have created many standards for specific architectures and operating systems. In 2003, the ISO/IEC 14882:2003 language standard was published, where the identified errors and shortcomings of the past versions of the standard were fixed. In 2005, the Library first technical report document, which. Was not part of the officially standard, the report describes the standard library extensions, which, as expected by the authors, should be included in the next version of the C ++ language. The support level of “TR1” is improved in almost all supported C ++ compilers. Since 2009, work has been done on updating the previous standard, a preliminary version of the new standard was first C ++ 09, and a year later C ++ 0x, today C ++ 11, which included additions to the core language and an extension of the standard library, including most of the first technical report document. However, the language continues to develop for matching current requirements and supports by several groups, which response for its developing. (Wikipedia, 2018)

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Honours and awards:

During his productive career, he earned a lot of prestigious awards, like ACM's Grace Murray Hopper Award in the early of 1993, Fellow of IEEE and ACM at the end of 1994. Later become a vital member of the US National Academy of Engineering in 2004, Sigma Xi's William Procter Prize for Scientific Achievement in 2005, and Honorary Professor at Xi'an Jiao Tong University between 2002-2006, Aarhus University's Rigmor og Carl Holst-Knudsens Videnskapspris in 2010. Also, he won the Senior Dahl–Nygaard Prize in 2015, the same time become a Fellow of the Computer History Museum for his scientific contribution for the C++ programming language invention. In the 2017 Bjarne Stroustrup received the Faraday Medal for creating one of the most popular and influential programming languages in the history of software engineering. Finally, he won half of the million dollars price of the Charles Stark Draper and also was named the winner of Computer Pioneer Award of the IEEE Computer Society at the end of 2018. (Stroustrup, Some Information about Bjarne Stroustrup, 2018) In addition, I should mention several his brilliant publications, which was fully written or co-written, including the books A Tour of C++ Programming: Principles and Practice Using C++ The C++ Programming Language, Design and Evolution of C++ and The Annotated C++ Reference Manual which helped millions of developers improve those skills in the object-orientated languages.

Conclusion:

So, his huge effort affects the software engineering industry in quite a positive way during the C++ programming language evolution and makes the object-oriented programming widely spread among the software engineers' community. Finally, the C ++ programming language is free, that is, no one has rights to it, which influential the open source community in a positive way and stimulates many scientists, who prefer efficiency start developing in that language.

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