What is Java?

Why Java?

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Java's Family Tree

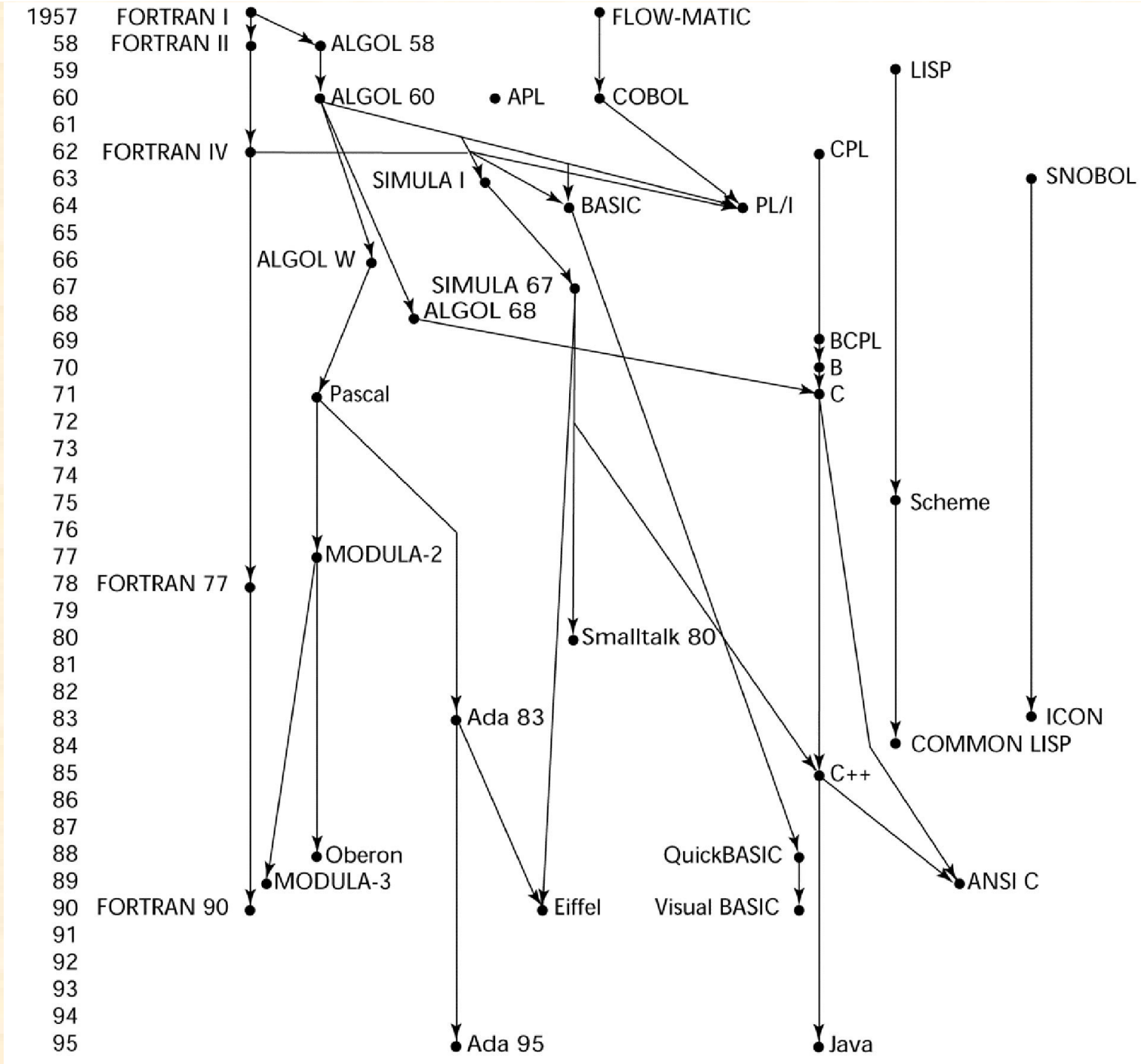
- Computer languages are **created** by computer scientists to fulfill certain needs
- Not every language is suitable for every purpose
  - FORTRAN and C (or C++) are useful for writing programs that execute very quickly but there are better languages for learning programming
  - BASIC is good for quickly writing small programs that will be used for a short time
    - It's a pretty good language for beginning programmers
    - It's not a good choice for professional programmers or for large-scale programming projects

Java's Family Tree

- Computer languages are **created** by computer scientists to fulfill certain needs
- Not every language is suitable for every purpose
  - Java balances many of the goals for a programming language
    - It's a good choice for learning programming
    - It's a good choice for large-scale development projects
    - It's widely used by professional programmers and runs on many different types of computers
    - It's not the best language to choose for writing high-performance programs (that need to run extremely fast)

Java's Family Tree

- To give you an idea of how *many* languages there are, look at the following (incomplete) family tree of programming languages
  - http://www.levenez.com/lang/history.html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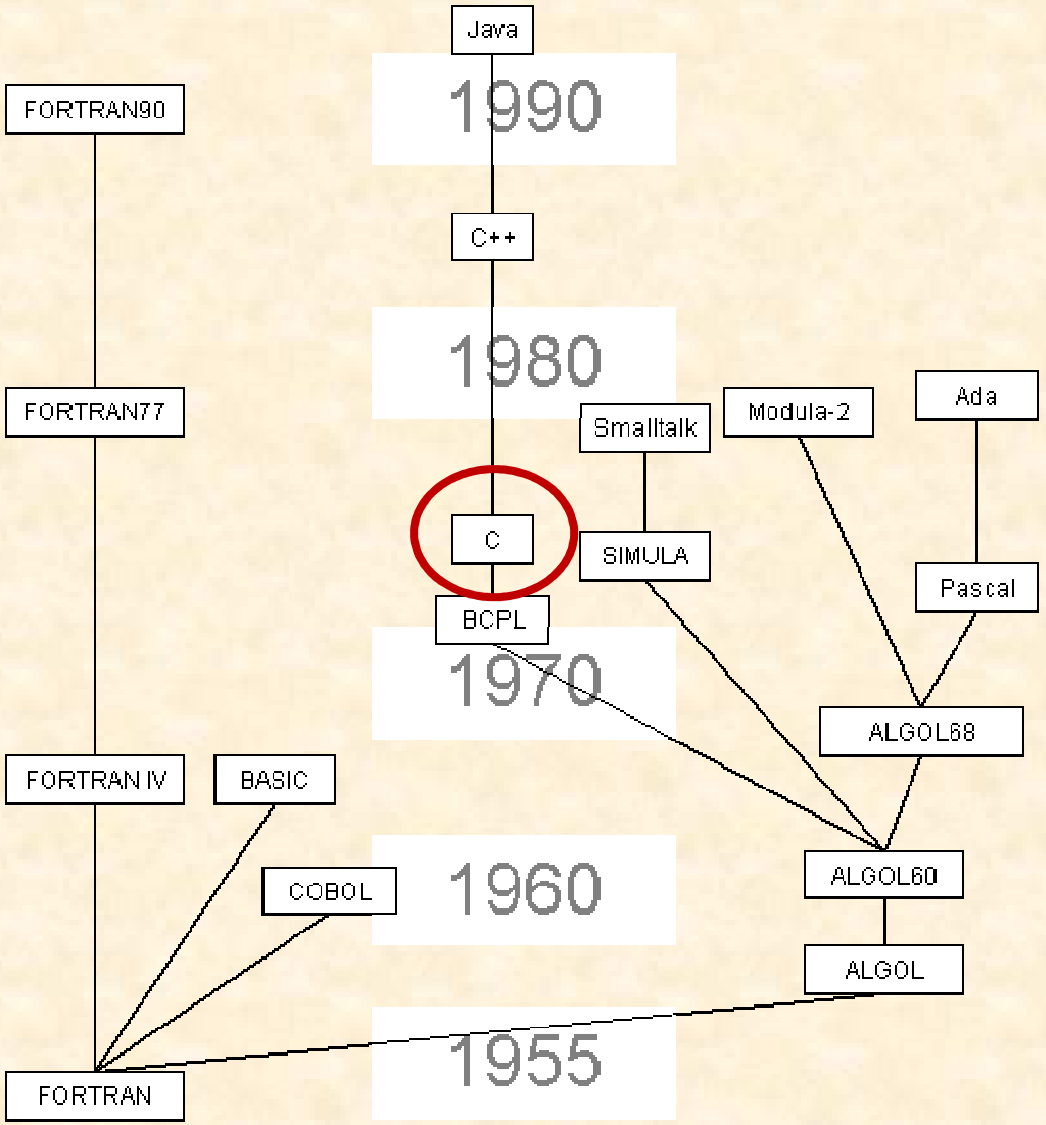
MODULA-2
FORTRAN 77
Smalltalk 80
Ada 83
ICON
COMMON LISP
C++
Oberon
QuickBASIC
MODULA-3
ANSI C
FORTRAN 90
Eiffel
Visual BASIC
Ada 95
Java

Java's Family Tree

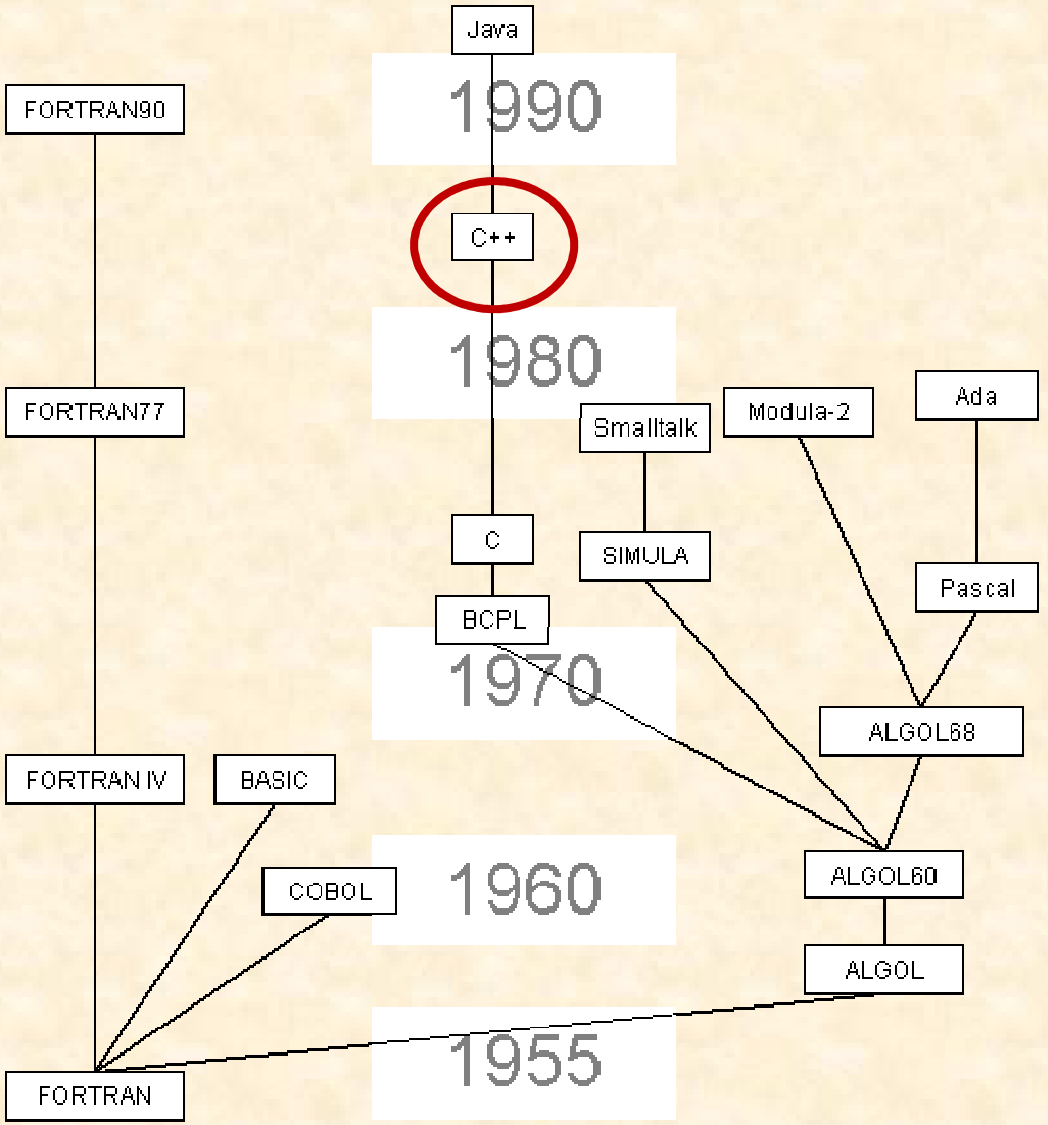
- Here is a slightly more useful pedigree for Java
- C is a widely used "system" language
  - Early 1970's
  - Used to write the operating systems Windows, Linux, MacOS X



Java's Family Tree

- Here is a slightly more useful pedigree for Java

- C++ was derived from C
  - Around 1985
  - Added "objects" to C
  - MS Office and many other Windows programs are written in C++
  - Still a major language for professional developers



Java's Family Tree

- Java was not *derived* from C++, but it was *influenced* by C++
  - C# is similarly not *derived* from Java, but is certainly *influenced* by Java
- Java was developed around 1993 by Sun Microsystems
  - Wanted a language for handheld computers and consumer electronics (microwaves, cars, etc)
- The original idea: extend C++
  - Instead, new language was created from scratch
  - Borrowed a lot of syntax and basic data types from C and C++

Java's Family Tree

- Java was originally called Oak
  - Removed many redundant and unsafe parts of C++
  - Added features to make programs "safer" to run on consumer electronics (more on this later)
- The name Oak was abandoned
  - A patent search found another minor language already had that name
  - The name Java was chosen (for murky reasons)
- Internet functionality wasn’t one of the original features
- Big promise: “Write Once, Run Anywhere”

Java's Family Tree

- Oak for electronics died, but Sun revived "LiveOak" (later Java) for a web browser they were writing
- Web browsers need
  - Safe execution of code from strangers
  - Ability to run on lots of hardware platforms
- Java’s features were a match!
- Java came standard in Sun’s browser in 1995
  - Quickly became standard for all browsers

Java's Family Tree

- Full circle: Java is now a major language for use in consumer electronics
- Most of your smart phones can run Java programs
  - Although perhaps not JavaSE like we use in this class
  - Android applications are Java + some special android libraries