FORTRAN

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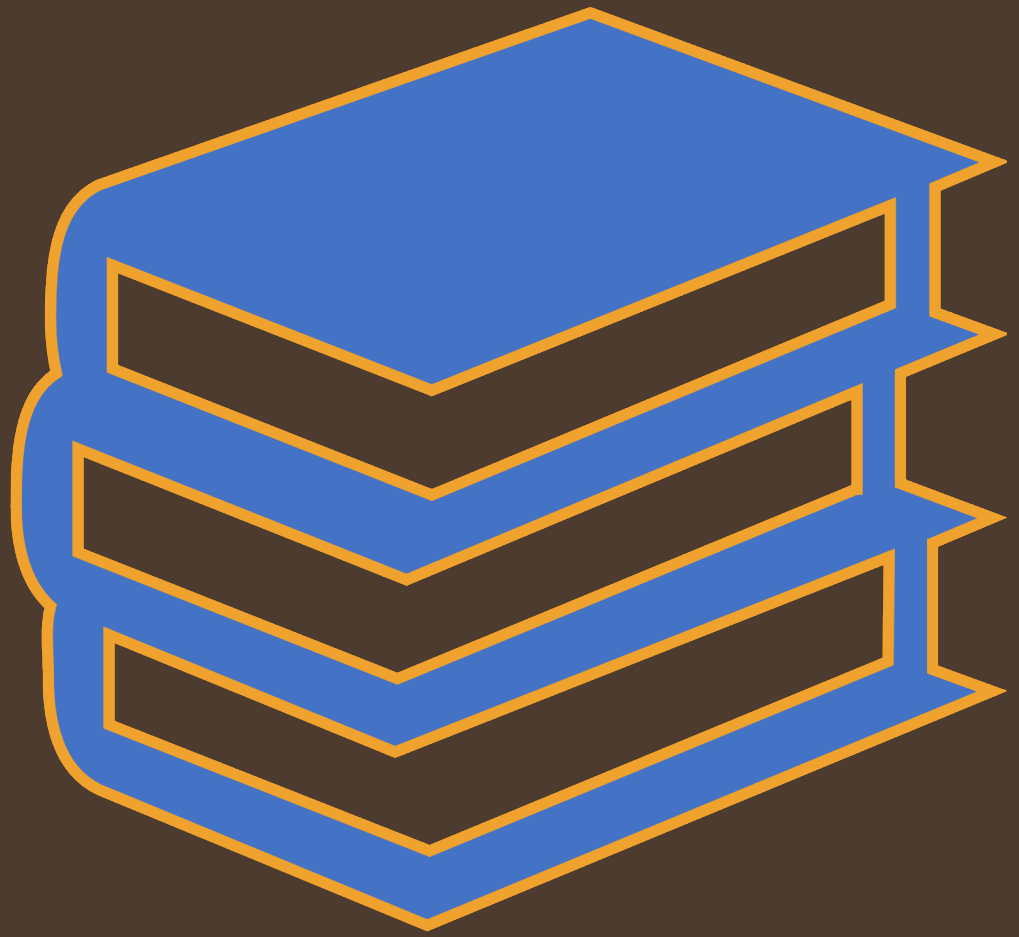
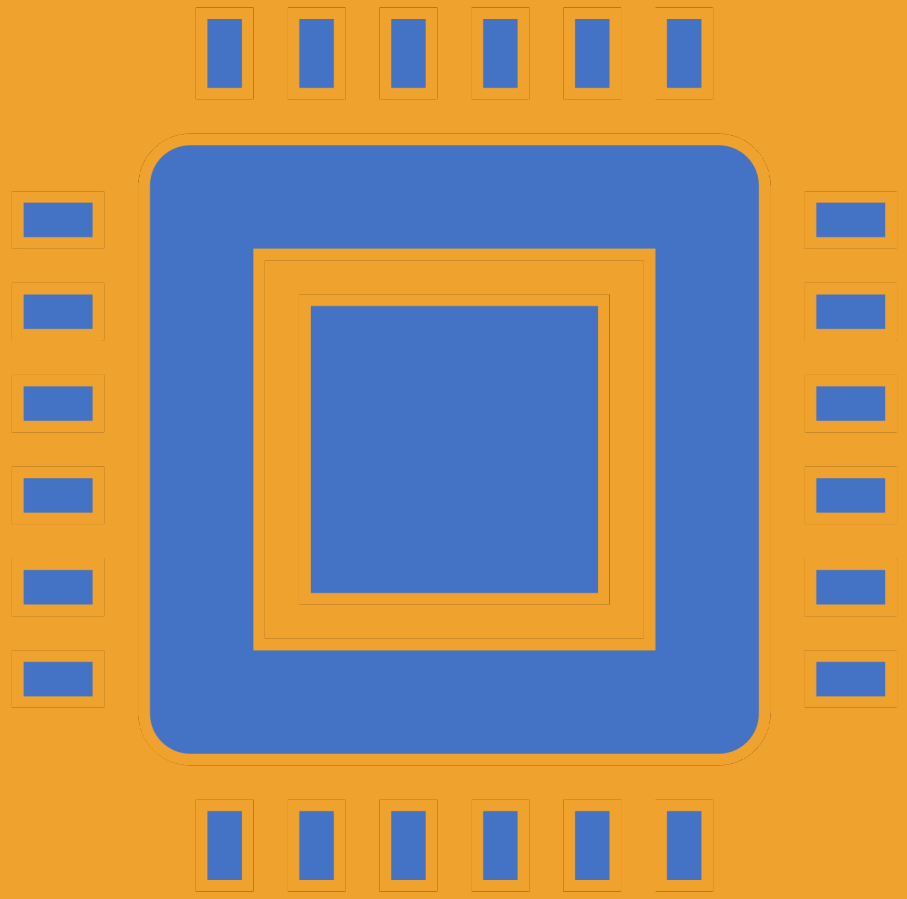


Overview

- Background
- Rationale
- Code sample
- Classification
- Evaluation
- Conclusions
- Questions

Background

- Create at IBM
- By a team lead by John Backus
- Looking to Make first high level programing language
- Is short for ‘formula translation’



Rationale

- At the start of computing it was very tedious to write code
- Programmers translate some assembly code to instruction words
- Wanted and easy to stand language

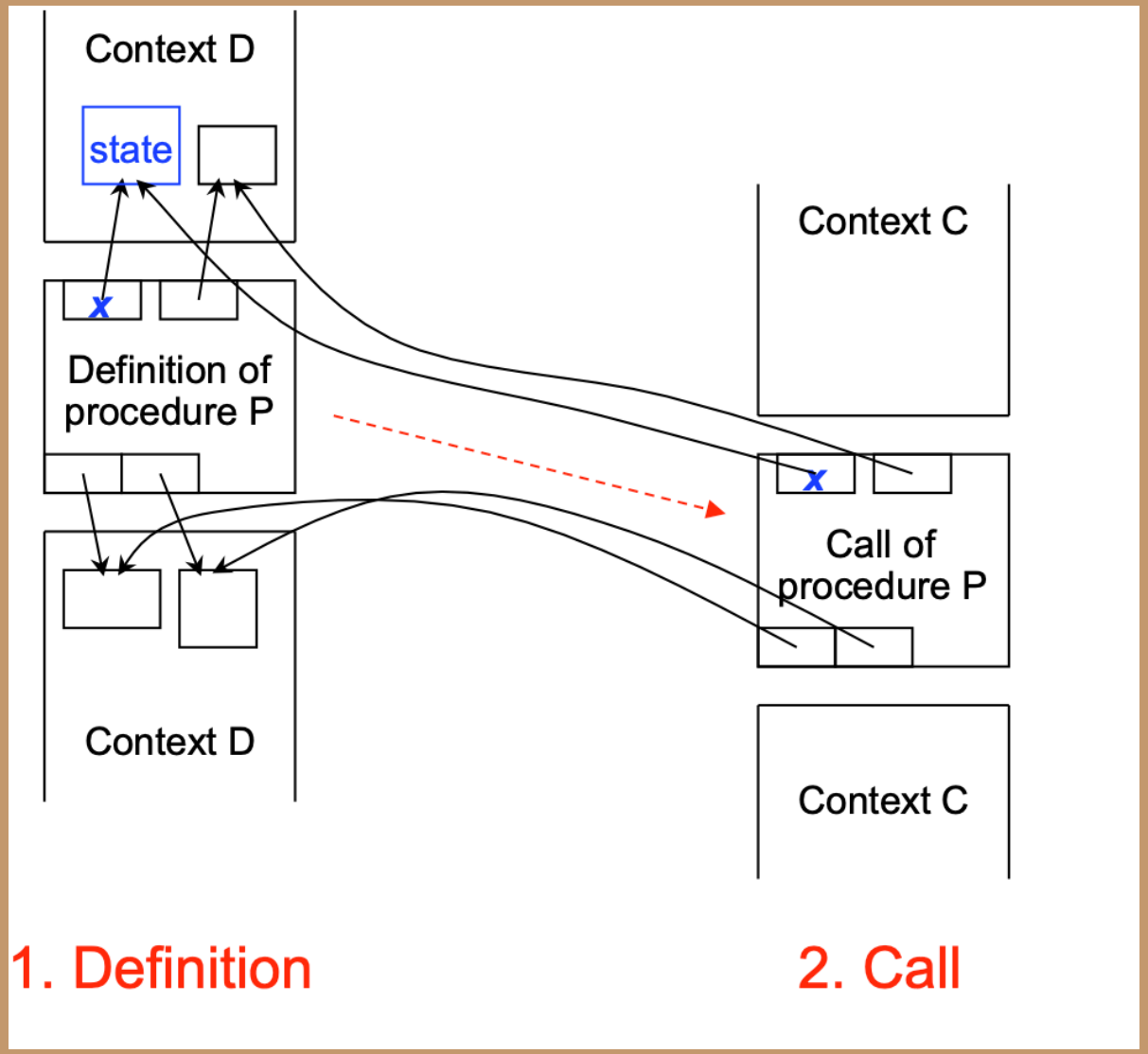
Consider the following example Fortran 90 program:

```
PROGRAM Triangle
 IMPLICIT NONE
 REAL :: a, b, c, Area
 PRINT *, 'Welcome, please enter the&
          &lengths of the 3 sides.'
 READ *, a, b, c
 PRINT *, 'Triangle''s area:  ', Area(a,b
END PROGRAM Triangle
FUNCTION Area(x,y,z)
 IMPLICIT NONE
 REAL :: Area              ! function type
 REAL, INTENT( IN ) :: x, y, z
 REAL :: theta, height
 theta = ACOS((x**2+y**2-z**2)/(2.0*x*y))
 height = x*SIN(theta); Area = 0.5*y*heig
END FUNCTION Area
```

CODE SAMPLE

Classification

- Multiparadigm
- Object Oriented Language
  - *First widespread adoption of OOP*
- Procedural
  - *Made it much easier to read*



Classification

- Principles
  - *Abstraction*
  - *No Defense in Depth*
    - Does not handle exception handling or type checking
  - *Preservation of Information*
  - *Simplicity*

Evaluation

Readability

- Much easier than the things that came before
- Has good flow to it
- Written in easy-to-understand steps

Writability

- Goal was to make it easy to learn
- Uses some mathematical syntax
- Can be written by none computer science focused people

Evaluation

Speed

Slow on reading and writing data

Does use a lot of memory

Used to write benchmark tests for some of the fastest computers

As fast as C++

Reliability

Good readability and writable

Easy to come back to later and pickup

Will not recompile different on different machines

Evaluation

Community

Large number of resources

Lots of previous projects done in language

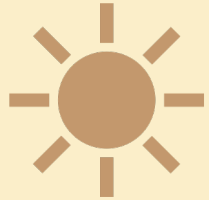
Lots of older people know it or of it

Ecosystem

Previous projects to work of

Lots of science and engineering packages available

Tools developed to test or implement code



Coolness

Very COOL

Conclusion

- Created first widespread language
- Popularized OOP languages
- Made programing more accessible to all
- Good language

Sources

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Questions