

object-oriented programming

exampleWithNumber: x

"This is a small method that illustrates every part of Smalltalk method syntax except primitives, which aren't very standard. It has unary, binary, and key word messages, declares arguments and temporaries (but not blocks), accesses a global variable (but not an instance variable), uses literals (array, character, symbol, string, integer, float), uses the pseudo variable true, false, nil, self, and super, and has sequence, assignment, return and cascade. It has both zero argument and one argument blocks. It doesn't do anything useful, though."

pects of
e context

1960s—Simula anticipates many later object-oriented languages in of mathematical simulations.

SIMULA BEGIN

STRUCTURED PROGRAMMING

Academic Press
London New York San Francisco
A Subsidiary of Harcourt Brace Jovanovich

exampleWithNumber: x
|y|
true & false not & (nil isNil) ifFalse: [self halt].
y := self size + super size.
#(\$a #a 'a' 1 1.0)
do: [:each | Transcript
show: (each class name);
show: (each printString);
show: ' '].

namespace Chrono {
^ x < y
enum class Month { jan=1, feb, mar, apr, may, jun, jul, aug, sep, oct,
class Date {
public: // public interface:
class Bad_date { }; // exception class
ex05() at: Date date add: n Month mm = [] at: yy ={});
// nonmodifying functions for examining the Date:
int day() const;
Month month() const;
int year() const;
string string_rep() const;
void representation();
char_rep(char s[], int n) const;
void style_string();
// (modifying) functions
void add_year(int n); //
void add_month(int n); //

1980s—Object-oriented programming becomes a household name. C++ and later Java focus on practical engineering concerns.

The C++ Programming Language by Bjarne Stroustrup

SPECIAL REPORT: Cairo, Copland, 64-bit Unix
NOVEMBER 1996
BYTE
the global authority for computing technology
Dual Pentium Pro
Screamers p.112
Tools to Direct Your Own
Multimedia p.122
Web PC Takes Shape p.105
EXCLUSIVE
INSIDE SUN'S
JAVA CHIPS
HOW WILL THEY TRANSFORM COMPUTING?
PLUS:
-Kill Network Viruses!
-PowerBuilder 5 vs. Centura
North America 11/1
www.byte.com
0-71486-026-0
\$3.95 U.S.A./\$4.95 in CANADA
A Publication of The McGraw-Hill Companies/59999280

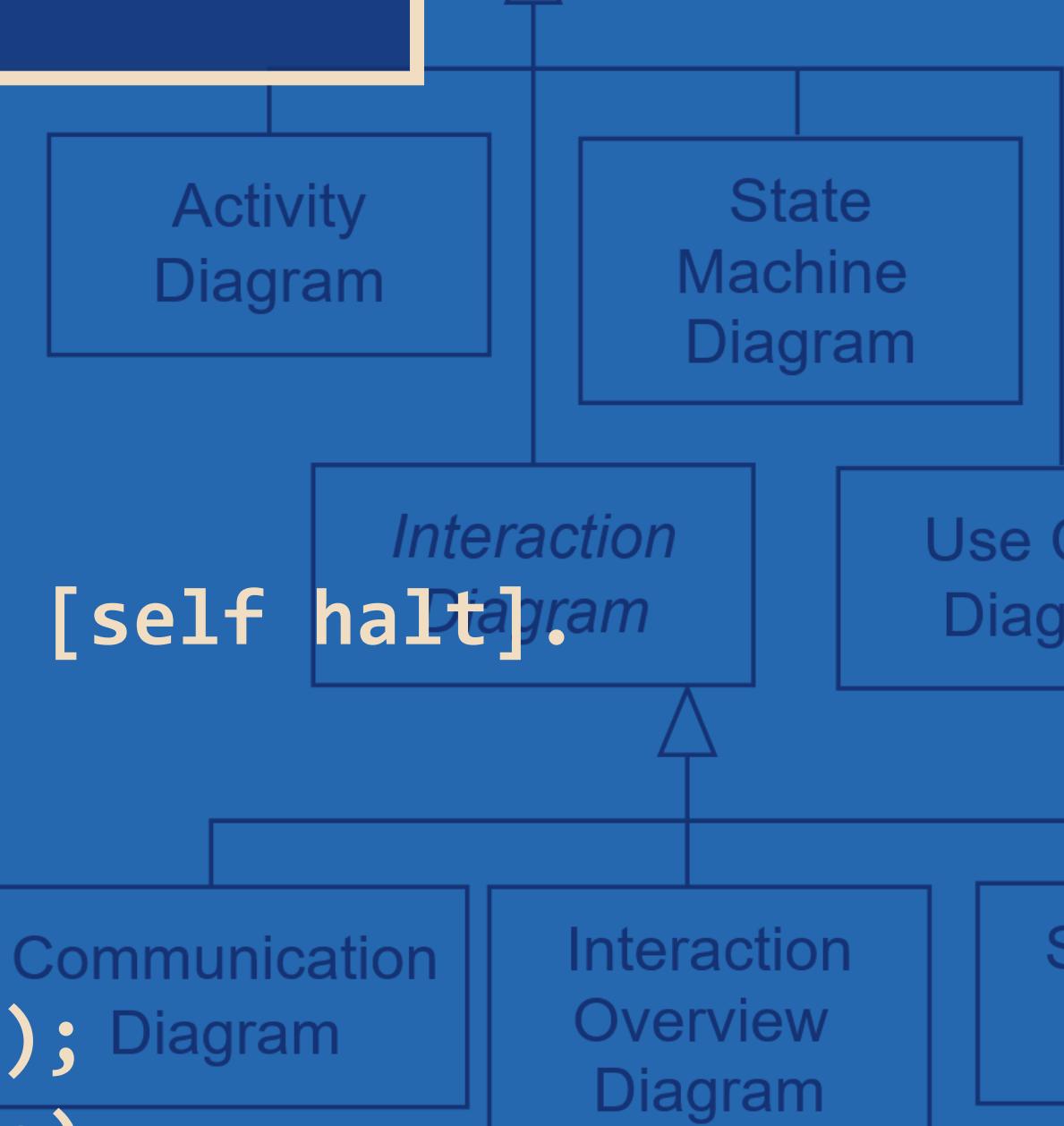
```
class Date {
    int d, m, y;
public:
    bool is_valid(); // check if this Date represents a date
    bool is_date(int d, Month m, int y); // true for valid date
    bool is_leapyear(int y); // true if y is a leap year
    bool operator==(const Date& a, const Date& b);
    bool operator!=(const Date& a, const Date& b);
    const Date& default_date(); // the default date
    friend ostream& operator<<(ostream& os, const Date& d);
    friend istream& operator>>(istream& is, Date& d); // read Date from is into d
};

class Diagram {
    // ...
};

class ComponentDiagram {
    // ...
};

class ObjectDiagram {
    // ...
};

class ProfileDiagram {
    // ...
};
```

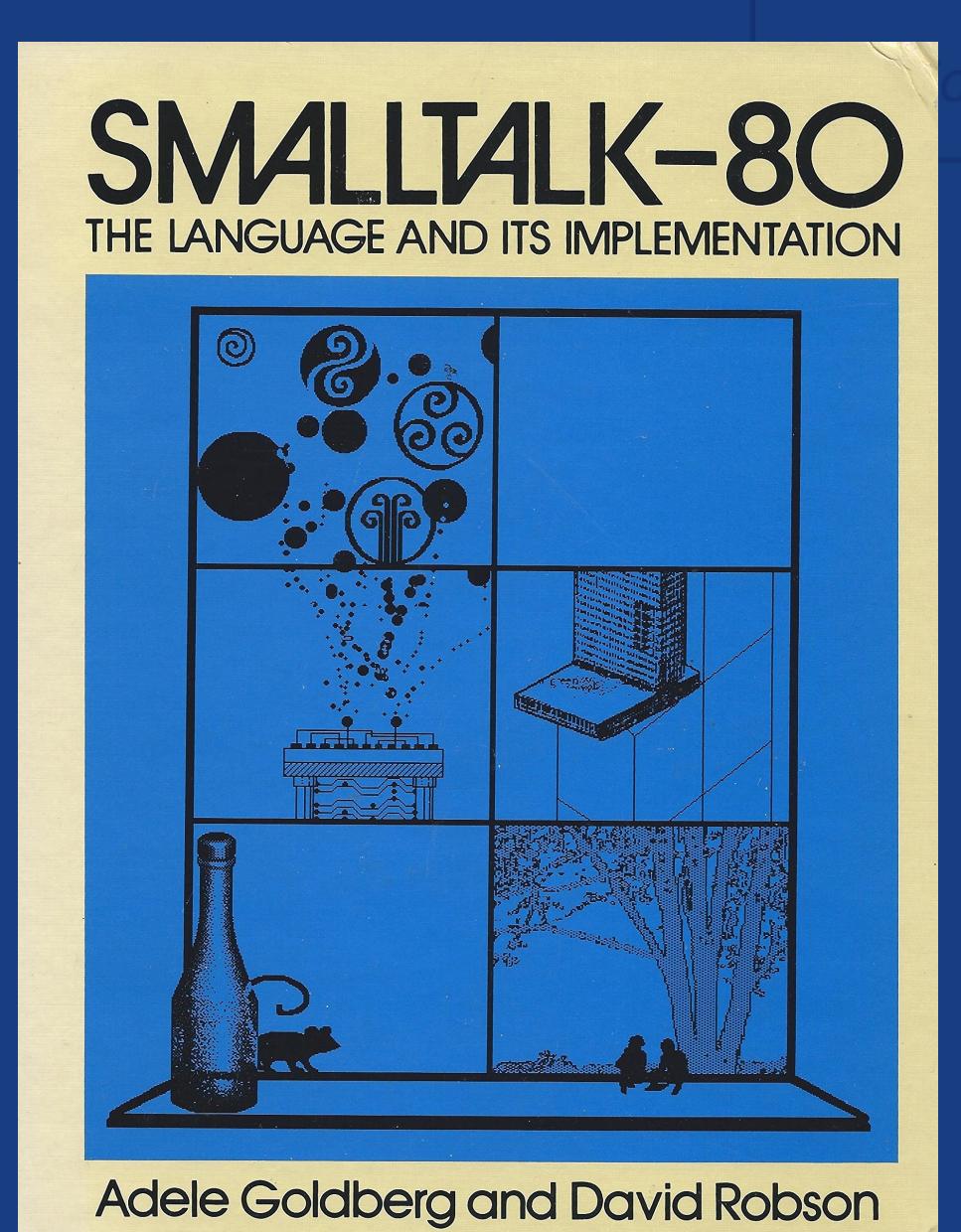
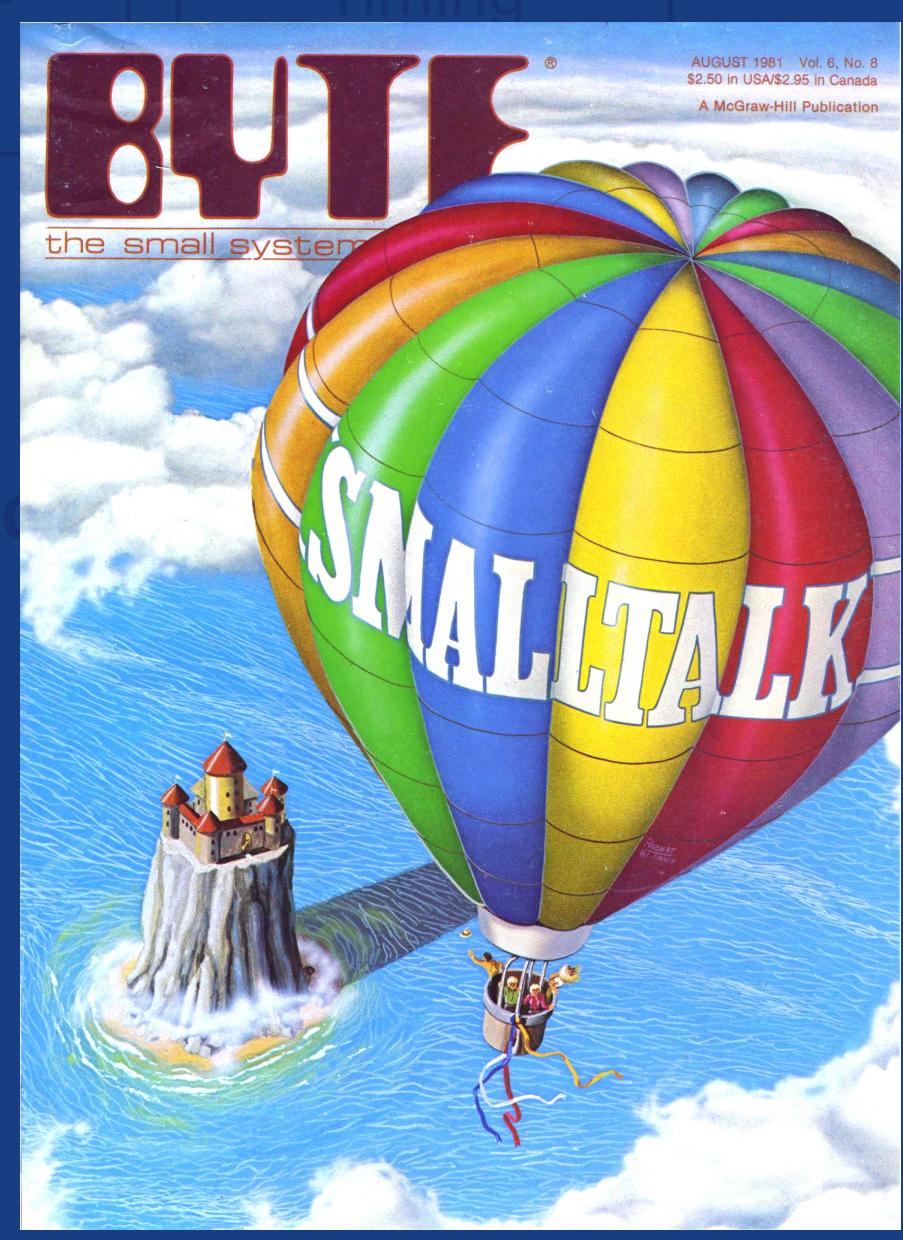


```
SIMULA begin comment airport departure;  
set q counter, q fee, q control, lobby (passenger);  
; Diagram  
counter office (clerk); ...  
activity passenger; Boolean fee paid;  
begin fee paid := random (0, 1) < 0.5; ... ;  
wait (q counter) end; Structure Diagram  
...  
...
```

end of SIMULA;

Class

1970s – In the humanistic vision of Smalltalk, objects become the basis of a new medium for communication with the computer.



```
The  
class date { Game's  
User Interface  
st; int month, day, year;  
public:  
    void set(int, int, int);  
    void get(int*, int*, int*);  
    void next();  
    void print();  
};  
//  
//
```



1990s—UML and new software development processes shift attention to the managerial problem of structuring systems and teams.

