

ATARI LOGO
A PROPOSED PLAN

BY

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PILOT

Programmed Inquiry Learning Or Teaching

PURPOSE

Created to fill need for a programming language for educators which would not require having an extensive mathematical background.

HISTORY

Developed by Dr. John Starkweather at the University of California Medical Center in San Francisco.

FEATURES

- Easy to learn
- Designed for educational applications
- Minimum number of commands

PRIMARY USE

Authoring system used to develop Computer-assisted instruction courseware.

ATARI PILOT

ENHANCEMENTS

- Superset of core Pilot
- Easy access to graphics & sound
- Interactive
- Specialized commands
- Designed as an introductory language
- Turtle Graphics

SAMPLE PILOT PROGRAM

Figure 6-6 shows how you can use a numeric condition to limit a person to three guesses in a guessing game.

```

10 R:WHAT AM I?
20 T:WELCOME TO 'WHAT AM I?'
30 T:I'LL GIVE YOU 3 HINTS \
40 T:TO GUESS WHAT I AM . . .
50 PA:60
60 T:
70 T:ARE YOU READY? \
80 A:
90 T:
100 M: Y,SURE,OK,FINE,ALRIGHT
110 JM:*GOODBYE
120 C:#G=1
130 *LOOP
140 T(#G=1): I ROLL ALONG, BUT I DO
NOT HAVE WHEELS.
150 T(#G=2): I HAVE A MOUTH, BUT I
CANNOT SPEAK.
160 T(#G=3): I HAVE A BED, BUT I
NEVER SLEEP.
170 T:WHAT AM I?
180 T:
190 A:ANSWER
200 M:RIVER,STREAM,CREEK
210 JY:*RIGHT
220 J(#G=3):*NOMORE
230 T:NOPE,GUESS AGAIN.
240 T:
250 C:#G=#G+1
260 J:*LOOP
270 *NOMORE
280 T:
290 T:NOPE, THAT'S THREE GUESSES.
300 T:I AM A RIVER.
310 J:*GOODBYE
320 *RIGHT
330 T:
340 T:THAT'S CORRECT! I AM
ANSWER.
350 *GOODBYE
360 T:
370 PA:60
380 T:SEE YOU LATER.
390 E:

```

READY

■

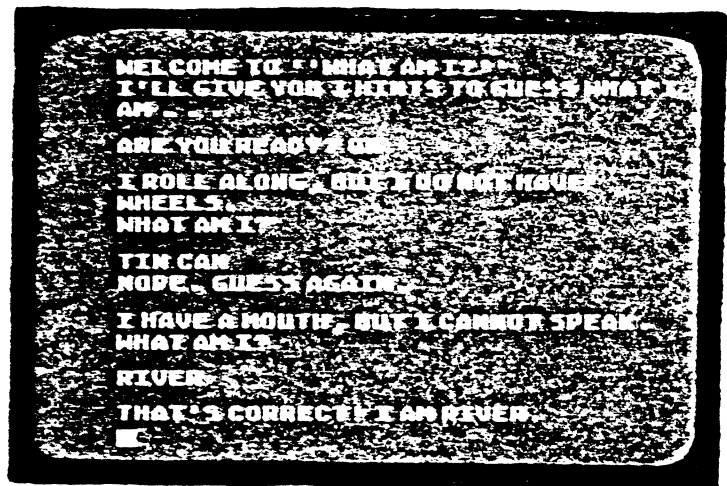


Figure 6-6

PASCAL

PURPOSE

Structured programming language created to facilitate the teaching of a systematic approach to computer programming and problem solving.

HISTORY

Created by Niklaus Wirth.

FEATURES

- Allows for modular program design
- Data structures and manipulation
- Arithmetic operations
- Recursive procedures
- File manipulation
- Procedure, functions and program declarations
- Control statements
- Compiled Language

PRIMARY USE

High Level Development Language for serious programmers.

Teaching of Computer Science Curriculum.

(* AS OF 10/21/79 *)

SAMPLE PASCAL PROGRAM

PROGRAM CALCULATE;

CONST

RCONST = -2.5;
RCONST1= 65535.5;

VAR R1,R2,TEMP:REAL;
X : ARRAY [1..2] OF REAL;
CH1,OP:CHAR;

(*\$ID1:STDPROCS*)

FUNCTION SUBREAL(R1,R2:REAL) : REAL;

BEGIN

SUBREAL := R1 - R2
END;

PROCEDURE ADDREAL(VAR R1:REAL; R2:REAL);

BEGIN

R1 := R1 + R2
END;

PROCEDURE TF(B:BOOLEAN);

BEGIN

IF B THEN
WRITELN('TRUE')
ELSE
WRITELN('FALSE')
END;

PROCEDURE CALC;

BEGIN

CASE OP OF

'S': BEGIN

INLINE(\$FD/\$09);
WRITELN(SIN(R1));

END;

'C': WRITELN(COS(R1));

'A': WRITELN(ARCTAN(R1));

'L': WRITELN(LN(R1));

'E': WRITELN(EXP(R1));

'+' : BEGIN ADDREAL(X[1],X[2]); WRITELN(X[1]:10:3) END;

'-' : WRITELN(SUBREAL(X[1],X[2]):10:2);

'*' : WRITELN(R1 * R2);

'/' : WRITELN(R1 / R2);

'M': WRITELN(-R1);

'=' : TF(R1 = R2);

'N': TF(R1 <> R2);

'\$': WRITELN(SQRT(R1):10:3,SQRT(R2):10:3);

'<': TF(R1 < R2);

'>': TF(R1 > R2);

'Z': TF(R1 <= R2);

'G': TF(R1 >=R2);

'1': WRITELN(SQR(R1),' ',SQR(R2));

'2': WRITELN(R1 + 1);

'3': WRITELN(1+R1);

'4': WRITELN(TRUNC(R1));

'5': WRITELN(ROUND(R1));

```

'6': WRITELN(RCONST);
'7': WRITELN(RCONST1);
'8': BEGIN R1 := -2.234; XC1] := 3.456; WRITELN(R1,' ',XC1]); END;

```

```

END;
END; (* CALCULATOR *)

```

```

PROCEDURE MENU;

```

```

BEGIN

```

```

    WRITE('S:SIN ');
    WRITE('C:COS ');
    WRITE('A:ARCTAN ');
    WRITE('L:LN ');
    WRITE('E:EXP ');
    WRITE('1:SQR ');
    WRITELN('$:SQRT ');
    WRITELN('+ , - , * , / ARITHMETIC OPERATORS');
    WRITELN('M:NEGATE');
    WRITE('= : EQUAL ');
    WRITELN('N : NOT EQUAL');
    WRITE('<:LESS THAN ');
    WRITELN('>:GREATER THAN ');
    WRITELN('Z:LESS THAN OR EQUAL TO');
    WRITELN('G:GREATER THAN OR EQUAL TO');
    WRITE('4:TRUNC ');
    WRITELN('5:ROUND');

```

```

END;

```

```

BEGIN (* MAIN PROGRAM *)

```

```

    REPEAT

```

```

        WRITE('ENTER FIRST OPERAND? ');
        READ(R1);
        XC1] := R1;
        WRITELN('R1=',R1); WRITELN;
        WRITE('ENTER SECOND OPERAND? ');
        READ(R2);
        XC2] := R2;
        WRITELN('R2=',R2); WRITELN;
        WRITELN('ENTER OPERATOR:');
        MENU;
        WRITE('? ');
        READ(OP);
        WRITELN;
        CALC;
        WRITELN('TYPE <ESCAPE> TO STOP');
        READ(CH1);

```

```

    UNTIL CH1 = CHR(27)

```

```

END.

```

LOGO

PURPOSE

Developed as a learning language designed particularly for problem solving.

HISTORY

Dialect of LISP* developed under the direction of Seymour Papert at MIT.

FEATURES

- Procedure oriented
- Interactive
- List processing language
- Recursive
- Turtle Graphics
- User-Friendly
- No threshold/
no ceiling
- Extensible
(Create command words)

LOGO - CON'T

PRIMARY USE

Serious language for learning.

Used to study natural language.

Used for studying associative thought processes and high level problem solving.

* LISP - Developed for use in artificial intelligence research.

LOGO EXAMPLE

By

Brian Harvey

```
TO PIGLATIN :SENT
  IF EMPTY? :SENT [OUTPUT []]
  OUTPUT SENTENCE PLWORD FIRST :SENT
    PIGLATIN BUTFIRST :SENT
END
```

```
TO PLWORD :WORD
  IF MEMBERP FIRST :WORD "AEIOUY [OUTPUT WORD :WORD "AY]
  OUTPUT PLWORD WORD BUTFIRST :WORD FIRST :WORD
END
```

```
PRINT PIGLATIN [WE CAN SPEAK PIG LATIN]
```

```
EWAY ANCAY EAKSPAY IGPAY ATINLAY
```

COMPETITIVE PRODUCTS

TI LOGO

- Available from
Texas Instruments
- Requires the basic
TI 99/4A console
plus extended
memory and the
TI LOGO command
module
- Suggested retail
for minimum system
just under \$1,000.

MIT LOGO FOR THE APPLE II

- Available from
Terrapin, Inc. \$149.95
- Requires 48K, disk
drive with 16 sector
controller, language
card ... complete
system around \$2,400.

MIT LOGO FOR THE APPLE II

- Available from
Krell Software \$179.95
- Requires 48K, disk
drive with 16 sector
controller, language
card ... complete
system around \$2,400.

COMPETITIVE PRODUCTS

LCSI LOGO PRODUCTS

AVAILABLE

APPLE LOGO (APPLE II)
(2nd best selling product
for Apple)

- Distributed exclusively
by Apple, Inc.
- Requires 48K, disk
drive with 16 sector
controller, language
card ... complete
system around \$2,400.
- Retail price \$175.

FUTURE IMPLEMENTATIONS

- Thompson
- Sinclair
- NABU
- IBM
- Atari Logo
- Others

ATARI LOGO (PROPOSED)

CONFIGURATION

Atari 400 with 16K

Optional:

Atari Disk Drive

PACKAGE CONTENTS

Consumer Product

Product 1-

16K Cartridge
plus documentation.

Educational Products

Product 2-

16K Cartridge
only.

Product 3-

documentation
only.

International Products (Future)

English (British)

French

German

Spanish

Features

Functionally compatible
to Apple Logo ... minor
differences.

PRICE

Under \$100.

ATARI LOGO ENHANCEMENTS

MINIMUM ENHANCEMENTS

Visible Turtle

DESIRED ENHANCEMENTS (Not Prioritized)

- Interface to Atari
Disk Operating System
- Player Missile Graphics
- Collision Detection
- Color Map Modifications
- Sound
- Joystick/Paddle
- Serial I/O
- RS232 Interface
- Robot Interface

STRATEGIC EVALUATION

<u>Rating</u>	<u>Criterion</u>
<u>Excellent</u>	Adheres to corporate and divisional goals
<u>Excellent</u>	Enhances ATARI image in the marketplace
<u>Excellent</u>	Compares favorably with other media treatments - Only Logo available for 16K machine
<u>Good</u>	Showcases hardware capabilities - Atari specific features included
<u>Excellent</u>	Addresses a currently targeted market segment - Consumer and educational market for learning/education products
<u>Excellent</u>	Function is appropriate to the product line - Essential to educational/consumer marketing
<u>Excellent</u>	Function is new to product line or an improvement over existing products - New to product line
<u>Excellent</u>	Encourages ATARI hardware sales - Essential to meet bids for hardware sales to schools and increase hardware sales to consumers
<u>Good</u>	Encourages purchase of other ATARI software - Friendliness and quality of Atari Logo expected to encourage other Atari software purchases
<u>None</u>	Improves usefulness of other Atari software

CONSUMER PROFILE

Atari Logo is a programming language which is both easy enough for very young beginners (5 years old) and powerful enough to interest advanced programmers (has been used with MIT physics students).

Atari Logo is designed as a learning language: the user can start with easily understood features of the language and progress smoothly to more advanced features. For this reason it will appeal to home users of all ages as well as to educational institutions.

Logo is now in strong demand in schools because of its history as an MIT research development in the tradition of Jean Piaget, the influential developmental psychologist.

DISTRIBUTION

ATARI LOGO - PRODUCED AND
OWNED BY LOGO COMPUTER
SYSTEMS, INC. EXCLUSIVE
WORLD-WIDE DISTRIBUTION BY
ATARI.

ATARI LOGO FORECAST

Expected Sales

	1983	1984	1985
Education	5,000	10,000	15,000
Consumer	52,000	157,500	--
International	4,600	--	--
	-----	-----	-----
Total	62,100	167,500	--

ESTIMATED MATERIAL COST

16K Cartridge	9.50
Quick Reference Card	.25
Introduction to Programming Guide (175 pages)	2.00
Logo Reference Manual	2.00
New Carton (2 @.35)	.70
Packing & Handling	.45

Total Est. Material Cost	14.70
16% Material Cost	2.35
Est. Preliminary Standard Cost	17.05

THE ORCHESTRA

Conducted by:

Bonnie Umphreys

Developed by:

Logo Computer Systems,
Inc.

Technical assistance by:

Brian Harvey
Jim Dunion/Harry Stewart
Cynthia Solomon
Bob Kahn

Alpha testing by:

Brian Harvey
Cynthia Solomon

Beta testing by:

Capital Children's Museum

New York City School
of the Future

Phoenix School in
Cambridge

Santa Clara School
District

Harold Abelson -
Professor MIT

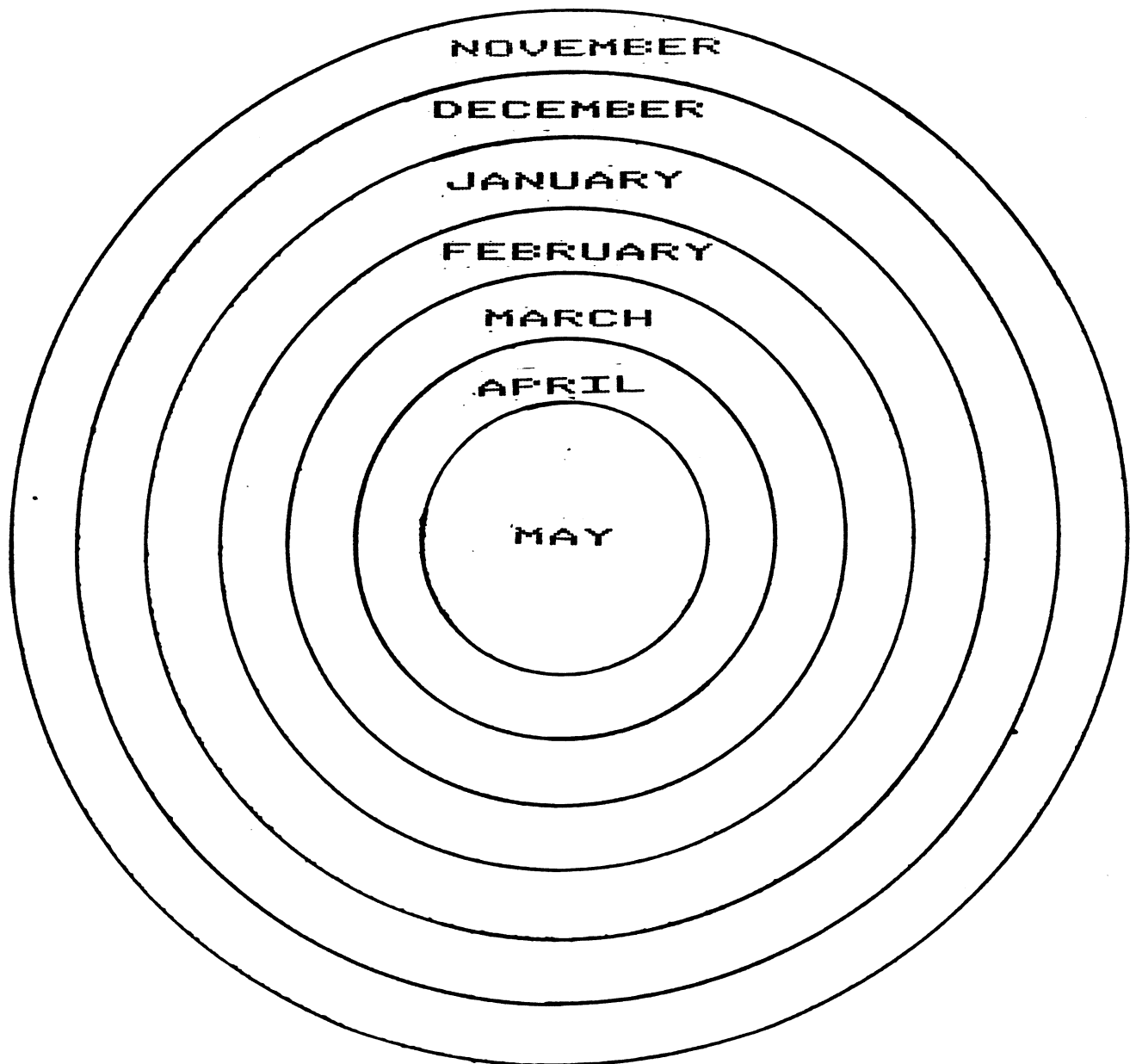
Manufacturing by:

Cartridge - Atari
Documentation & box -
Atari or LCSi

Exclusive World-Wide
Distribution by:

Atari, Inc.

THE TARGET



THE SCHEDULE

	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
1. Conversion to Atari										
2. Signed Contract		*								
3. Add Visible Turtle										
4. Atari Enhancements										
5. Documentation										
6. Alpha Test										
7. Announcement				*						
8. Beta Test										
9. Educational Shows										
10.Pre-Release										
11.Manufacture										
12.Inventory										

LOGO'S ROOTS

JEAN PIAGET

1. Intellectual development requires a rich social environment.
2. A key part of development is the invention by each child of certain powerful ideas (e.g., conservation) which are abstracted from exploration of the environment.

LOGO'S ROOTS

ARTIFICIAL INTELLIGENCE

1. Computers can be used not only to process numeric data, but also to manipulate symbolic information.
2. The most interesting applications of computers include high-level problem solving (e.g., playing chess) and the understanding of human (natural) language.
3. These applications require programming languages which provide advanced control structures (recursive procedures) and data structures (list processing).
4. "Teaching" a computer to solve a problem can shed light on how human beings solve similar problems.

ENGLISH LANGUAGE PROCESSING

Data Hierarchy: letter - word - sentence.

Primitive procedures to analyze linguistic units:

FIRST

FIRST [THIS IS A SENTENCE] "THIS

FIRST "HELLO "H

BUTFIRST

BUTFIRST [I LIKE COMPUTERS] [LIKE COMPUTERS]

BUTFIRST "BANANA "ANANA

LAST

LAST [LOGO IS FUN] "FUN

LAST "AARDVARK "K

BUTLAST

BUTLAST [E.T. PHONE HOME] [E.T. PHONE]

BUTLAST "ZYLON "ZYLO

TO SECOND :THING

OUTPUT FIRST BUTFIRST :THING

END

PRINT SECOND [THIS IS A LONG SENTENCE]

IS

PRINT SECOND "HELLO

E

POWERFUL IDEAS

FUNCTION

COMPOSITION OF FUNCTIONS

```
TO FIGLATIN :SENT
IF EMPTY? :SENT [OUTPUT []]
OUTPUT SENTENCE PLWORD FIRST :SENT
    FIGLATIN BUTFIRST :SENT
END
```

```
TO PLWORD :WORD
IF MEMBER? FIRST :WORD "AEIOUY [OUTPUT WORD :WORD "AY]
OUTPUT PLWORD WORD BUTFIRST :WORD FIRST :WORD
END
```

```
PRINT FIGLATIN [WE CAN SPEAK FIG LATIN]
```

```
EWAY ANCAY EAKSPAY IGPAY ATINLAY
```

POWERFUL IDEAS

FUNCTION

COMPOSITION OF FUNCTIONS

MODULARITY

RECURSION

SUBPROCEDURE