# Intro — Language definition

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### Syntax

- **exp**: Expressions
- **op_assignment**: Assignment operator
- **op_arith**: Arithmetic operators
- **op_increment**: Increment and decrement operators
- **op_logical**: Logical operators
- **op_conditional**: Conditional operator
- **op_colon**: Colon operators
- **op_join**: Row- and column-join operators
- **op_range**: Range operators
- **op_transpose**: Conjugate transpose operator
- **op_kronecker**: Kronecker direct-product operator

### Declarations & arguments

- **Declarations**: Declarations and types
- **optargs**: Optional arguments
- **struct**: Structures
- **class**: Object-oriented programming (classes)
- **pragma**: Suppressing warning messages
- **version**: Version control
Flow of control

if
if (exp) ... else ...
for
for (exp1; exp2; exp3) stmt
while
while (exp) stmt
do
do ... while (exp)
break
Break out of for, while, or do loop
continue
Continue with next iteration of for, while, or do loop
goto
goto label
return
return and return(exp)

Special topics

Semicolons
Use of semicolons
void
Void matrices
pointers
Pointers
ftof
Passing functions to functions

Error codes

Errors
Error codes

Description

This section defines the Mata programming language.

Remarks and examples

stata.com

[M-2] Syntax provides an overview, dense and brief, and the other sections expand on it.

Also see [M-1] Intro for an introduction to Mata.
Augusta Ada King, Lady Lovelace (1815–1852), is popularly believed to have written the first computer program. She was born Augusta Ada Byron in London, England. She was the daughter of Lord Byron, a well-known Romantic poet and infamous libertine. Because of her marriage to William King, Count of Lovelace, most people know her informal name, Ada Lovelace.

Shortly after Lovelace’s birth, Lady Byron divorced Lovelace’s father. Attempting to discourage Lovelace from Lord Byron’s poetry, Lady Byron hired private tutors in mathematics and science. One of these tutors introduced Lovelace to Charles Babbage in 1833. Lovelace later translated Menabrea’s article on Babbage’s Analytical Engine. At Babbage’s request, she added her own explanation about the engine’s usefulness. At the time, few scientists recognized that the engine could be programmed to solve specific problems. Lovelace also noted the potential for the engine to use symbols in its computations, anticipating the functionality of modern computers.

Her notes on Menabrea’s work also included algorithms that could be used for computation. Although the first several algorithms are recognized as Babbage’s work, the algorithm to compute Bernoulli numbers is attributed to Lovelace. In honor of this work, the U.S. Department of Defense named the computer language it developed in 1979 “Ada”. The British Computer Society awards a medal and sponsors an annual lecture in her name.

Also see

[M-0] Intro — Introduction to the Mata manual