RELATIONAL OPERATORS

Relational operator	Meaning
<	Less than.
<=	Less than or equal to.
>	Greater than.
>=	Greater then or equal to.
==	Equal to.
~=	Not equal to.

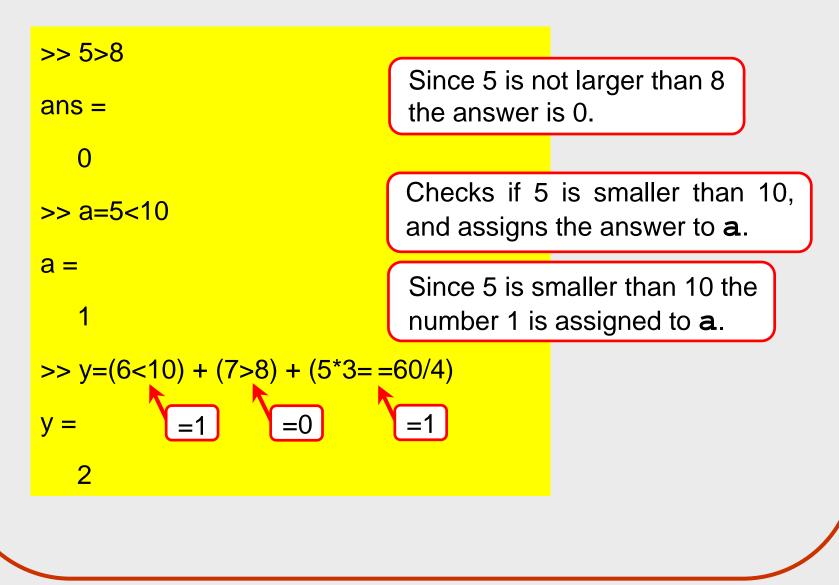
Relational operators compare two numbers in a comparison statement.

If the statement is true, it is assigned a value of 1.

 \succ If the statement is false, it is assigned a value of 0.

RELATIONAL OPERATORS, EXAMPLES

165



LOGICAL OPERATORS

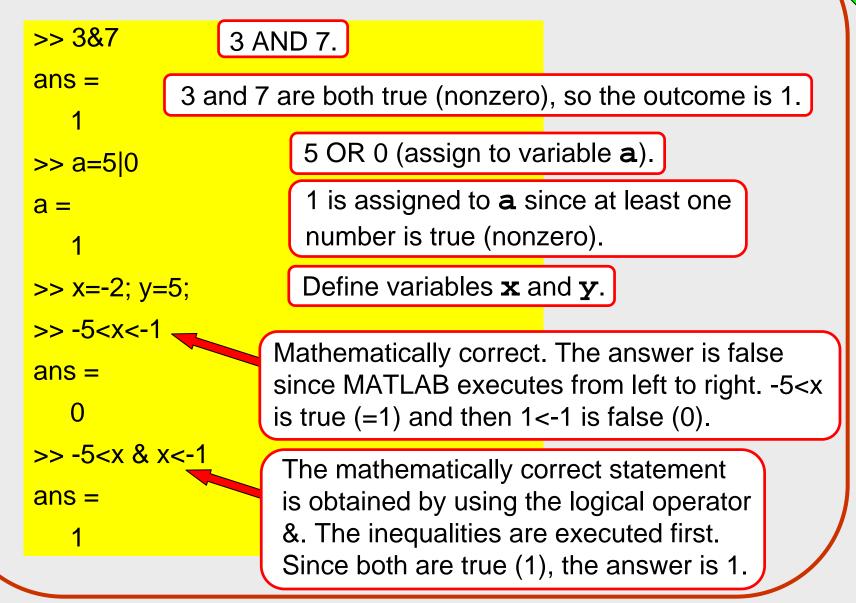
- Logical operators have numbers as operands.
- > A nonzero number is true.
- A zero number is false.

Logical Operator	<u>Name</u>	Meaning
& Example: <i>A</i> & <i>B</i>	AND	True if both operands (<i>A</i> and <i>B</i>) are true.
 Example: <i>A</i> <i>B</i>	OR	True if either or both operands (<i>A</i> and <i>B</i>) are true.
~ Example: ~ A	NOT	True if the operand (<i>A</i>) is false. False if the operand (<i>A</i>) is true.

LOGICAL OPERATORS, EXAMPLES

168-

69



(c) 2003 The Ohio State University

EXAMPLE OF USING THE if-end STATEMENT

% A script file that demonstrates the use of the if-end statement.
% The user is asked to enter three grades.
% The program calculates the average of the grades.
% If the average is less than 60, a massage:
% The student did not pass the course. is printed.

```
score = input('Enter (as a vector) the scores of the three tests ');
ave_grade = (score(1) + score(2) + score(3))/3;
disp('The average grade is:')
disp(ave_grade)
if ave_grade < 60
    disp('The student did not pass the course.')
end
```

EXAMPLE OF USING THE if-end STATEMENT

Executing the script file of the previous slide in the Command Window:

>> Lecture8Example1 Enter (as a vector) the scores of the three tests [78 61 85] The average grade is: 74.6667

>> Lecture8Example1 Enter (as a vector) the scores of the three tests [60 38 55] The average grade is: 51 The student did not pass the course.

EXAMPLE OF USING THE if-else-end STATEMENT

```
% A script file that demonstrates the use of the if-else-end statement.
% The user is asked to enter three grades. The program calculates
% the average of the grades. If the average is less than 60, a
% massage: The student did not pass the course. is printed.
% Otherwise, a massage: The student passed the course. is printed.
score = input('Enter (as a vector) the scores of the three tests ');
ave_grade = (score(1) + score(2) + score(3))/3;
disp('The average grade is:')
disp(ave_grade)
if ave_grade < 60
  disp('The student did not pass the course.')
else
  disp('The student passed the course.')
end
```

EXAMPLE OF USING THE if-else-end STATEMENT

Executing the script file of the previous slide in the Command Window:

>> Lecture8Example2 Enter (as a vector) the scores of the three tests [65 80 83] The average grade is: 76 The student passed the course. >> Lecture8Example2 Enter (as a vector) the scores of the three tests [60 40 55] The average grade is: 51.6667 The student did not pass the course.

EXAMPLE OF USING THE

if-elseif-else-end STATEMENT

- % A script file that demonstrates the use of the if-elseif-else-end % statement.
- % The program calculates the tip in a restaurant according to the % amount of the bill.
- % If the bill is less than 10\$ the tip is \$1.80.
- % Between \$10 and \$60 the tip is 18% of the bill.
- % Above \$60 the tip is 20% of the bill.

format bank clear tip

(The file continues on the next slide)

(Continuation from the previous slide)

```
bill = input('Enter the amount of the bill (in dollars): ');
if bill \leq 10
  tip = 1.8;
elseif (bill > 10) & (bill <= 60)
  tip = bill^{0.18};
else
   tip = bill^{0.2};
end
disp('The tip is (in dollars):')
disp(tip)
```

EXECUTING THE SCRIPT FILE OF THE RESTAURAT TIP CALCULATION

>> Lecture8Example3 Enter the amount of the bill (in dollars): 15 The tip is (in dollars): 2.70

>> Lecture8Example3 Enter the amount of the bill (in dollars): 6 The tip is (in dollars): 1.80

>> Lecture8Example3
Enter the amount of the bill (in dollars): 100
The tip is (in dollars):
 20.00

(c) 2003 The Ohio State University

COMMENTS ABOUT if-end STATEMENTS

- For every if command a computer program must have an end command.
- A program can have many if end statements following each other.
- A computer program can perform the same task using different combinations of if - end, if - else - end, and if - elseif - else - end statements.