Pseudocode Keywords

• Input statement
• Assignment statement
• Output/Write /Display statement
• Relational Operators
• Logical Operators
• Arithmetic Operators
• Flowchart Symbols
• Pascal Basics
• Desk-checking/Trace Tables
Data Input

The input statement is used to get data from outside the computer via some input device into a variable for manipulation by the pseudocode. Often this data is typed at the computer keyboard by the person using the program. For input we use the keyword “Read” or “Input”.
The data input keyword is used in the following form:

Read variable_name

where variable_name is the name given to the location where the value is to be stored. E.g. if variable name is ‘score’ then the read statement would become:

Read Score
Examples

1. Write a pseudocode to read two numbers into variable A and B.

2. Show the state of the variables A and B after the following values are entered:
   a. 235 and 172
   b. 597 and 920
Input Prompts

When you want the user to input data to a program, you should always provide a prompt indicating that data is needed and explain what type of data is required. If you don’t use a prompt the user will not know what type of data to enter or even aware that execution has paused. The keywords “Write” or “Print” is used display messages and other information on the screen.
Input Prompts (cont’d)

The input prompt is written in the following form:

Write “The instruction to the user”
Or
Print “The instruction to the user”

Whatever is written in quotation will be printed on the screen.
Examples

1. Write an algorithm to read three numbers into variable number1, number2 and number3.

2. Write an algorithm to read the names and ages of three persons.
Assignment Statement

Assignment statements are used to give initial value to variables and to change the value assigned to a variable. The assignment statement has two parts; the left value (variable_name) and the right value (expression or value), written as follows:

Variable_name = Expression
Assignment Statement (cont’d)

Examples:

✓ Score = 84
✓ Sum = num1 + num2
✓ Value = Total

• The expression can be a single value, a calculation or the content of another variable.

• E.g. Write the pseudocode to interchange the values in two variables.
Data Processing Operators

Logical Operator: AND, OR, NOT

Arithmetic Operators:

+  Addition  2 + 3 = 5
-  Subtraction  7 – 3 = 4
*  Multiplication  5 * 4 = 20
/  Division  12 / 3 = 4
^  Exponents  2 ^ 3 = 8
%  Modulus  14 % 4 = 2

(Remainder from integer division)

Relational operators: compare values to one other. The comparison operators are =, <> , < , > , <= , >=
Data Processing Operators

**Relational Operators:**

- `=` Tests whether the two operands are equal.
- `<>` Tests whether the two operands are not equal.
- `<` Tests whether the first operand is less than the second operand.
- `>` Tests whether the first operand is greater than the second operand.
- `<=` Tests whether the first operand is less than or equal to the second operand.
- `>=` Tests whether the first operand is greater than or equal to the second operand.
Hierarchy of Operations

The rules of arithmetic tells us that the order in which arithmetic operations are performed is as follows:

1. Performs the operations in parentheses (from inside out, if there are nested parentheses)

2. Perform exponentiations

3. Do multiplications, division and modulus (from left to right if there is more than one)

4. Do additions and subtractions (from left to right if there is more than one)
QUESTIONS

1. Write an assignment statement to store the value 2000.

2. Write an algorithm to read two numbers and find their sum.

3. Write an algorithm to calculate the salary of a days worker. Input to the program are hours worked for the day and hourly rate.

4. Write an algorithm to read three numbers, find their product, sum and average.
Data Output

A program’s output is data sent by the program to the screen, printer, or another destination such as a file. Output will be in the form of text and values (for our purpose). For data output, the keywords “Print” or “Write” will be used. The output statement takes the form:

Write “statement”, variable_name

Or

Print “statement”, variable_name
Data Output

1. When a program or pseudocode encounters a “Print” statement, it is interpreted as follows:
   a. *If the information is between quotes, print the information between the quotes as is.*
   b. *If a variable is a part of the information that follow “Print”, print the content of the variable.*

2. The print statement must be at the right place in the program

3. Variables are not included between quotes but separated from the quoted information by a comma.
QUESTIONS

(Refer to questions on slide 14)

1. Modify question 3 to print the hours worked, hourly rate and salary.

2. Modify question 4 to print the product, sum and average.

3. Write an algorithm to read three numbers and find their product and average. Print the sum of the average and the product.

4. Write an algorithm to calculate the cost of a product given the quantity and the unit price. The cost, quantity and unit price must be printed.
Introduction to Pascal Software