

Pseudocode:

Pseudocode is an artificial and informal language that helps programmers develop algorithms. Pseudocode is a "text-based" detail (algorithmic) design tool.

The rules of Pseudocode are reasonably straightforward. All statements showing "dependency" are to be indented. These include while, do, for, if, switch. Examples below will illustrate this notion.

Example #1

If student's grade is greater than or equal to 60

```
    Print "passed"
else
    Print "failed"
```

Example #2

Computing Sales Tax : Pseudo-code the task of computing the final price of an item after figuring in sales tax. Note the three types of instructions: input (**get**), process/calculate (=) and output (**display**)

1. **get** price of item
2. **get** sales tax rate
3. sales tax = price of item multiply sales tax rate
4. final price = price of item plus sales tax
5. **display** final price

Variables: price of item, sales tax rate, sales tax, final price

Note that the operations are numbered and each operation is unambiguous and effectively computable. We also extract and list all variables used in our pseudo-code. This will be useful when translating pseudo-code into a programming language

Example #3

Computing a Quiz Average: Pseudo-code a routine to calculate your quiz average.

1. **get** number of quizzes
2. sum = 0

3. count = 0
4. while count < number of quizzes
 - 4.1 get quiz grade
 - 4.2 sum = sum + quiz grade
 - 4.3 count = count + 1
5. average = sum / number of quizzes
6. display average

variables: number of quizzes, sum ,count, quiz grade, average

This example introduces an *iterative* control statement. As long as the condition in line 4 is True, we execute the subordinate operations 4.1 - 4.3. When the condition becomes False, we resume the pseudo-code at line 5.

This is an example of a *top-test* or *while do* iterative control structure. There is also a *bottom-test* or *repeat until* iterative control structure which executes a block of statements until the condition tested at the end of the block is False.

Some Keywords that should be used

For looping and selection, The keywords that are to be used include Do While...EndDo; Do Until...Enddo; Case...EndCase; If...Endif; Call ... with (parameters); Call; Return; Return; When; Always use scope terminators for loops and iteration.

As verbs, use the words Generate, Compute, Process, etc. Words such as set, reset, increment, compute, calculate, add, sum, multiply, ... print, display, input, output, edit, test , etc. with careful indentation tend to foster desirable pseudocode.

Do not include data declarations in your pseudocode.

Lab Tasks

Task 1: Write a Pseudo code to calculate the area of a circle and display the result. Use the formula: $A = \pi r^2$ where Pi is approximately equal to 3.1416.

Task 2: Write a Pseudo code that computes the average of three input quizzes, and then display the result.

Task 3: Write a Pseudocode that converts the input Fahrenheit degree into its Celsius degree equivalent. Use the formula: $C = (5/9) * F - 32$.

Task 4: Create a Pseudocode to compute the volume of a sphere. Use the formula: $V = \frac{4}{3} * \pi r^3$ where π is equal to 3.1416 approximately. The r^3 is the radius. Display result.

Task 5: Write a Pseudocode that converts the input Celsius degree into its equivalent Fahrenheit degree. Use the formula: $F = \frac{9}{5} * C + 32$.