

The Problem:        during the semester, the formal specification of the simple payroll problem will be available via the course Website at:

<http://ei.cs.vt.edu/~cs1044/>

Sample input and output and a collection of C++ implementations featuring various language capabilities can be found in Appendix 5 of these notes.

- I. Set up input and output files
- II. Print header to output file
- III. Try to read data for first employee (priming read)
- IV. While the last read succeeded Do
  - A. Perform calculations for current employee
  - B. Print results for current employee
  - C. Try to read data for next employeeEndwhile
- V. Print out summary information:
- VI. Close input and output files:

NumEmp		number of employees
IdNum		employee ID number
Age		employee age
GrossPay		employee gross pay amount
NetPay		employee net pay amount
SSI		employee SSI tax
FIT		employee income tax
InsFee		employee insurance fee
InsPlan		employee insurance plan code
TotalGrossPay	0.0	total of gross pay amounts
TotalNetPay	0.0	total of net pay amount
TotalSSI	0.0	total of SSI tax
TotalFIT	0.0	total of income tax
TotalInsFee	0.0	total of insurance fee

I. Set up input and output files:

A. Open input file: "workers.dat"

B. Open output file: "payola.dat"

II. Print header to output file:

A. Print programmer's name

B. Print title

C. Print blank line

D. Print column labels

E. Print table delimiters

III. Try to read data for first employee (priming read):

A. Read id number into: IdNum

B. Read age into: Age

C. Read gross pay into: GrossPay

D. Read insurance plan code into: InsPlan

IV. While the last read succeeded Do

A. Count this employee by incrementing NumEmp

B. Calculate insurance fee InsFee for this employee:

1. If Basic Plan is selected Then

    If Age is in low bracket Then

        InsFee <-- low Basic Plan rate

    Else If Age is in middle bracket Then

        InsFee <-- middle Basic Plan rate

    Else

        InsFee <-- high Basic Plan rate

    Endif

Else

    If Age is in low bracket then

        InsFee <-- low Deluxe Plan rate

    Else If Age is in middle bracket then

        InsFee <-- middle Deluxe Plan rate

    Else

        InsFee <-- high Deluxe Plan rate

    Endif

Endif

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C. Calculate income tax FIT for this employee:
  1. If GrossPay is in low bracket Then
      Apply low rate to gross pay
  Else If GrossPay is in middle bracket Then
      Apply low rate to income in low bracket
      and middle rate to rest
  Else
      Apply low rate to income in low bracket
      and middle rate to income in middle bracket
      and high rate to rest
  Endif

D. Calculate social security tax SSI for this employee:
  1. SSI <-- SSI tax rate * GrossPay

E. Calculate net pay NetPay for this employee:
  1. NetPay <-- GrossPay - FIT - SSI - InsFee
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F.  Update running totals:
    1.  Add GrossPay to TotalGrossPay
    2.  Add FIT to TotalFIT
    3.  Add SSI to TotalSSI
    4.  Add InsFee to TotalInsFee

G.  Print employee data to output file:
    1.  Print id number:           IdNum
    2.  Print gross pay:          GrossPay
    3.  Print income tax:         FIT
    4.  Print social security tax: SSI
    5.  Print insurance fee:      InsFee
    6.  Print net pay:           NetPay

H.  Skip over employee name to beginning of next input line

I.  Try to read data for next employee:
    1.  Read id number into:      IdNum
    2.  Read age into:           Age
    3.  Read gross pay into:      GrossPay
    4.  Read insurance plan code into: InsPlan

Endwhile
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V.  Print out summary information:
    A.  Print table delimiters
    B.  If there were employees Then
        1.  Print label
        2.  Print average gross pay:          TotalGrossPay/NumEmp
        3.  Print average income tax:        TotalFIT /NumEmp
        4.  Print average social security tax: SSI/NumEmp
        5.  print average insurance fee:     InsFee/NumEmp
        6.  print average net pay:           NetPay/NumEmp
    Endif

VI.  Close input and output files:

    A.  Close input file
    B.  Close output file
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