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COSC 120-751

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Project 1

Part 1: Algorithm and Pseudocode

*Algorithm:

The project is to create a program that takes input from the user and outputs how much money a salesman at Pohanka, a car dealership in Salisbury Maryland makes off sales along with their base salary. The program will use a series of if/else statements in order to output varying incomes for different salesmen. There will be variables that will have user input assigned into them, and these will be used to perform calculations for a salesman's income using specific constants to that particular case.

Some of the nouns included in the problem are:

Employee, salespersons, salesman, commission, salary, sale, rates, problem, user, keyboard, first name, last name, total, average, amount, dollar, employment, length.

Some critical nouns are:

Salespersons: it will be an int data type variable that is assigned value from user input that determines the amount of salesmen there are at Pohanka.

Employee, it will be a string data type variable with getline(cin, employeehours); and employee hours in order to determine if their hours are full time or part time.

Commission: it will be a double data type that will be a constant, and there will be three different commission percentages for each commission bracket.

Salary: it will be a double data type that will be a constant as well and there will be four different salary constants. They will be unique and they will be used in each calculation of income using if/else statements to determine the working hours of each salesman.

Sale: it will be a double data type that will be a variable that the user inputs the value of the sale the salesman made.

Rate: it will be a double data type and will be a variable that gets assigned one of three values, depending on the value of the sale which is determined using a series of if/else statements.

First Name: it will be a string data type variable that will be assigned a value input by the user for the salesman's first name

Last Name: it will be a string data type variable that will be assigned a value input by the user for the salesman's last name

Total Sale: it will be a double data type variable that will be assigned a value from a calculation performed by the program for the percent of the commission the salesman gets.

Total Salary: it will be a double data type that takes the constant base salary given to that salesman, and added with the total sale to determine the income that salesman made.

Average Commission: it will be a double data type variable that is assigned the average of all the commissions of each salesman.

Average Salary: it will be a double data type variable that is assigned the average of all the salaries of each salesman.

Some of the verbs included in the program are:

Calculate, write, paid, worked, consists, is, gets, pays, read, exits, displays.

Pseudocode:

Constants:

1. Commission rateunder15k = .10
2. Commisision ratebetween15kand60kfirst = .10
3. Commission ratebetween15kand60ksecond = .15
4. Commission rateover60k = .33
5. Salary parttimenotenure = 0
6. Salary parttimetenure = 2500
7. Salary fulltimenotenure = 5000
8. Salary fulltimetenure = 10000

Variables:

1. Salespersons salesmen
2. Employee employeehours
3. Sale salevalue
4. Rate commissionrate
5. Name firstname

6. Name lastname
7. Average avgcommission
8. Average avgsalary
9. Salary salary

Pseudocode Main Function:

int main()

{

Define int salesmen

Define string employeehours

Define string employeetenure

Define salevalue

Define commissionrate

Define commissionrate1

Define commissionrate2

Define firstname

Define lastname

Output “Enter the amount of salesmen that work at Pohanka”

Input salesmen

Start for loop that executes and increments salesmen++ each time

Output “Enter the salesman’s first name”

Input firstname

Output “Enter the salesman’s last name”

Input lastname

Output “Enter full time if the salesman is full time and part time if they are part time”

Input employeehours

Output “Enter five years if salesman has been working for more than five years and not five years if they have not”

If statement for employeehours = full time and five years

    Salary = fulltimetenure

If statement for employeehours = full time and not five years

    Salary = fulltimenotenure

If statement for employeehours = part time and five years

    Salary = parttimetenure

If statement for employeehours = part time and not five years

    Salary = parttimenotenure

Output “Enter the salesman’s recent sale value”

Input salevalue

If statement for if sale is less than 15,000{

    Commissionrate = salevalue * rateunder15k

}

Else if statement for sale is less than 60,000 and more than 15,000{

    Commissionrate1 = 15,000 * ratebetween15kand60kfirst

    Commissionrate2 = (salevalue – 1500) * ratebetween15kand60ksecond

    Commissionrate = commissionrate1 + commissionrate2

}

Else if statement for sale is more than 60,000{

    Commissionrate = salevalue * rateover60k

}

Else if statement when salevalue < 0{

    Output “enter a nonnegative number”

}

Output “salesman” >> firstname >> lastname >> “earned $” >> commissionrate >> “off a $” salevalue >> “sale and earned a $” >> salary >> “ this year.” >> endl;

Average salary = average + salary

Average commission = average + commission

Output average salary

Output average commission

Part 2: Source Code:

```
//Nick Krisulevicz
//Project 1
//10/02/2020

#include <iostream>
#include <iomanip>
#include <cmath>
#include <string> //
using namespace std;

const double rateunder15k = 0.10;
const double ratebetween15kand60kfirst = 0.10;
const double ratebetween15kand60ksecond = 0.15;
const double rateover60k = 0.33;
//These constants are for the commission rates
const double parttimenotenure = 0.00;
const double parttimetenure = 2500.00;
const double fulltimenotenure = 5000.00;
const double fulltimetenure = 10000.00;
//These constants are for the salaries rates
```

```
int main()
{
   int salesmen;
   string firstname;
   string lastname;
   string hours;
   string tenure;
   double salevalue;
   double commission;
   double commissionrate1;
   double commissionrate2;
   double salary;
   double avgcommission;
   double avgsalary;
   //These are all the variables used in the program

   cout << fixed << setprecision(2) << showpoint;
   //this statement ensures all operations with money display two floating point zeroes

   cout << "Enter the amount of salesmen who work for Pohanka." << endl;
   cin >> salesmen;
   //this statement prompts the user to input the number of salesmen the program will ask for
details for.

   for (int i = 0;i < salesmen; i++){ //The for loop that runs for each salesman

      cout << "Enter the salesman's first name." << endl;
      cin >> firstname;
      //prompts the user to input the first name
```

```
    cout << "Enter the salesman's last name." << endl;

    cin >> lastname;

    //prompts the user to input last name

    cout << "Enter fulltime if the salesman works full time, and parttime if the salesman works part time" << endl;

    cin >> hours;

    //prompts user to input whether the salesman works full time or part time

    cout << "Enter fiveyears if the salesman has worked at least five years, and notfiveyears of the salesman has not worked five years." << endl;

    cin >> tenure;

    //prompts the user to input whether the salesman worked for more than five years or not

    if (hours == "parttime" && tenure == "notfiveyears"){

       salary = parttimenotenure;

    }

    else if (hours == "parttime" && tenure == "fiveyears"){

       salary = parttimetenure;

    }

    else if (hours == "fulltime" && tenure == "notfiveyears"){

       salary = fulltimenotenure;

    }

    else if (hours == "fulltime" && tenure == "fiveyears"){

       salary = fulltimetenure;

    }

    //the if/else statement series that determines the salary of the salesman based off two criteria, how much they work and how often they work

    cout << "Enter the value of the salesman's recent sale $";

    cin >> salevalue;

    cout << endl;

    //prompts the user to input the value of the salesman's most recent sale

    if (salevalue >= 15000){
```

```
            commission = salevalue * rateunder15k;
        }
        else if(salevalue >= 15001 && salevalue <= 60000){
            commissionrate1 = 15000 * ratebetween15kand60kfirst;
            commissionrate2 = (salevalue - 15000) * ratebetween15kand60ksecond;
            commission = commissionrate1 + commissionrate2;
        }
        else if (salevalue >= 60001){
            commission = salevalue * rateover60k;
        }
        else if (salevalue < 0){
            cout << "Enter a non-negative number" << endl;
        }
        //the if/else if statement series that determines the amount of commission dependent on the price of the sale and if it is within a certain range of money
        cout << "Salesman " << firstname << " " <<  lastname << " has earned $" << commission << " off a $" << salevalue << " sale and earned $" << salary << " this year." << endl;
        //the final output statement that displays the salesman's name, sale value, commission, and salary
        avgsalary = avgsalary + salary;
        avgcommission = avgcommission + commission;
    }
    avgsalary = avgsalary / salesmen;
    avgcommission = avgcommission / salesmen;
    //calculation statements to determine the final average salaries and commission
    cout << endl;
    cout << "The average salary is $" << avgsalary << endl;
    cout << "The average commission is $" << avgcommission << endl;
    //the final output statement for the calculated commissions and salaries
    return 0;
```

Part 3: Testing Plan

Output 1: one salesman full time five years, one salesman part time not five years

Enter the amount of salesmen who work for Pohanka.

2

Enter the salesman's first name.

Mike

Enter the salesman's last name.

Sauer

Enter fulltime if the salesman works full time, and parttime if the salesman works part time

fulltime

Enter fiveyears if the salesman has worked at least five years, and notfiveyears of the salesman has not worked five years.

fiveyears

Enter the value of the salesman's recent sale $120000

Salesman Mike Sauer has earned $12000.00 off a $120000.00 sale and earned $10000.00 this year.

Enter the salesman's first name.

Richard

Enter the salesman's last name.

Wu

Enter fulltime if the salesman works full time, and parttime if the salesman works part time

parttime

Enter fiveyears if the salesman has worked at least five years, and notfiveyears of the salesman has not worked five years.

notfiveyears

Enter the value of the salesman's recent sale $11000

Salesman Richard Wu has earned $12000.00 off a $11000.00 sale and earned $0.00 this year.

The average salary is $5000.00

The average commission is $12000.00

Output 2: two salesmen full time not five years

Enter the amount of salesmen who work for Pohanka.

2

Enter the salesman's first name.

Jake

Enter the salesman's last name.

Sauer

Enter fulltime if the salesman works full time, and parttime if the salesman works part time

fulltime

Enter fiveyears if the salesman has worked at least five years, and notfiveyears of the salesman has not worked five years.

notfiveyears

Enter the value of the salesman's recent sale $69000

Salesman Jake Sauer has earned $6900.00 off a $69000.00 sale and earned $5000.00 this year.

Enter the salesman's first name.

Patty

Enter the salesman's last name.

Patterson

Enter fulltime if the salesman works full time, and parttime if the salesman works part time

fulltime

Enter fiveyears if the salesman has worked at least five years, and notfiveyears of the salesman has not worked five years.

notfiveyears

Enter the value of the salesman's recent sale $6900

Salesman Patty Patterson has earned $6900.00 off a $6900.00 sale and earned $5000.00 this year.

The average salary is $5000.00

The average commission is $6900.00

Output 3: two salesmen part time not five years

Enter the amount of salesmen who work for Pohanka.

2

Enter the salesman's first name.

Andrew

Enter the salesman's last name.

Metz

Enter fulltime if the salesman works full time, and parttime if the salesman works part time

parttime

Enter fiveyears if the salesman has worked at least five years, and notfiveyears of the salesman has not worked five years.

notfiveyears

Enter the value of the salesman's recent sale $80000

Salesman Andrew Metz has earned $8000.00 off a $80000.00 sale and earned $0.00 this year.

Enter the salesman's first name.

Hayden

Enter the salesman's last name.

Hertz

Enter fulltime if the salesman works full time, and parttime if the salesman works part time

parttime

Enter fiveyears if the salesman has worked at least five years, and notfiveyears of the salesman has not worked five years.

notfiveyears

Enter the value of the salesman's recent sale $43000

Salesman Hayden Hertz has earned $4300.00 off a $43000.00 sale and earned $0.00 this year.

The average salary is $0.00

The average commission is $6150.00

I got help from my buddy Mike who let me use his expensive keyboard to type on.