Tugas Praktikum Pemrograman

Nama: Kenji Ratanaputra
NIM : 24/534421/PA/22664
Prodi : Ilmu Komputer
Pertemuan: 2
Source Code: https://github.com/Kenzi-R/Praktikum-Pemrograman/tree/main/Pertemuan%202

2.3 Assignment

2.3.1 Problem 1 (40 points)

You are tasked with creating a payslip for an employee. The payslip should include the following details:

• Name: The name of the employee.

• Gross Salary: The gross salary of the employee, given as a percentage of the base salary.

• Tax: A flat tax rate of 20%.

• Installment: A fixed installment amount.

• Insurance: A fixed insurance amount.

The payslip should be displayed in a table format, and your program should calculate

the net salary after tax, installment, and insurance deductions.

Requirements:

• Calculate the gross salary from the percentage.

• Deduct the tax (20%) from the gross salary.

• Subtract the fixed installment and insurance amounts.

• Display the payslip in a table format.

2.3.2 Homework Problem 2: Solving a Quadratic Equation (40 points)

You are given a quadratic equation of the form:

ax^2 + bx + c = 0

where a, b, and c are coefficients. Your task is to write a C++ program to solve the quadratic equation and find the values of x.

Here's what you need to do:

1. Write a C++ program that prompts the user to input the coefficients a, b, and c one by one.

2. Calculate the discriminant:

$\Delta = b^2 - 4ac$

3. Use the quadratic formula to calculate the roots:

• If $\Delta > 0$, there are two distinct real roots:

$$x1 = \frac{-b + \sqrt{\Delta}}{2a}$$

$$x2 = \frac{-b - \sqrt{\Delta}}{2a}$$

• If $\Delta = 0$, there is exactly one real root:

$$x = \frac{-b}{2a}$$

• If $\Delta < 0$, there are no real roots (the roots are complex).\

2.3.3 Homework Problem 3 (20 points)

Imagine I am your supervisor. Please write a test code for your previous two assignments to demonstrate that your solutions are working correctly.

Requirements:

• Test for Payslip Calculation (from Problem 1):

– Create test cases with different employee names, gross salary percentages, fixed

installments, and insurance amounts.

– Ensure your test cases cover various scenarios, such as high and low gross

salaries and different installment and insurance amounts.

– Verify that the payslip output is correctly formatted and that the net salary

is calculated accurately.

• Test for Quadratic Equation Solver (from Problem 2):

– Create test cases with different values for coefficients a, b, and c.

– Include scenarios where the discriminant (Δ) is positive, zero, and negative.

– Ensure that your program correctly handles each case and outputs the correct

roots or indicates that the roots are complex.

Steps:

1. Write test code that includes various input values for both the payslip calculation and quadratic equation solver.

2. Run the test code and verify the results against expected outputs.

3. Document the results of your tests, including any discrepancies or issues found.

4. Submit your test code along with a brief report summarizing your test cases, results, and any findings.

Submit: Your test code file and a report summarizing your test cases and results.

Code untuk Payslip Calculation

SalarySlip.cpp | Quadratic Formula.cpp

D: > Kuliah > Prak Prog > Praktikum Pemrograman > Pertemuan 2 > SalarySlip.cpp > main()

```cpp
#include <bits/stdc++.h>
using namespace std;

    int main(){
        string name;
        //Input
        double salary,tax,installment,insurance,net;
        getline(cin,name);                      //Input nama
        cin>>salary>>installment>>insurance;    //Input Gaji Kotor, Cicilan ,dan Asuransi
        tax=salary*1/5;                         //Perhitungan pajak dari 20% Gaji Kotor
        net=salary-tax-installment-insurance;   //Perhitungan uang sisa setelah dipotong cicilan, asuransi dan pajak

        //Output
        cout<<"Payslip for Employee"<<endl;
        cout<<"--------------------"<<endl;
        cout<<"Name: "<<name<<endl;
        cout<<"Gross Salary: Rp"<<salary<<",00"<<endl;
        cout<<"Tax (20%): Rp"<<tax<<",00"<<endl;
        cout<<"Installment: Rp"<<installment<<",00"<<endl;
        cout<<"Insurance: Rp"<<insurance<<",00"<<endl;
        cout<<"Net Salary: Rp"<<net<<",00"<<endl;
    }
```

Test for Payslip Calculation (from Problem 1):

Test Case 1
Kenji Ratanaputra
1000000
100000
50000
Expected Output:

Payslip for Employee

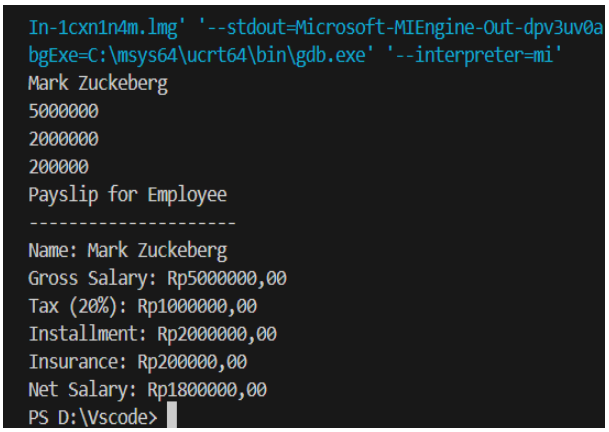
Name: John Doe
Gross Salary: Rp1000000,00
Tax (20%): Rp200000,00
Installment: Rp100000,00
Insurance: Rp50000,00
Net Salary: Rp650000,00

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORT

```
In-gtbpzjmg.ts2' '--stdout=Microsoft-MIEngine-Out
bgExe=C:\msys64\ucrt64\bin\gdb.exe' '--interprete
Kenji Ratanaputra
1000000
100000
50000
Payslip for Employee
--------------------
Name: Kenji Ratanaputra
Gross Salary: Rp1000000,00
Tax (20%): Rp200000,00
Installment: Rp100000,00
Insurance: Rp50000,00
Net Salary: Rp650000,00
```

Test Case 2
Mark Zuckeberg
5000000
2000000
200000
Expected Output:
Payslip for Employee

Name: Mark Zuckeberg
Gross Salary: Rp5000000,00
Tax (20%): Rp1000000,00
Installment: Rp2000000,00
Insurance: Rp200000,00
Net Salary: Rp1800000,00



Code untuk Mencari Persamaan Kuadrat

SalarySlip.cpp | Quadratic Formula.cpp

D: > Kuliah > Prak Prog > Praktikum Pemrograman > Pertemuan 2 > Quadratic Formula.cpp >

```cpp
#include <bits/stdc++.h>
using namespace std;

    int main(){
    double a,b,c;
    cout<<"input a=";cin>>a;     //Memasukan ax^2
    cout<<"input b=";cin>>b;     //Memasukan bx
    cout<<"input c=";cin>>c;     //Memasukan c

    double d=(b*b)-(4*a*c);      //Perhitungan nilai diskriminan
    double x1,x2,x;
    //Jika Nilai Diskriminan besar dari 0
    if(d>0){
        x1=((-b)+(sqrt(d)))/(2*a);
        x2=((-b)-(sqrt(d)))/(2*a);
        cout<<"X1="<<x1<<endl;
        cout<<"X2="<<x2<<endl;
        }
    //Jika nilai diskriminan sama dengan 0
    else if(d==0){
            x=(-b)/(2*a);
            cout<<"X=";
            cout<<x;
        }
    //Jika nilai diskriminan kecil dari 0
    else if(d<0){
            cout<<"No root Solution"<<endl;
            return 0;
        }
    }
```

Test for Quadratic Equations (Problem 2)

- If D=0

```
PS D:\Vscode>  &
-MIEngine-In-k1
d-2dak0dfu.n5g'
input a=1
input b=2
input c=1
X=-1
```

$x^2 + 2x + 1$=0; Expected Output = X=-1

a=1, b=2, c=1

```
PS D:\Vscode>
PS D:\Vscode>  & 'c:
-MIEngine-In-dsrts2h
d-1kytjzmu.ipq' '--d
input a=4
input b=16
input c=16
X=-2
```

$4x^2 + 16x + 16$=0; Expected Output = X=-2

a=4, b=16, c=16

- If D>0

```
PS D:\Vscode>
PS D:\Vscode>  &
-MIEngine-In-lk32s
d-n5cvau5h.ibs' '-
input a=1
input b=-2
input c=-15
X1=5
X2=-3
PS D:\Vscode>
```

x^2-2x-15=0; Expected Output = X1=5, X2=-3

a=1, b=-2, c=-15

```
d-gq1ymsm2.xp5' '-
input a=6
input b=5
input c=-6
X1=0.666667
X2=-1.5
PS D:\Vscode>
```

$6x^2$+5x-6=0; Expected Output = X1=0.666667, X2=-1.5

a=6, b=5, c=-6

- If D<0

```
-MIEngine-In-w4lqnljt.e2r'
d-4pcybdpp.dwz' '--dbgExe=
input a=1
input b=1
input c=1
No root Solution
PS D:\Vscode> ^C
```

x^2+x+1=0;Expected Output = No Root Solution

a=1, b=1, c=1