**PROJECT REPORT**

*On*

**Payroll Management System**

(III Semester Mini Project)

Submitted in partial fulfillment of the requirement for the III semester

**Bachelor of Computer Science and Engineering**

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***Guided By: Submitted By:***

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CSE-III-SEM

Section : G (12)

Session : 2021-22

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

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**CANDIDATE’S DECLARATION**

I hereby certify that the work which is being presented in the dissertation entitled **“Payroll Management System”** in partial fulfillment of the requirements for the award of the Degree of Bachelor of Technology in Computer Science and Engineering, submitted in the Department of Computer Science and Engineering of the Graphic Era Deemed to be University, Dehradun is an authentic record of my own work carried out under the supervision of Mr. Pankaj Kumar, Assistant Professor, Department of Computer Science and Engineering of the Graphic Era Deemed to be University, Dehradun (Uttarakhand).

**Name- Ruudra Amola**

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**CSE-Core (III Semester)**

**PROBLEM STATEMENT:**

To create a simple Payroll Management System in Python language which takes employee details as input and gives computed Monthly Salary as the main output.

**SOFTWARES AND TOOLS/MODULES USED:**

* **Language used**- Python (version-3.10.2)
* **GUI used-** Tkinter based on Python used for creating interface
* **Modules used**- tkinter module, datetime module, time module
* Used online **CSS color picker** to add hexadecimal color codes.
* **IDE used** - Visual Studio Code by Microsoft

**MOTIVATION:**

The main motivation and idea behind taking up this project was to have an experience with a new programming language which is not part of our main course curriculum and to gain a basic knowledge about application building.

My other motivation was to know and implement a system which has a vast real time and practical application in the industry, so I took up Payroll Management system as my topic.

A Payroll Management System being an integral part of every organization, is a software which generally computes monthly net salary of an employee working in any organization. It calculates this by deducting different forms of taxes and adding bonuses to and from the gross pay of an employee. This being my first project, I have kept the working interface very simple and limited to my knowledge. It performs 4 major operations-

Computes monthly Net Pay, Prints employee Pay Slip with complete details, Resets the system for a new entry and One exit operation to close the application.

As I have no past in-hand experience in working with GUI based applications, I mainly used a very simple GUI to work with in python language called as Tkinter GUI which has somewhat different syntax from basic python.

Overall, it was a great experience for me to learn something out of the books and implement it myself.

**METHODOLOGY AND ABOUT THE PROJECT:**

The project is developed in **Python language**. Python is an interpreted high-level general-purpose programming language. Python's design philosophy emphasizes code readability with its notable use of significant indentation. Its language constructs as well as its object-oriented approach aim to help programmers write clear, logical code for small and large-scale projects. Python consistently ranks as one of the most popular programming languages.

A **GUI or Graphical User Interface** is a system of interactive Visual components of a computer software. A GUI displays objects and entities which represent actions that can be taken by the user. The objects have different shapes, sizes, color as the user interacts with it. The concept of GUI was first introduced in 1981. A GUI may have several interactive elements such as Buttons, Icons, Menu bars, Tabs, Toolbars, background window, widgets and much more.

Python offers multiple options for developing a GUI. Out of many GUI creation methods, one of the most used GUI is **Tkinter**. It’s a standard interface to the Tk GUI toolkit shipped by python. Tkinter is the fastest method to create GUI apps using python. To use tkinter we have to import the tkinter module in the program by typing “**import tkinter**”.

There are 2 main methods used in tkinter-

1. **Tk ()** to create the main application window
2. **mainloop()** is used when your application is ready to run after you have included everything in your application code.

import time

import datetime

from tkinter import \*

import tkinter.messagebox

The **import time** module allows the program to retrieve the current time at which the program is executed.

The **import datetime** module extracts the current date.

The **import tkinter.messagebox** module is used to display messages or small pop up windows in the application.

I also used the **Online Color picker tool** to apply **hexadecimal** color codes in the code to reflect it in the application. This tool makes it easy to create, adjust, and experiment with custom colors for the web.

**A brief understanding of the logical calculation part in my code is as follows:**

This program mainly takes 6 parameters as input which are-

* Name of Employee
* Address of Employee
* Name of Employer
* Employee ID
* Weekly work hours
* Hourly pay

And gives 4 outputs which are-

* Monthly Tax rate in rupees
* Over time Bonus in rupees
* Weekly Gross Pay
* Monthly Net Pay

The program has 4 main operations which are briefly explained as follows-

1. **To Reset the System:**

def reset():

This function clears all the previously inputted contents from the application and make it ready for a new set of entries.

1. **To Print Pay Slip:**

def payslipinfo():

This function prints all the contents of an employee’s pay slip along with inputted details in a separate widget in the application.

1. **Performs calculations at the backend:**

def monthlypay():

This is the main logic function of the program that does all the calculations in the backend. The aim of this function is to compute the 4 outputs stated above in this page.

 weeklyworkhours=float(HoursWorked.get())

 hourlywage=float(payperhour.get())

So, for input the program takes two variables namely **weeklyworkhours** and **hourlywage,** where weeklyworkhours represents the number of hours an employee has worked in a week and hourlywage is the amount which the company pays to the employee in one hour.

  overtimehours=(weeklyworkhours-40)

  overtimepay=overtimehours\*hourlywage\*1.5

Here, the program calculates overtime hours in the first line in which 40 is taken as 8 hours of work per day multiplied by 5 working days in a week.

And then we calculate the over time bonus in the second line where it is calculated as 1.5 times the regular gross pay.

#if overtime hours exist...

  if (overtimehours>0):

    otbonus="INR",str('%.2f'%(overtimepay))

    OverTimeBonus.set(otbonus)

    grosspay=hourlywage\*weeklyworkhours+overtimepay-(overtimehours\*hourlywage)

    paymentdue="INR",str('%.2f'%(grosspay))

    Payable.set(paymentdue)

  #if overtime hours doesnt exist...

  elif (overtimehours<=0):

    overtime="INR",str('%.2f'%(overtimepay))

    grosspay=hourlywage\*weeklyworkhours

    paymentdue="INR",str('%.2f'%(grosspay))

    Payable.set(paymentdue)

Now, we run an if-else statement which tests two conditions.

* First is when overtime hours exist that means the employee has worked more than 40 hours in a week. The gross pay is calculated after adding the overtime bonus to the original gross pay.
* Second in the else loop if the overtime hours do not exist which means the employee has worked either exactly 40 hours in a week of less than that.

  tax=grosspay\*4\*0.2

  taxed="INR",str('%.2f'%(tax))

  TaxValue.set(taxed)

In this part, the program is computing the monthly tax rate in rupees. The tax rate here is assumed to be 20% which is normally generalized by the government and is fixed, that’s why we have multiplied the gross pay by 0.2. Also 4 is multiplied because there are 4 weeks in a month so final set value will be of monthly tax rate.

  netpay=(grosspay\*4)-tax

  totalnetpay="INR",str('%.2f'%(netpay))

  NetPayable.set(totalnetpay)

In this final part of this function the program calculates the most important value of the whole system which is the Monthly Net Pay. Multiplying the Gross pay by 4 makes it monthly gross pay and the tax rate is deducted from the gross pay to obtain the total Net pay, also called the take home salary of an employee.

1. **Function to exit the system:**

def exit():

This is the final operation of the application. Under this function the program asks the user if he wants to exit the system using the tkinter message box module and exit () function.

**CONCLUSION:**

This project helped me to gain knowledge about the python language and its basic features. After and during my work on the project I was able to understand the concept of Graphical User Interface or GUI. The simplicity and vastness of the python language and its developer friendly syntax was very interesting to study. The knowledge of Python and its libraries which the project provided, would now enable me to quickly and efficiently write codes and help me in future.

A Payroll Management software helps streamline and centralizes the salary payments of your organization. The software calculates salaries, tax deductions, incentives and bonuses by itself, sorts out the issues related to payments and deductions and records it digitally into its database.

Some wide applications of a payroll management system in an organization’s database are-

* Time Management
* Attendance Tracking
* Leave Tracking and management
* Integration with Accounting system

Throughout the course of my project, I was very much active on some major programming sites like w3schools.com and geeksforgeeks.com for assistance and learning as this was a first-time experience in application building for me.

**THANKYOU!!**