**CAPITAL UNIVERSITY OF SCIENCE AND TECHNOLOGY**



**FACULTY OF ENGINEERING**

A Project Report submitted to the

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

in partial fulfillment of the requirements for the degree of

BACHELORS OF CYBER SECURITY

**PROJECT:**

**Basic payroll system for employee salaries**



PRESENTED BY

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Islamabad

JANUARY,2025

# DECLARATION

It is declared that this is an original piece of our own work, except where otherwise acknowledged in text and references. This work has not been submitted in any form for another degree or diploma at any university or other institution for tertiary education and shall not be submitted by us in future for obtaining any degree from this or any other University or Institution.

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# CERTIFICATE OF APPROVAL

It is certified that the project titled “**Basic payroll system for employee salaries**

” carried out by ghulam muhammad “BCY243016”, jawaria shakeel” BCY243012” under the LECTURER of SIR WAQAS, **Capital University of Science & Technology, Islamabad,** is fully adequate, in scope and in quality, as a FIRST SEMESTER project for the degree of BS CYBER SECURITY.

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**Introduction**

The payroll system is a critical component of any organization. It ensures timely and accurate payment of employee salaries while managing complex calculations, including gross pay, deductions, and net pay. This report presents a Basic Payroll System developed in C++, designed to streamline payroll operations and provide a secure and efficient mechanism for salary management**.**

**2. Overview**

The Basic Payroll System is a software solution developed to handle payroll processes efficiently. It includes features such as:

* Admin registration and login.
* Employee data management.
* Salary calculation based on input parameters like hours worked and hourly rates.
* Tax and allowance computations.
* Report generation for payroll summaries.

This system leverages C++ programming to ensure fast and reliable performance while maintaining data security.

**3. Project Idea**

The idea behind the Basic Payroll System is to automate payroll operations, reduce manual errors, and enhance data management. By utilizing C++, the project ensures high performance, ease of maintenance, and scalability.

Key features include:

* User authentication for system security.
* Dynamic handling of employee records.
* Real-time salary calculation.
* Efficient file handling for data storage and retrieval.

**4. Purpose of the Project**

The primary purpose of the Basic Payroll System is to:

1. Simplify the payroll process for administrators.
2. Ensure accurate and timely salary payments.
3. Protect sensitive employee data with secure authentication mechanisms.
4. Reduce administrative costs and time spent on payroll management.

**5. Project Specification**

The project specifications include:

* Programming Language: C++.
* System Features:
  + Admin registration and login functionalities.
  + Employee record management.
  + Automated salary calculations including:
    - Gross Pay = (Hours Worked × Hourly Rate) + Allowance.
    - Tax = 10% of Gross Pay.
    - Net Pay = Gross Pay - Tax.
  + File handling for persistent data storage.
  + Payroll summary generation.
* User Interface: Console-based, with a focus on simplicity and usability.

**6. Application of the Project**

The Basic Payroll System can be applied in various organizational contexts, including:

1. Small to Medium Enterprises (SMEs): Streamlining payroll operations.
2. Freelancers or Consultants: Managing personal payroll.
3. Educational Institutions: Handling faculty and staff salaries.
4. Non-Profit Organizations: Ensuring transparency and accountability in payroll management**.**

**7. Project Plan**

The development of the project was carried out in the following stages:

1. Requirement Analysis:
   * Identifying essential functionalities for a payroll system.
2. Design Phase:
   * Structuring the system’s components.
3. Implementation:
   * Developing the system using C++.
4. Testing:
   * Validating accuracy in calculations and functionality.
5. Deployment:
   * Deploying the system for user testing and feedback.

**8. Report Organization**

This report is organized into the following sections:

1. Introduction: Overview of the payroll system.
2. Overview: Key system features.
3. Project Idea: Concept and objectives.
4. Purpose of the Project: Goals and benefits.
5. Project Specification: Technical details and functionalities.
6. Application of the Project: Use cases and benefits.
7. Project Plan: Development stages.
8. Methodologies: Technical and procedural approaches.

**9. Methodologies**

The following methodologies were adopted for the project:

1. Programming Approach:
   * Modular programming to divide functionalities into distinct components such as admin management, file handling, and payroll computation.
2. Algorithm Design:
   * Implementing algorithms for salary calculations, ensuring accuracy and efficiency.
3. File Handling:
   * Utilizing C++ file handling mechanisms to store and retrieve employee records securely.
4. Testing:
   * Unit testing for individual functions.
   * Integration testing to ensure cohesive operation of all system components.

**CODE**

#include <iostream>

#include <fstream>

#include <string>

#include <iomanip>

using namespace std;

struct Employee {

string name;

int hoursWorked;

float hourlyRate;

float allowance;

float grossPay;

float Tax;

float netPay;

};

void registerAdmin() {

ofstream adminFile("admins.txt", ios::app);

string username, password;

cout << "\nRegister Admin" << endl;

cout << "Enter username: ";

cin >> username;

cout << "Enter password: ";

cin >> password;

adminFile << username << " " << password << endl;

adminFile.close();

cout << "Admin registered successfully!\n";

}

bool loginAdmin() {

ifstream adminFile("admins.txt");

string username, password, fileUsername, filePassword;

cout << "\nAdmin Login" << endl;

cout << "Enter username: ";

cin >> username;

cout << "Enter password: ";

cin >> password;

while (adminFile >> fileUsername >> filePassword) {

if (username == fileUsername && password == filePassword) {

adminFile.close();

cout << "Login successful!\n";

return true;

}

}

adminFile.close();

cout << "Invalid credentials!\n";

return false;

}

void calculatePayroll(Employee& emp) {

emp.grossPay = (emp.hoursWorked \* emp.hourlyRate) + emp.allowance;

emp.Tax = emp.grossPay \* 0.1f; // 10% Tax

emp.netPay = emp.grossPay - emp.Tax;

}

void saveEmployeeData(const Employee& emp) {

ofstream employeeFile("employees.txt", ios::app);

employeeFile << fixed << setprecision(2);

employeeFile << emp.name << " " << emp.hoursWorked << " " << emp.hourlyRate

<< " " << emp.allowance << " " << emp.grossPay << " "

<< emp.Tax << " " << emp.netPay << endl;

employeeFile.close();

cout << "Employee data saved successfully!\n";

}

void addEmployee() {

Employee emp;

cout << "\nAdd Employee" << endl;

cout << "Enter employee name: ";

cin >> emp.name;

cout << "Enter hours worked: ";

cin >> emp.hoursWorked;

cout << "Enter hourly rate: ";

cin >> emp.hourlyRate;

cout << "Enter allowance: ";

cin >> emp.allowance;

calculatePayroll(emp);

cout << "\n--- Payroll Details ---\n";

cout << "Name: " << emp.name << endl;

cout << "Gross Pay: $" << emp.grossPay << endl;

cout << "Tax: $" << emp.Tax << endl;

cout << "Net Pay: $" << emp.netPay << endl;

saveEmployeeData(emp);

}

void viewEmployees() {

ifstream employeeFile("employees.txt");

if (!employeeFile) {

cout << "No employee data found.\n";

return;

}

Employee emp;

cout << "\n--- Employee Data ---\n";

while (employeeFile >> emp.name >> emp.hoursWorked >> emp.hourlyRate >>

emp.allowance >> emp.grossPay >> emp.Tax >> emp.netPay) {

cout << fixed << setprecision(2);

cout << "Name: " << emp.name << endl;

cout << " Hours Worked: " << emp.hoursWorked << endl;

cout << " Hourly Rate: $" << emp.hourlyRate << endl;

cout << " Allowance: $" << emp.allowance << endl;

cout << " Gross Pay: $" << emp.grossPay << endl;

cout << " Tax: $" << emp.Tax << endl;

cout << " Net Pay: $" << emp.netPay << endl;

}

employeeFile.close();

}

int main() {

int choice;

while (true) {

cout << "\n--- Employee Payroll Management System ---\n";

cout << "1. Register Admin\n";

cout << "2. Login as Admin\n";

cout << "3. Exit\n";

cout << "Enter your choice: ";

cin >> choice;

switch (choice) {

case 1:

registerAdmin();

break;

case 2:

if (loginAdmin()) {

int adminChoice;

do {

cout << "\n--- Admin Menu ---\n";

cout << "1. Add Employee\n";

cout << "2. View Employees\n";

cout << "3. Logout\n";

cout << "Enter your choice: ";

cin >> adminChoice;

switch (adminChoice) {

case 1:

addEmployee();

break;

case 2:

viewEmployees();

break;

case 3:

cout << "Logging out...\n";

break;

default:

cout << "Invalid choice!\n";

}

} while (adminChoice != 3);

}

break;

case 3:

cout << "Exiting the system. Goodbye!\n";

return 0;

default:

cout << "Invalid choice!\n";

}

}

}

**Conclusion:**

The Basic Payroll System demonstrates how automation and C++ programming can streamline payroll operations, ensuring accuracy, efficiency, and data security for any organization. The systematic approach outlined in this report ensures the system's scalability and relevance across diverse use cases.