CS 161A: Programming and Problem Solving I

Assignment 1: Weekly Payroll

Academic Integrity

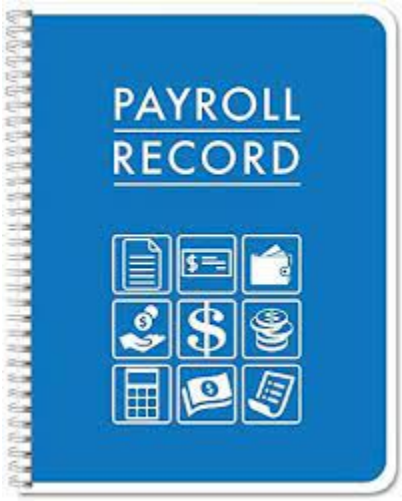
You may NOT, under any circumstances, begin a programming assignment by looking for completed code on StackOverflow or Chegg or any such website, which you can claim as your own. Please check out the Student Code of Conduct at PCC.

The only way to learn to code is to do it yourself. The assignments will be built from examples during the lectures, so ask for clarification during class if something seems confusing. If you start with code from another source and just change the variable names or other content to make it look original, you will receive a zero on the assignment.

I may ask you to explain your assignment verbally. If you cannot satisfactorily explain what your code does, and answer questions about why you wrote it in a particular way, then you should also expect a zero.

Introduction

During September, businesses across the United States take time to thank their payroll teams and reflect on all of the successful paydays of the past year. While technology has made it easier than ever for HR teams to pay their employees, crunching the numbers can still be a laborious task for payroll professionals. National Payroll Week serves as a reminder that there are dedicated professionals working hard everyday to ensure we get paid accurately and on time.



Purpose

Recall, when we design a program to solve a problem, we break it down into steps a computer can execute. The purpose of this assignment is to develop an algorithm and a working C++ program for a simple weekly payroll calculation.

After completing this assignment you will be able to:

- Use C++ syntax to:
    - read inputs from the user
    - store the input into appropriate typed variable
    - perform arithmetic calculations, and produce output

Task

- ❏ Before you get started:
    - ❏ Check out the Sample Assignment 01 - Algorithmic Design Document
    - ❏ Check out the Sample Assignment 01 code - Sample1
- ❏ To implement a simply weekly payroll program you will do the following:
    - ❏ Read the employee ID number (an **`int`**) from the user
    - ❏ Read the number of hours worked (an **`int`**) from the user
    - ❏ Read the hourly rate (an **`int`**) from the user
    - ❏ Read the federal withholding rate (an **`int`**, e.g., 10)
    - ❏ You must read one input per line. Please see the sample run below. **This is part of the required coding construct.**
    - ❏ Your program should calculate the total gross pay, the Income Tax Withholding, and the net pay.
    - ❏ First calculate the total gross pay from the hours worked and the hourly rate inputs.
    - ❏ Then calculate the Federal Tax withholding using the gross pay and the federal withholding rate.
    - ❏ Then calculate the Net Pay by subtracting the federal tax withholding from the gross pay.
    - ❏ Output the following::

        -Total Gross Pay

        -Federal Tax Withholding

        -Net Pay

      The Sample1 shows you how to do this.
- ❏ Open the Algorithmic Design Document, make a copy, and follow the steps to create your algorithm.
- ❏ You must express your algorithm as **pseudocode.**

- ❏ First do this calculation on paper and pencil and make sure you get the same answers as my two sample runs shown below in the Criteria for Success.
- ❏ Print a goodbye message.
- ❏ **Use only the concepts we have learned so far.**

Criteria for Success

- ❏ Test your program using the following sample runs, making sure you get the same output when using the given inputs (in **blue**):

```
Welcome to my Weekly Payroll program!!
Enter your employee ID number (numbers only): 34567
Enter number of hours worked (whole numbers): 40
Enter the hourly rate: 17
Enter the federal withholding rate: 15

Your Payroll Summary:
Total Gross Pay: $680
Federal Tax Withholding: $102
Net Pay: $578

Thank you for using my Weekly Payroll program!!
```

```
Welcome to my Weekly Payroll program!!
Enter your employee ID number (numbers only): 12345
Enter number of hours worked (whole numbers): 30
Enter the hourly rate: 22
Enter the federal withholding rate: 10

Your Payroll Summary:
Total Gross Pay: $660
Federal Tax Withholding: $66
Net Pay: $594

Thank you for using my Weekly Payroll program!!
```

- ❏ Check out the Sample Assignment 01 - Algorithmic Design Document
- ❏ Check out the Sample Assignment 01 code - Sample1
- ❏ Complete all sections of your Algorithmic Design Document.
- ❏ Include **pseudocode** in part d of the design document.
- ❏ **Follow these Coding Construct Requirements:**
  - ❏ Must have all the right data types mentioned under Task.

    - ❏ You must read one input per line.
    - ❏ Print a welcome and goodbye message.
- ❏ Please open and compare your work with the grading rubric before submitting.
- ❏ Remember to follow all style guidelines.
- ❏ You must have comments in your code per style guidelines.
- ❏ Download your Algorithmic Design Document as a PDF (File -> Download -> PDF), rename it to `a01.pdf`, and upload it to the D2L assignment by **Wednesday**.
- ❏ Upload your `a01.cpp` C++ source file to the D2L assignment by **Sunday**.
- ❏ Do your own work. Consult the syllabus for more information about academic integrity.

Additional Support

- ❏ Check out the Sample Assignment 01 - Algorithmic Design Document
- ❏ Check out the Sample Assignment 01 code - Sample1
- ❏ Post a question for the instructor in the Ask Questions! area of the Course Lobby.