CS 171 - Homework 1

Overview

When you have a job there are two terms used for your payment.

Gross Pay this is the total amount of money given to the employee before anything is taken out.

Net Pay this is the amount after all takes and deductions have been removed.

Your **Net Pay** is often called **Take Home Pay** since it is the amount you actually get to take home and spend.

In this homework, you will write a program to compute **Gross Pay** and **Net Pay**.

Note: may of these calculations will be different for different types of jobs. This is simplification of how wages are calculated. It should give you the skills you need to replicate these calculations for a real job.

Algorithm Description

Your program will take these inputs from the user.

1. The hourly wage in dollars. This is a `float` value.
2. The number of hours worked per week. This is an `int` value.
3. The number of weeks worked per year. This is an `int` value.

The calculations needed will be shown using an example.

Assume the user gave us the following inputs.

- Hourly Wage: 15.50
- Hours Worked Per Week: 40
- Weeks Worked Per Year: 50

This person would make $15.50 * 40 = 620.00$ per week.

They worked 50 weeks of the year which is a total of $620.00 * 50 = 31000.00$. This employee took 2 weeks of unpaid vacation during the year.

The **Gross Pay** is $31,000.00 dollars per year.

Next, we account for deductions from the **Gross Pay**.

Social Security takes 6% of the person's wage. This is a deduction of $31000.00 * 0.06 = 1860.00$. The employee has $31000.00 - 1860.00 = 29140.00$ left.

Medicare takes 2% of the person's remaining wage. This is a deduction of $29140.00 * 0.02 = 582.80$. The employee has $29140.00 - 582.80 = 28557.20$ left.

The IRS wage tax is 12% of the remaining wage. This is a deduction of $28557.20 * 0.12 = 3426.86$. The employee has $28557.20 - 3426.86 = 25130.34$ left.

The PA State tax is 3.07% of the remaining wage. This is a deduction of $25130.34 * 0.0307 = 771.50$. The employee has $25130.34 - 771.50 = 24358.84$ left.

The Philadelphia tax is 3.75% of the remaining wage. This is a deduction of $24358.84 * 0.0375 = 913.46$. The employee has $24358.84 - 913.46 = 23445.38$ left.

The employer takes 396.00 dollars a month out of the paycheck for health insurance. This is a deduction of $396 * 12 = 4752.00$. The employee has $23445.38 - 4752.00 = 18693.38$ left.

The **Net Pay** for the employee is $18,693.38. We can divide this by the weeks worked to get $373.87 per week. We can divide this by the hours worked to get $9.35 per week.

We the ratio of **Net Pay** to **Gross Pay** is 60.3%.

$$\frac{Net}{Gross} = \frac{18,693.38}{31,000.00} = 0.6030$$

This shows that the employee lost almost 40% of their wages to deductions.

Program Examples

Your program should produce output as close to the examples given as possible.

Hint: To format decimals nicely adapt the following example.

```
print("A number ${:,.2f} is printed.".format(1999.237))
```

Example 1

```
Welcome to Gross and Net Pay Estimator.
Enter Hourly Wage in dollars (float):
15.50
Enter Hours Per Week (integer):
40
Enter Weeks Per Year Worked (integer):
50

Gross Pay Information
You will make $620.00 per week.
You will make $31,000.00 per year.

Taxes and Deductions
You will pay $1,860.00 in Social Security Taxes.
You will pay $582.80 in Medicare Taxes.
You will pay $3,426.86 in IRS Taxes.
You will pay $771.50 in PA State Taxes.
You will pay $913.46 in Phila Taxes.
```

```
You will pay $4,752.00 for health insurance.

Net Pay Information
Your take home pay will be $18,693.38 per year.
This is an hourly take home pay of $9.35.
This is a weekly take home pay of $373.87.
Your Net Pay is 60.30 precent of your Gross Pay.
```

Example 2

```
Welcome to Gross and Net Pay Estimator.
Enter Hourly Wage in dollars (float):
7.50
Enter Hours Per Week (integer):
40
Enter Weeks Per Year Worked (integer):
52

Gross Pay Information
You will make $300.00 per week.
You will make $15,600.00 per year.

Taxes and Deductions
You will pay $936.00 in Social Security Taxes.
You will pay $293.28 in Medicare Taxes.
You will pay $1,724.49 in IRS Taxes.
You will pay $388.24 in PA State Taxes.
You will pay $459.67 in Phila Taxes.
You will pay $4,752.00 for health insurance.

Net Pay Information
Your take home pay will be $7,046.32 per year.
This is an hourly take home pay of $3.39.
This is a weekly take home pay of $135.51.
Your Net Pay is 45.17 precent of your Gross Pay.
```

Example 3

```
Welcome to Gross and Net Pay Estimator.
Enter Hourly Wage in dollars (float):
50
Enter Hours Per Week (integer):
40
Enter Weeks Per Year Worked (integer):
52
```

```
Gross Pay Information
You will make $2,000.00 per week.
You will make $104,000.00 per year.

Taxes and Deductions
You will pay $6,240.00 in Social Security Taxes.
You will pay $1,955.20 in Medicare Taxes.
You will pay $11,496.58 in IRS Taxes.
You will pay $2,588.26 in PA State Taxes.
You will pay $3,064.50 in Phila Taxes.
You will pay $4,752.00 for health insurance.

Net Pay Information
Your take home pay will be $73,903.46 per year.
This is an hourly take home pay of $35.53.
This is a weekly take home pay of $1,421.22.
Your Net Pay is 71.06 precent of your Gross Pay.
```

Guidelines

All your code should be in a single file `hw01.py`.

You may use Pothole Case or Camel Case, but be consistent in your file.

Your name, date, program description should be at the top of the file.

Add comments to claify how your code works.

Your output should be as close as possible to the examples given.

If inputs are not entered in the correct format, your program should crash. For example, if the wage is entered as a word.

```
Welcome to Gross and Net Pay Estimator.
Enter Hourly Wage in dollars (float):
houses
Traceback (most recent call last):
  File ".../costs.py", line 5, in <module>
    hourlyWage = float(input("Enter Hourly Wage in dollars (float):\n"))
ValueError: could not convert string to float: 'houses'
```

What To Submit

- `hw01.py` a single file with your working programing
- `readme.txt` a text file with any comments for the grader. (optional)

Rubric

All rubic items are graded on the following scale:

- Meets all Requirements: Full Credit
- Good with minor issues: 66% of points rounded up to nearest point
- Significant issues: 33% of points round up to nearest point
- Not Attempted/ Does not meet requirements: 0 points

Course Assistants may not award any other precent of points.

Rubric Item	Points
Name in comments	3
Date in comments	3
Program Desc. in comments	3
Reasonable Comments in code	3
Reasonable and Consistent Variable Names	3
Correct File Name	3
Program Gets Inputs Correctly	9
Gross Pay Calculations	18
Deductions Calculations	18
Net Pay Calculationss	18
Output Formatting	16
General Coding Style	3