

Lab 1 Input, Processing and Output

1. Stock Transaction Program

Last month, Joe purchased some stock in Acme Software, Inc. Here are the details of the purchase:

- The number of shares that Joe purchased was 2,000.
- When Joe purchased the stock, he paid \$40.00 per share.
- Joe paid his stockbroker a commission that amounted to 3 percent of the amount he paid for the stock.

Two weeks later, Joe sold the stock. Here are the details of the sale:

- The number of shares that Joe sold was 2,000.
- He sold the stock for \$42.75 per share.
- He paid his stockbroker another commission that amounted to 3 percent of the amount he received for the stock.

Write a program that displays the following information:

- The amount of money Joe paid for the stock.
- The amount of commission Joe paid his broker when he bought the stock.
- The amount for which Joe sold the stock.
- The amount of commission Joe paid his broker when he sold the stock.
- Display the amount of money that Joe had left when he sold the stock and paid his broker (both times). If this amount is positive, then Joe made a profit. If the amount is negative, then Joe lost money.

Source: Gaddis, T., & Agarwal, R.. Starting out with Python. Pearson

Output example

```
Money paid for buying the stock: $80000.0
Commission paid when bought stock: $2400.0
Money receive when selling the stock: $85500.0
Commission paid when sold stock: $2565.0
Monney left: $535.0
```

2. Compound Interest

When a bank account pays compound interest, it pays interest not only on the principal amount that was deposited into the account, but also on the interest that has accumulated over time. Suppose you want to deposit some money into a savings account, and let the account earn compound interest for a certain number of years.

The formula for calculating the balance of the account after a specified number of years is:

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

The terms in the formula are:

A is the amount of money in the account after the specified number of years.

P is the principal amount that was originally deposited into the account.

r is the annual interest rate.

n is the number of times per year that the interest is compounded.

t is the specified number of years.

Write a program that makes the calculation for you. The program should ask the user to input the following:

- The amount of principal originally deposited into the account
- The annual interest rate paid by the account
- The number of times per year that the interest is compounded (For example, if interest is compounded monthly, enter 12. If interest is compounded quarterly, enter 4.)
- The number of years the account will be left to earn interest

Once the input data has been entered, the program should calculate and display the amount of money that will be in the account after the specified number of years.

Source: Gaddis, T., & Agarwal, R.. Starting out with Python. Pearson

Output example

```
Enter the amount of principal originally deposited: 10000
Enter the annual interest rate: 2
Enter the number of times per year that the interest is compounded: 4
Enter the number of years: 10
The amount of money that will be in the account after 10.0 years is $12,207.94.
```

3. Binary and decimal conversion

Write a program that ask a user to input an eight digit binary number then convert it to its decimal equivalent.

Output example

```
Enter an eight digit binary number: 01101100
The decimal equivalent of 01101100 is 108.
```