

PROGRAMS

1. 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. For 5% interest rate r is 0.05

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 – every three months, 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.

NOTE: The user should enter the interest rate as a percentage. For example, 2 percent would be entered as 2, not as 0.02. The program will then have to divide the input by 100 to move the decimal point to the correct position.

Example Program Output

```
Enter the starting principal: 100
Enter the annual interest rate: 10
How many times per year is the interest compounded? 2
For how many years will the account earn interest? 4
At the end of 4 years you will have 147.75 $
```

2. Use the turtle graphics library and write a program that reproduce the following object shown in the figure. You may choose size of the square shape as 200 pixel and radii of the circles as 50 pixels. **Coloring Note:** Left Triangle: Green, Right Triangle: Orange, Top/Bottom Circles: Red and Centered Circle: Red Pen Color.

