COP1334C
Introduction to C++ Programming

Chapter 3
Expressions & Interactivity
Lab

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1. **Write an updated version of the MadLib word game that allows the user to enter white spaces. The program should ask the for the following information:**
   - **His or her name**
   - **His or her age**
   - **The name of a city**
   - **The name of a college**
   - **A profession**
   - **A type of animal**
   - **A pet's name**

After the user has entered these items, the program should display the following story, inserting the user's input into the appropriate locations:

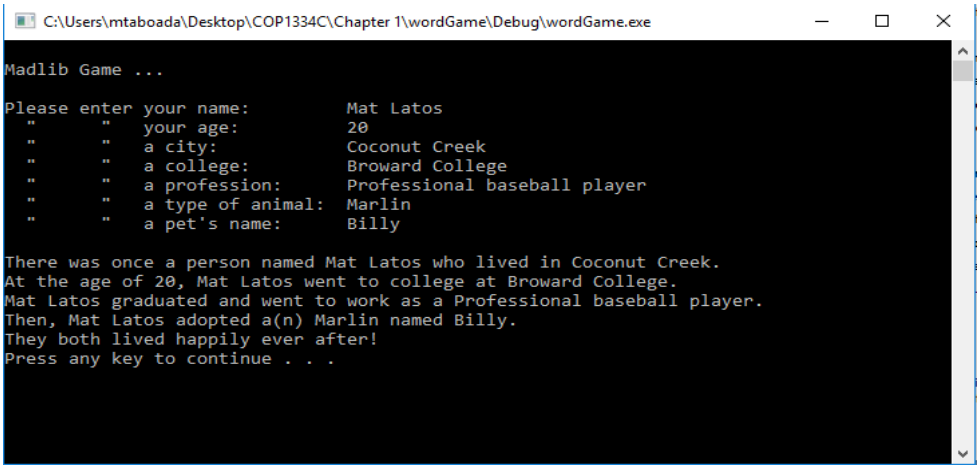
There was once a person named NAME who lived in CITY. At the age of AGE, NAME went to college at COLLEGE. NAME graduated and went to work as a PROFESSION. Then, NAME adopted a(n) ANIMAL named PETNAME. They both lived happily ever after!

wordGame.cpp

Notes:

1. Read values in the order specified.
2. Use getline() for strings of characters and >> for numeric values.

Output Sample



2. **A movie theater only keeps a percentage of the revenue earned from ticket sales. The remainder goes to the movie distributor. Write a program that calculates a theater's gross and net box office profit for a night.**

   The program should ask for the name of the movie, and how many and adult and child tickets were sold. (The price of an adult ticket is $14 and a child's ticket is $10). It should display a report similar to the one shown in the Output Sample.

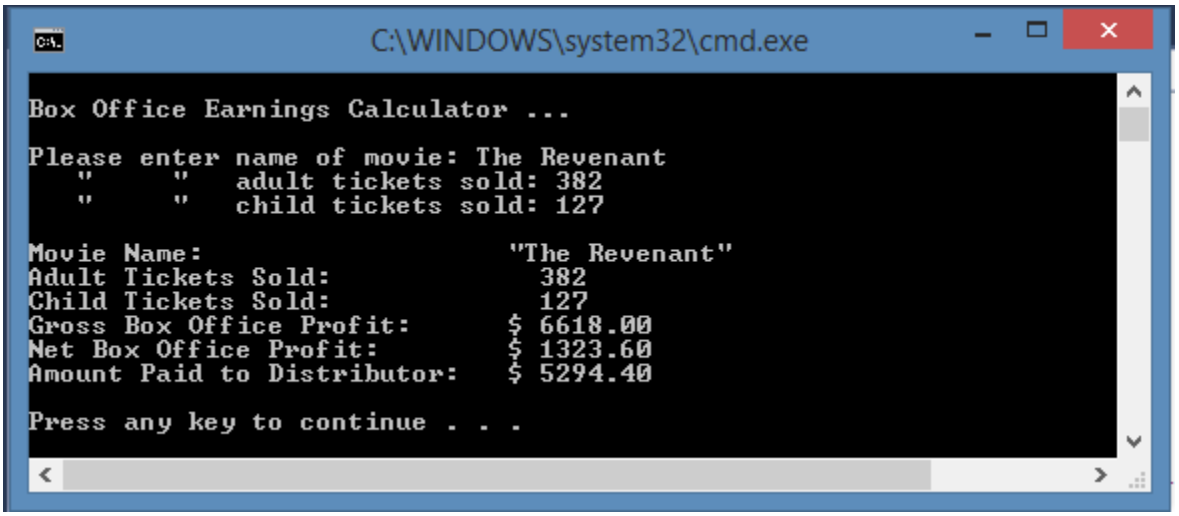
   boxOffice.cpp

   Notes: Assume the theater keeps 20% of the gross box office profit.

   Make sure to include the following manipulators:

   - setw()
   - right/left
   - fixed, showpoint & setprecision()

   Output Sample



3. **Assuming there are no deposits other than the original investment, the balance in a savings account after one year may be calculated as:**

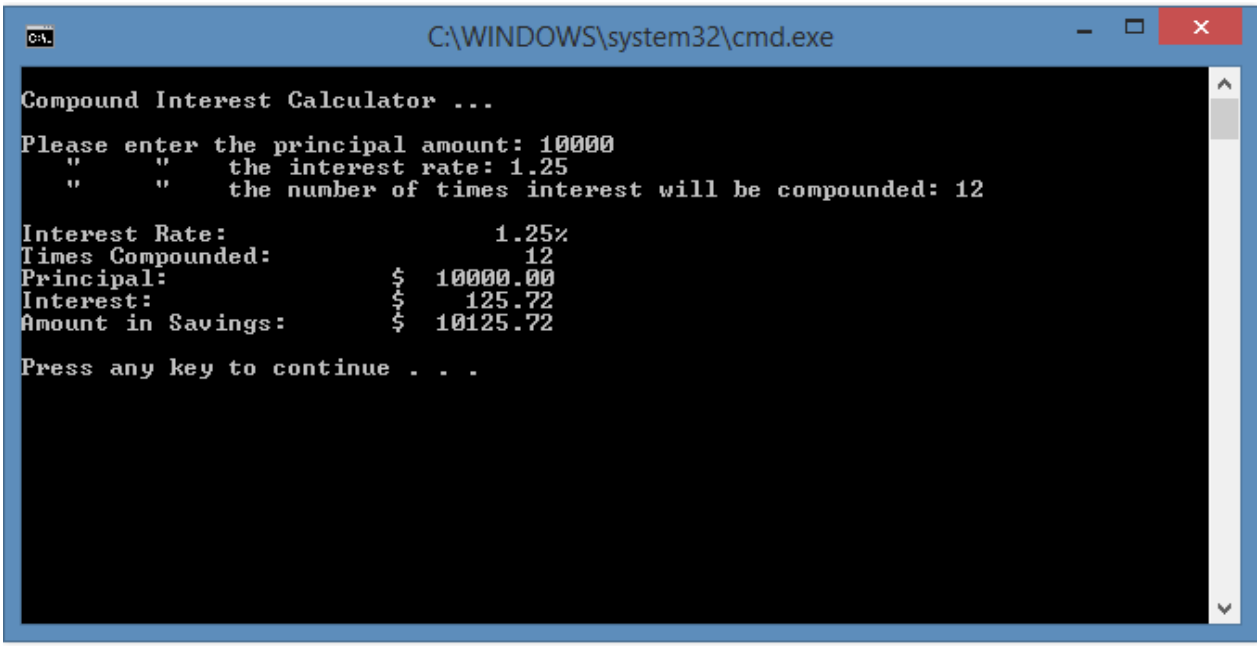
$$Amount = Principal * (1 + \frac{Rate}{T})^{T}$$

$Principal$ is the balance in the savings account, $Rate$ is the interest rate, and T is the number of times the interest is compounded during a year (T is 4 if the interest is compounded quarterly). Write a program that asks for the principal, the interest rate, and the number of times the interest is compounded. It should display a report similar to the one shown in the Output Sample.

interest.cpp

Notes: Use the function pow(x,y) located in <cmath>
Make sure to include manipulators to replicate output shown.

Output Sample



4. **Joe's Pizza Palace needs a program to calculate the number of slices a pizza of any size can be divided into. The program should perform the following steps:**
    a. **Ask the user for the diameter of the pizza in inches.**
    b. **Calculate the number of slices that may be taken from a pizza of that size.**
    c. **Display a message telling the number of slices.**

To calculate the number of slices that may be taken from the pizza, you must know the following facts:

- **Each slice should have an area of 14.125 inches.**
- **To calculate the number of slices, simply divide the area of the pizza by 14.125.**
- **The area of the pizza is calculated with this formula:**

$$A = \pi r^2$$

π is the Greek letter PI. 3.14159 can be used as a value. The variable r is the radius of the pizza. Divide the diameter by 2 to get the radius.

pizza.cpp

Notes: Use the function pow(x,y) located in <cmath>.
Make sure the output of the program displays the number of slices in fixed point notation, rounded to one decimal place of precision. Use a named constant for **π.**

Output Sample