

```

# Rodrigo Becerril Ferreyra
# 017584071
# CECS 100 Autumn 2018
# 2018-09-18
# Project 1
# "Compound Interest"

# Corresponds to pp. 106 + 107 in text
# Objective: calculate compound interest given rate, number of times
# compounded, and time
# -----

#Formula:
# A =  $P(1 + (r/n))^{(nt)}$ 
# A = final amount
# P = principle
# r = interest rate
# n = number of times interest is compounded per year
# t = time (years)

# init variables
P = 0.0
r = 0.0
n = 0.0
t = 0.0

print("""\nWelcome to the compound interest calculator. You can calculate
how much money you will have in a
bank account using a few values: the amount you put in, the annual
interest rate (as a decimal), the
amount of times your bank compounds your money (you can figure this out
by calling your bank), and the
number of years you plan to have your money in your account.\n""")
print("Please enter the values on screen and press Enter.\nDo not use any
symbols such as commas or percent signs. A decimal point is
acceptable.\n")

while(1):
    try:
        P = float(input("Principle (introductory balance) (in USD) (how
much money you put into the account): "))
        r = float(input("Interest rate (per year (APY)) (decimal number)
(found on your account terms): "))

        # This is quality control: if the user accidentally puts in a
        # percent, the program
        # automatically divides by 100
        if(r > 1):
            r /= 100
        n = float(input("Number of times interest is calculated per year
(found on your account terms): "))

        #the function calls for  $n^{-1}$ , so n cannot equal 0.
        if(n==0):

```

```
        raise ZeroDivisionError()

    t = float(input("Account age (in years) (how long the account has
been/will be open): "))
    break #out of the infinite loop
except ValueError:
    print("\nNot a valid number. Please try again.\n")
except ZeroDivisionError:
    print("\nIt is not possible to compound zero times a year. Please
try again.\n")

# Main calculation
A = P * ((1 + (r/n)) ** (n*t))

# prints out Amount rounded off to two decimal places
print("\nYour account balance will be ${0}.".format(round(A, 2)))
```