

## CS201 Computer Science I

**Date:** 9/29

**Goal:** To get familiar with arithmetic and type casting in Java.

**Problem:** Compute the compound interest

**Description:** The formula for calculating the compound interest:

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

Where

- P = initial investment
- r = annual interest rate (as a decimal)
- n = number of times the interest is compounded per year
- t = number of years
- B = balance after time t

Example: An amount of \$1,500.00 is deposited in a bank paying an annual interest rate of 4.3%, compounded quarterly. Find the balance after 6 years. Using the formula above, with  $P = 1500$ ,  $r = 4.3/100 = 0.043$ ,  $n = 4$ , and  $t = 6$ :

$$B = 1500 \left( 1 + \frac{0.043}{4} \right)^{4*6} = 1938.84$$

Write a well-documented program that allows the user to calculate the balance and the interest earned. Since we have not learned how to read input from the keyboard, you can simply hard-code the initial investment, the annual interest rate in percentage, the number of times the interest is compounded per year, and the number of years. Make sure you choose the appropriate data type for each variable. Try out different sets of values and output intermediate results to make sure correct type casting.