

C++ Challenge Sheet 1

Future Investment Value:

Write a program that reads in investment amount, annual interest rate, and number of years, and displays the future investment value using the following formula.

$$\text{Future Investment Value} = \text{Investment Amount} \times (1 + \text{Monthly Interest Rate})^{\text{Number of years} \times 12}$$

For example, if you enter amount 1000, annual interest rate 3.25%, and number of years 1, the future investment value is 1032.98.

Sum of digits in an integer:

Write a program that reads an integer between 0 and 1000 (exclusive) and adds all the digits in the integer. For example, if an integer is 932, the sum of all its digits is 14.

Hint: Use the % operator to extract digits and use the / operator to remove the extracted digit. For instance, $932 \% 10 = 2$ and $932 / 10 = 93$.

Compound Value:

Suppose you save \$100 each month into a savings account with the annual interest rate 5%. Thus, the monthly interest rate is $0.05/12 = 0.00417$. After the first month, the value in the account becomes

$$100 \times (1 + 0.00417) = 100.417$$

After the second month, the value in the account becomes

$$(100 + 100.417) \times (1 + 0.00417) = 201.252$$

After the third month, the value in the account becomes

$$(100 + 201.252) \times (1 + 0.00417) = 302.507$$

And so on.

Write a program that prompts the user to enter a monthly saving amount and displays the account value after the sixth month.