

In each exercise make your source code and output readable.

Exercise 1. Assuming that ocean levels are currently increasing by an average of 1.5 millimetres per year, write a program to display a table showing by how many millimetres the water level will rise over the next 25 years. MODIFICATION. Number of years should be given by the user, do not accept values less than 1.

Exercise 2. When you run on a treadmill, you burn 3.6 calories per minute. Write a program to display the number of calories burned after 5, 10, 15, 20, 25 and 30 minutes. MODIFICATION. Number of calories burned per minute should be given by the user, do not accept values less than 1.

Exercise 3. Membership in the club requires a fee of 2500 PLN. It is announced that this fee will increase by 4% per year over the next 6 years. Write a program that displays the amount of expected fees for the next 6 years. MODIFICATION. The percentage increase in fees should be given by the user, do not accept values less or equal than 0% or greater than 10%.

Exercise 4. Write a program that calculates how much a person would earn for a certain period of working days if their remuneration would be 10 PLN for the first day of work, 11 PLN for the second day of work and would increase by 1 PLN every next day. Write a program to display a table showing the salary of each day. The program then calculates remuneration for the entire period. The number of working days should be given by the user. For the number of working days do not accept a number less than 1 or greater than 360.

Exercise 5. Write a program that requires the user to input two integers and then

- prints out all numbers from the smaller to the larger.
- prints out all the numbers from the larger to the smaller.
- prints out every nth numbers from the smaller to the larger, the value of n is given by the user.
- prints out every divisible by Q numbers from the smaller to the larger, the value of Q is given by the user.

Exercise 6. Write a program that prints out the multiplication table up to 9 for the number n. The value of n is given by the user. MODIFICATION. Write a program that prints out the multiplication table up to m for the number n. The values of n and m are given by the user.

Exercise 7. Write a program that computes and prints out the sum of the initial n odd natural numbers. The number n must be given by the user.

Exercise 8. Write a program that computes and prints out the arithmetic average of all integers divisible by Q from the interval [a,b]. The value of Q, a, b are given by the user.

Exercise 9. Write a program that will print the following patterns for n=4

(a)	(b)	(c)	(d)
****	*	*	*
****	**	**	***
****	***	***	*****
****	****	****	*****

Exercises 10-12 are a bit complex.

Exercise 10. Write a program that computes the sum of the initial n natural numbers ending with the digit 1, 2 or 7. The value of n is given by the user.

Exercise 11. Write a program that computes the sum of the initial n natural numbers whose sum of digits is a prime number. The value of n is given by the user.

Exercise 12. Write a program that calculates how much money you'll end up with if you invest an amount of money at a fixed interest rate, compounded yearly. Have the user furnish the initial amount, the number of years, and the yearly interest rate in percent. Some interaction with the program might look like this:

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Enter initial amount: 3000
Enter number of years: 10
Enter interest rate (percent per year): 5.5
At the end of 10 years, you will have 5124.43 dollars.
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At the end of the first year you have $3000 + (3000 * 0.055)$, which is 3165. At the end of the second year you have $3165 + (3165 * 0.055)$, which is 3339.08. Do this as many times as there are years. A for loop makes the calculation easy.

MODIFICATION. Modify the program to consider money investment at a fixed interest rate compounded monthly.

How to Calculate Monthly Compounded Interest. Banks pay you money for the use of your money. That's the idea behind savings accounts and certificates of deposit. How much your money earns is the interest rate. A simple interest rate is just the percentage of the money you invest that the bank pays you per year. If it's 6 percent, you'd be paid \$60 for \$1000 on deposit for a year. However, banks and other financial institutions don't wait an entire year before paying you any interest. Instead, it's divided into smaller amounts deposited periodically into your account. That's good for you, because then the added interest starts earning more interest - and that's what compound interest means.

Figure the monthly interest rate. Divide the annual interest rate by 12. For example, if the annual interest rate is 6 percent, the monthly interest rate is 6 percent/12, or 0.50 percent.