

Lab: Data Types and Variables

Problems for exercises and homework for the [“Programming Fundamentals” course @ SoftUni](#).

You can check your solutions here: <https://judge.softuni.bg/Contests/171/Data-Types-and-Variables-Lab>.

I. Integer and Real Numbers

1. Centuries to Minutes

Write program to enter an integer number of **centuries** and convert it to **years**, **days**, **hours** and **minutes**.

Examples

Input	Output
1	1 centuries = 100 years = 36524 days = 876576 hours = 52594560 minutes
5	5 centuries = 500 years = 182621 days = 4382904 hours = 262974240 minutes

2. Circle Area (12 Digits Precision)

Write program to enter a radius **r** (real number) and **print the area** of the circle with exactly **12 digits** after the decimal point. Use data type of **enough precision** to hold the results.

Examples

Input	Output
2.5	19.634954084936

Input	Output
1.2	4.523893421169

3. Exact Sum of Real Numbers

Write program to enter **n** numbers and calculate and print their **exact sum** (without rounding).

Examples

Input	Output
3 10000000000000000000 5 10	10000000000000000015

Input	Output
2 0.00000000003 33333333333.3	33333333333.30000000003

II. Data Types and Type Conversion

4. Elevator

Calculate how many courses will be needed to **elevate n persons** by using an elevator of **capacity of p persons**. The input holds two lines: the **number of people n** and the **capacity p** of the elevator.

Examples

Input	Output	Comments
17 3	6	5 courses * 3 people + 1 course * 2 persons
4 5	1	All the persons fit inside in the elevator. Only one course is needed.
10 5	2	2 courses * 5 people

5. Special Numbers

A **number** is **special** when its **sum of digits** is **5, 7 or 11**.

Write a program to read an integer **n** and for all numbers in the range **1...n** to print the number and if it is special or not (**True / False**).

Examples

Input	Output
15	1 -> False 2 -> False 3 -> False 4 -> False 5 -> True 6 -> False 7 -> True 8 -> False 9 -> False 10 -> False 11 -> False 12 -> False 13 -> False 14 -> True 15 -> False

6. Triples of Latin Letters

Write a program to read an integer **n** and print all **triples** of the first **n small Latin letters**, ordered alphabetically:

Examples

Input	Output
3	aaa aab aac aba abb abc aca acb acc baa bab bac bba bbb bbc bca bcb bcc caa cab cac cba cbb cbc cca ccb ccc

7. Greeting

Write a program that enters **first name**, **last name** and **age** and prints "**Hello, <first name> <last name>. You are <age> years old.**". Use interpolated strings.

Examples

Input	Output
Svetlin Nakov 25	Hello, Svetlin Nakov. You are 25 years old.

III. Variables

8. Refactor Volume of Pyramid

You are given a **working code** that finds the **volume of a pyramid**. However, you should consider that the variables exceed their optimum span and have improper naming. Also, search for variables that **have multiple purpose**.

Code

Sample Code

```
double dul, sh, V = 0;
Console.Write("Length: ");
dul = double.Parse(Console.ReadLine());
Console.Write("Width: ");
sh = double.Parse(Console.ReadLine());
Console.Write("Height: ");
V = double.Parse(Console.ReadLine());
V = (dul + sh + V) / 3;
Console.WriteLine("Pyramid Volume: {0:F2}", V);
```

9. Refactor Special Numbers

You are given a **working code** that is a solution to **Problem 5. Special Numbers**. However, the variables are **improperly named, declared before** they are needed and some of them are used for multiple things. Without using your previous solution, **modify the code** so that it is **easy to read and understand**.

Code

Sample Code

```
int kolkko = int.Parse(Console.ReadLine());
int obshto = 0; int takova = 0; bool toe = false;
for (int ch = 1; ch <= kolkko; ch++)
{
    takova = ch;
    while (ch > 0)
    {
        obshto += ch % 10;
        ch = ch / 10;
    }
    toe = (obshto == 5) || (obshto == 7) || (obshto == 11);
    Console.WriteLine($"{takova} -> {toe}");
    obshto = 0;
    ch = takova;
}
```