**Homework: Data Types and Variables**

### Problem List

1. [**Declare Variables**](https://github.com/TelerikAcademy/CSharp-Part-1/blob/master/Topics/01.%20Introduction-to-Programming/homework/01.%20Play%20with%20VS)

## Description

* Declare five variables choosing for each of them the most appropriate of the types byte, sbyte, short, ushort, int, uint, long, ulong to represent the following values: 52130, -115, 4825932, 97, -10000. Choose a large enough type for each number to ensure it will fit in it. Try to compile the code.

## Submission

* You do not have to submit anything for this problem

1. [**Float or Double**](https://github.com/TelerikAcademy/CSharp-Part-1/blob/master/Topics/01.%20Introduction-to-Programming/homework/01.%20Play%20with%20VS)

## Description

* Which of the following values can be assigned to a variable of type float and which to a variable of type double: 34.567839023, 12.345, 8923.1234857, 3456.091? Write a program to assign the numbers in variables and print them to ensure no precision is lost.

## Submission

* You do not have to submit anything for this problem

1. [**Variable in Hexadecimal Format**](https://github.com/TelerikAcademy/CSharp-Part-1/blob/master/Topics/01.%20Introduction-to-Programming/homework/01.%20Play%20with%20VS)

## Description

* Declare an integer variable and assign it with the value 254 in hexadecimal format (0x##). Use Windows Calculator to find its hexadecimal representation. Print the variable and ensure that the result is 254.

## Submission

* You do not have to submit anything for this problem

1. [**Unicode Character**](https://github.com/TelerikAcademy/CSharp-Part-1/blob/master/Topics/01.%20Introduction-to-Programming/homework/01.%20Play%20with%20VS)

## Description

* Declare a character variable and assign it with the symbol that has Unicode code 42 (decimal) using the \u00XX syntax, and then print it.

Hint: first, use the Windows Calculator to find the hexadecimal representation of 42. The output should be \*.

## Submission

* You do not have to submit anything for this problem

1. [**Boolean Variable**](https://github.com/TelerikAcademy/CSharp-Part-1/blob/master/Topics/01.%20Introduction-to-Programming/homework/01.%20Play%20with%20VS)

## Description

* Declare a Boolean variable called isFemale and assign an appropriate value corresponding to your gender. Print it on the console.

## Submission

* You do not have to submit anything for this problem

1. [**Strings and Objects**](https://github.com/TelerikAcademy/CSharp-Part-1/blob/master/Topics/01.%20Introduction-to-Programming/homework/01.%20Play%20with%20VS)

## Description

* Declare two string variables and assign them with Hello and World. Declare an object variable and assign it with the concatenation of the first two variables (mind adding an interval between). Declare a third string variable and initialize it with the value of the object variable (you should perform type casting).

## Submission

* You do not have to submit anything for this problem

1. [**Quotes in Strings**](https://github.com/TelerikAcademy/CSharp-Part-1/blob/master/Topics/01.%20Introduction-to-Programming/homework/01.%20Play%20with%20VS)

## Description

* Write a program that outputs The "use" of quotations causes difficulties.

## Input

* None

## Output

* Print on a single line The "use" of quotations causes difficulties.

## Constraints

* Time limit: **0.1s**
* Memory limit: **16MB**

## Submission

* Submit your code [here](http://bgcoder.com/Contests/Compete/Index/313#1)

1. [**Isosceles Triangle**](https://github.com/TelerikAcademy/CSharp-Part-1/blob/master/Topics/01.%20Introduction-to-Programming/homework/01.%20Play%20with%20VS)

## Description

* Write a program that prints an isosceles triangle of 9 copyright symbols ©, something like this:

©

© ©

© ©

© © © ©

Note: The © symbol may be displayed incorrectly at the console so you may need to change the console character encoding to UTF-8 and assign a Unicode-friendly font in the console.

Note: Under old versions of Windows the © symbol may still be displayed incorrectly, regardless of how much effort you put to fix it.

## Submission

* You do not have to submit anything for this problem

1. [**Exchange Variable Values**](https://github.com/TelerikAcademy/CSharp-Part-1/blob/master/Topics/01.%20Introduction-to-Programming/homework/01.%20Play%20with%20VS)

## Description

* Declare two integer variables a and b and assign them with 5 and 10 and after that exchange their values by using some programming logic. Print the variable values before and after the exchange.

## Submission

You do not have to submit anything for this problem

1. [**Employee Data**](https://github.com/TelerikAcademy/CSharp-Part-1/blob/master/Topics/01.%20Introduction-to-Programming/homework/01.%20Play%20with%20VS)

## Description

* A marketing company wants to keep record of its employees. Each record would have the following characteristics:
  + First name
  + Last name
  + Age (0...100)
  + Gender (m or f)
  + Personal ID number (e.g. 8306112507)
  + Unique employee number (27560000…27569999)

Declare the variables needed to keep the information for a single employee using appropriate primitive data types. Use descriptive names. Print the data at the console.

## Submission

You do not have to submit anything for this problem

1. [**Bank Account Data**](https://github.com/TelerikAcademy/CSharp-Part-1/blob/master/Topics/01.%20Introduction-to-Programming/homework/01.%20Play%20with%20VS)

## Description

* A bank account has a holder name (first name, middle name and last name), available amount of money (balance), bank name, IBAN, 3 credit card numbers associated with the account. Declare the variables needed to keep the information for a single bank account using the appropriate data types and descriptive names.

## Submission

You do not have to submit anything for this problem

1. [**Null Values Arithmetic**](https://github.com/TelerikAcademy/CSharp-Part-1/blob/master/Topics/01.%20Introduction-to-Programming/homework/01.%20Play%20with%20VS)

## Description

* Create a program that assigns null values to an integer and to a double variable.
  + Try to print these variables at the console.
  + Try to add some number or the null literal to these variables and print the result.

## Submission

You do not have to submit anything for this problem

1. [**Comparing Floats**](https://github.com/TelerikAcademy/CSharp-Part-1/blob/master/Topics/01.%20Introduction-to-Programming/homework/01.%20Play%20with%20VS)

## Description

* Write a program that safely compares two floating-point numbers (double) with precision eps = 0.000001.

*Note: Two floating-point numbers* a *and* b *cannot be compared directly by* a == b *because of the nature of the floating-point arithmetic. Therefore, we assume two numbers are equal if they are more closely to each other than a fixed constant*eps*.*

## Input

* On the first line you will receive the first floating-point number
* On the second line you will receive the second floating-point number

Hint: Use double.Parse(Console.ReadLine()) to read input

## Output

* Print true if the numbers are equal or false if they are not

## Constraints

* Time limit: **0.1s**
* Memory limit: **16MB**

## Sample tests

| **Input** | **Output (with precisioneps=0.000001)** | **Explanation** |
| --- | --- | --- |
| 5.3 6.01 | false | The difference of 0.71 is too big (> eps) |
| 5.00000001 5.00000003 | true | The difference 0.00000002 < eps |
| 5.00000005 5.00000001 | true | The difference 0.00000004 < eps |
| -0.0000007 0.00000007 | true | The difference 0.00000077 < eps |
| -4.999999 -4.999998 | false | Border case. The difference 0.000001 == eps. We consider the numbers are different. |
| 4.999999 4.999998 | false | Border case. The difference 0.000001 == eps. We consider the numbers are different. |

## Submission

* Submit your code [here](http://bgcoder.com/Contests/Compete/Index/313" \l "1)

1. [**Print the ASCII Table**](https://github.com/TelerikAcademy/CSharp-Part-1/blob/master/Topics/01.%20Introduction-to-Programming/homework/01.%20Play%20with%20VS)

## Description

* Find online more information about ASCII (American Standard Code for Information Interchange) and write a program that prints the visible characters of the ASCII table on the console (characters from 33 to 126 including).

Note: You may need to use for-loops (learn in Internet how).

## Input

* None

## Output

* The 94 characters on single line

## Constraints

* Time limit: **0.1s**
* Memory limit: **16MB**

## Submission

Submit your code [here](http://bgcoder.com/Contests/Compete/Index/313#1)