



C# programming language. The beginning

Course

Programming Languages

Semester 2, FIIT

Mayer S.F.

Mikhalkovich S.S

LECTURE # 11. Strings

String type

Lesson # 11

Char type

To output the char we must surround it by the single quotes:

```
Console.WriteLine('A');
```

Or we can use the variables of char type to store some symbol

```
char symb = 'A';  
Console.WriteLine(symb);
```

A

String type

To output the string we must use double quotes

```
Console.WriteLine("Good day");
```

Or we can use the variables of string type to store some text

```
string s1 = "good day students";  
Console.WriteLine(s);
```

good day students

String is an array of characters.
The indexes start with 0

```
string s = "good day students";  
Console.WriteLine(s[0]);
```

g

Verbatim string and escape characters

`\n` is an escape symbol to have a new line

```
string s = "good\n day\n students";  
Console.WriteLine(s);
```

```
good  
day  
students
```

Or we can use a verbatim string to have a new line in the text.
`@` means a verbatim string

```
string s = @"good  
day  
students";  
Console.WriteLine(s);
```

```
good  
day  
students
```

Verbatim string `@` is also used when we have the special characters inside the text
`\` is a special character, it can't be used in text

```
string s = @"C:\myFolder\picture.jpg";  
Console.WriteLine(s);
```

```
C:\myFolder\picture.jpg
```

Or we can use double `\\` to escape one of them

```
string s = "C:\\myFolder\\picture.jpg";  
Console.WriteLine(s);
```

To have a substring out of the string

Methods of a String class

- Substring ()

```
string str = "Visual C# Education";  
Console.WriteLine(str.Substring(7, 2));
```

C#

To replace some substring by another string

- Replace()

```
string str = "Visual C# Education";  
Console.WriteLine(str.Replace("C#", "C++"));
```

Visual C++ Express

To check the string whether it contains some substring

- Contains()

```
string str = "Visual C# Education";  
Console.WriteLine(str.Contains("#"));
```

True

To check the string whether it contains any symbol and return index of it, or -1

- IndexOf()

```
string str = "Visual C# Education";  
Console.WriteLine(str.IndexOf('z'));
```

-1

Iterating over the characters of a string

```
var s = "Computer";  
for (var i = 0; i < s.Length; i++)  
    Console.Write($"{s[i]} "); // Output: C o m p u t e r
```

```
var s = "Computer";  
foreach (var c in s)  
    Console.Write($"{c} "); // Output: C o m p u t e r
```

Strings are immutable! We can't modify their characters

Using StringBuilder class

- To modify the value of individual chars of a string **StringBuilder** class should be used - is a class that represents a mutable string

```
// 1) Empty string:  
StringBuilder sb = new StringBuilder();  
  
// 2) String with an initial length:  
int n = 50;  
StringBuilder sb = new StringBuilder(n);  
  
// 3) String with an initial value:  
StringBuilder sb = new StringBuilder("qwerty");
```

To create

```
// ReadLine() method:  
StringBuilder sb = new StringBuilder(Console.ReadLine());  
  
// WriteLine() method:  
Console.WriteLine(sb);
```

To input and output

Using StringBuilder class

- Todo: to change the 7'th character of the string.

```
var str = "Hello Mr. Thomson";  
var sb = new StringBuilder(str);  
sb[7] = 's';  
str = sb.ToString();  
Console.WriteLine(str); // output: Hello Ms. Thomson
```

StringBuilder class methods

- **Append** — to add something to the end of a string
- **Insert** — to add something at the given index
- **Remove** — to remove something from the string
- **Replace** — to replace a character or a string

Lecture tasks

Lesson #11

<https://labs-org.ru/c-sharp11-eng/>

Q & A