

F# Tutorial

Pipe-Forward Operator

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1 Syntax, variables, functions

1.1 Key concepts:

1. Having a good text editor helps you code much easier.
2. (a) Once defined, a variable in F# cannot change value (unless "mutable" is used)
(b) If you need an updated value, create a new one.
3. Different datatypes (e.g. integer and decimal-numbers) do not combine easily.
4. Defining and using functions in F# is slightly different from math notation/ other languages.
 - (a) F# automatically detects the type of the variables (e.g. integer, double, etc.) for a function.
 - (b) The variable types for a function will be enforced.

1.2 Introduction:

1.2.1 Comments

You can use double-slash `//`, triple-slash `///`, or star-bracket `(* *)` to make comments.

```
// These words are ignored.  
/// These words are ignored.  
(* These words are ignored. *)  
let x = 1  
let y = x + 5
```

1.2.2 Intellisense

If you are using Visual Studio or Visual Studio Code, you can put your mouse on top of the variable name `x` or `y`, and see that it is an `int` or integer.

This feature will help you identify what is each variable/function, and make coding easier for you.

SHOW PICTURE OF INTELLISENSE HERE.

1.2.3 Common data types and printing

Some of the common types in F# are:

Keyword	Description	Print in output:
<code>int</code>	Integer	<code>%i</code>
<code>double</code> or <code>float</code>	Decimal numbers	<code>%f</code>
<code>string</code>	Words/Sentences	<code>%s</code>
<code>bool</code>	True/False	<code>%b</code>
-	Other objects	<code>%A</code> or <code>%O</code>

```
let name = "John"
let age = 21
let height = 170.5
```

```
printfn "My name is: %s" name
// Output:
// My name is: John
```

```
printfn "Name: %s. Age: %i. Height: %f." name age height
// Output:
// Name: John. Age: 21. Height: 170.500000
```

```
printfn "His height is: %.2f" height
// Output:
// His height is: 170.50
///// Show only two decimal.
```

For example, in the second example, inside the string-format, there are `%s`, `%i`, `%f`. And so, we expect a string, integer, and decimal (in that order) after the string-format specification in order to completely print the result to the output console.

1.2.4 Immutability