Visual Pro Tutorial B

A beginners guide to Visual Scripting

VisualPro: A Lightweight; Visual Scripting Tool

Tutorial: Functions and Variables

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1 Learning Objectives

The following learning objectives are as follows:

1. To declare functions in a Functional Programming (FP) style rather than an OOP style.
2. To declare variables in both global scope **(considered bad practice)** and function scope.

2 Introduction

Focus on the FP style, which gives the chance to increase existing skill level to explore both OOP and FP style languages. Supported languages in VisualPro are C and C++.

Tip 2.1: Fun Fact:

C++ is an extension of C that offers both FP and OOP style language, making the language a powerful language.

2.1 What is the Differences?

OOP style enables the creation of objects, whereas FP style contains functional structure. However, C does allow the creation of a 'struct' that is similar to a class, however, it only allows variables. It is great for creating reusable data structures but do not Constructors or Deconstructors that play a big part in memory management.

An example of C# (OOP Style) vs. C (FP Style):

Example 2.1: OOP Style

```
using System; // Provides the Console.WriteLine function from
    the 'System' library.

class Program {
  static void Main(string[] args) {
    int x = 6, y = 45;
    Console.WriteLine("x + y = " + (x * y).ToString());
    // result: 270 (The ToString method converts the x * y
        calculation to a string and appends to the string).
  }
}
```

Example 2.2: FP Style

```
#include <stdio.h> /* Provides the printf function from the
'stdio' library. */

int main(int argc, char** argv) {
    int x = 6, y = 45;
    printf("x + y = %i", x * y); // result: 270 (%i means first
        parameter is an integer and includes it to the string).

    return 0;
}
```

Note that the OOP style relies on encapsulation, whereas the C language or any other language is FP.

3 Functional Structure

3.1 Exercise: Understanding the Basics

A function exists outside of a class, and within the global scope.

4 Keywords

- FP - Functional Programming.
- OOP - Object-Oriented Programming.

References

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