A NEW PROGRAMMING LANGUAGE

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Abstract: Everyone knows that hardware does not mean anything without software. Software is developed by programming languages. One of the most important factors determining the reach of software is the characteristics of the programming language. Many rich applications can be developed with a language that is fast, easy to learn, and has a large library.
The aim of this work is to provide information about the Go programming language that a powerful, fast, easy to learn programming language. Go programming language, developed by Google. Many of the deficiencies of traditional programming languages have been eliminated. It appeared in 2009 and 1.0 version was released in 2012. With the Go programming language, fast and sophisticated projects that can work on the web or in a different environment can be produced. It is an open-source programming language that is evident by the notion of rule, flexibility and speed. In a short time, he was among the fastest growing programming languages.
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Introduction

The Go language was originally a programming language developed by Google in 2007 by Robert Griesemer, Rob Pike and Ken Thompson. It is a static written language and has a syntax similar to that of C programming language. It provides many advanced built-in types such as garbage collection, type security, dynamic typing, variable-length arrays, and key-value maps. It also provides a rich standard library. The Go programming language was launched in November 2009 and is used in some of Google's systems.

Google, a large technology and company, for years C, C ++, Java, Python and so on. It uses many different programming languages. These technologies have advantages and disadvantages. You may not notice them in small or under-load projects, but they appear in large projects. These are performance, compilation (in large projects may take hours to compile the source code) security, compliance, time management, resources (hardware, money, energy, etc.) can be listed in many headings such as management. For many years, Google has developed both an operating system for internal systems and many technologies and algorithms to solve many problems like these. Go programming language is one of them. The Go programming language has been initiated by Google to solve its problems. Therefore, all features added to or not added to the Go are completely determined by the software experiences of the years. If you look at the Go programming language a little bit, you might see a question like yok "Why not generics?". The answer of this question from the developer team to summarize; Generics are not fast. The point of view of Go is so clear. The goal is to create a flexible, fast and powerful language with little language capability and rule. In this article, basic features of Go programming language will be explained. The ease of bringing to the software world will be discussed. Sample codes will be explained. GoLang, which is a fast language, will be examined with its basic lines. Go programming language has many similarities to the C programming language.

1. Features of Go Programming Language
Most important features of Go programming language are listed;
- Compile time is fast.
- Support for environment adopting patterns similar to dynamic languages. For example, type inference (b := 10 is valid declaration of a variable b of type int)
- GoLang programs are simple and safe.
- Support for Interfaces and Type embedding.
- GoLang is object oriented

To keep the GoLang simple, the following features commonly available in other similar languages are omitted in GoLang;

- Type inheritance
- Method or operator overloading
- Circular dependencies among packages
- Pointer arithmetic
- Generic programming

2. Create, Compile Go Programs

A Go program lines length can vary from 4 lines to millions of lines. It should be written into one or more text files with the extension ".go". For example, firstapp.go. You can create a Go program use Notepad or Notepad++ in Windows, Nano in Linux, TextEdit in macOS etc. Other, you have to download Go compiler software. You can download golang.org for your operating systems.

A compiler is computer software that transforms computer code written in one programming language (the source language) into another programming language (the target language). Compilers are a type of translator that supports digital devices, primarily computers. The name compiler is primarily used for programs that translate source code from a high-level programming language to a lower level language (e.g., assembly language, object code, or machine code) to create an executable program.

Now Go Compiler stable version is 1.11. You can download Go compiler from this address: https://golang.org/dl/
Go compiler list (As Operating System): Windows, Linux, macOs, FreeBsd

Install Compiler on Windows;
After download Go compiler, run "setup". Compiler will be install to "Go" folder. Setup software will be make all of go environment.
You can verify installation Go compiler. Open command line (Cmd)
You are ready to create Go programs in Windows.

Install Compiler on Linux;
$ wget https://dl.google.com/go/go1.11.src.tar.gz
$ sudo tar -xvf go1.11.src.tar.gz
$ sudo mv go /usr/local
Prepare Go Environment;
GOROOT is the location where Go package is installed on your system.
$ export GOROOT=/usr/local/go
GOPATH is the location of your work directory. For example my project directory is ~/GoProjects
$ export GOPATH=$HOME/GoProjects
Now set the PATH variable to access go binary system wide.
$ export PATH=$GOPATH/bin:$GOROOT/bin:$PATH
You can verify installation Go compiler. Open command line (Cmd)
$ go version
go version go1.11 linux/amd64
You are ready to create Go programs in Linux.

3. Go Programming Language Rules

In a Go program, the line separator key is a line terminator. That is, individual statements don't need a special separator like ";" in C.
fmt.Println("Hello Students")
fmt.Println("Go is Wonderful")

Comments;
Comments are helping texts in your Go program. These lines are not compiled. In a Go program comments character are "/* */".
/* These lines are comments */

Identifiers;
Go identifiers is a name used to identify a variable, function or any user defined item. It must start with a letter (A-Z) or underscore (_) . It can follow any digits (0-9)
Example;

section, section1, section2, _oursection
section1 = "Computer"
section2 = "Accounting"
There is not in identifier any punctuation characters. (@,$, %)
Go programming language is a case-sensitive language. For example "School" and "school" are different.
School = "Kocaeli University"
school = "Istanbul University"

Conclusions

The Go programming language is quite simple and comfortable. It is completely open source. It has a fast compilation structure. Provides increased speed of operation with large data. The standard library is wide. Go programing language is a good choice for programmers who are looking for a new programming language. This article describes the basic characteristics of Go programming language. This language will provide a basis for new programmers.

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