IJIRSET
International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

e-ISSN: 2319-8753 | p-ISSN: 2347-6710

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 11, Issue 12, December 2022

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.118

9940 572 462 | 6381 907 438 | ijirset@gmail.com | www.ijirset.com

International Journal of Innovative Research in Science, Engineering and Technology (IJIRSET)

| e-ISSN: 2319-8753, p-ISSN: 2347-6710| www.ijirset.com | Impact Factor: 8.118|

|| Volume 11, Issue 12, December 2022 ||

| DOI:10.15680/IJIRSET.2022.1112028 |

GoLang (GO) Programming Language of Google

S.P.Phadtare, Firoza Mallik, Romana Salim, Pradnya Mahadik

Department of Information Technology, Sharad Institute of Technology Polytechnic (Yadrav-Ichalkaranji), India

Student, Department of Information Technology, Sharad Institute of Technology Polytechnic (Yadrav-Ichalkaranji), India

Student, Department of Information Technology, Sharad Institute of Technology Polytechnic (Yadrav-Ichalkaranji), India

Student, Department of Information Technology, Sharad Institute of Technology Polytechnic (Yadrav-Ichalkaranji), India

ABSTRACT —Who works on the Go programming language orWhen they developing software today,they do not use the advance tools or new concepts. So it's time to use tools and languages for developing software. The Go Programming Language was created at Google they also speaks to Jeff meyerson in this excerpt from software. Jeff Meyerson also spoke with Andrew Gerrand about the Go programming language. Before developing the go languagemany company got many problems e.g difficult to understand the documentation, difficult to read the code and etctherefore the Go programming language help to solve this problem.The Go programming also help to make investigation of the whole software development process. The Go programming is easy to use and fulfill the needs of the software.

KEYWORDS: Developer tools, Go, Golang, Language review.

I. INTRODUCTION

It was developed in 2007 by Robert Griesemer, Rob Pike, and Ken Thompson at Google but launched in 2009 as an open-source programming language. Go also known as Golang is an open source. Go is a general-purpose programming language with a simple syntax and using packages, for efficient management of dependencies.

II. PURPOSE & GOALS

Challenges in introducing Go asthe main language. Platform computer system setup consisting of a hardware architecture, operating systemand its libraries. We find outtheory and practice as well as how it solvesproblems programmers face in other languages. Host platform where the compiler will run. GO programming environment which support multiple architectures. It is also used for Game Development ,Distributed Network Services ,Cloud development.This includes looking at the community, availability of resources, the future development of the language.

III. CONFERENCE PAPER PREPARATION

Conference papers are limited to a maximum of five pages.Please and check your spelling and male surethat sentences are complete and they are in proper Structure. Check thenumbering and make surethat all appropriate references are included.Please take note of the following items when proofreadingspelling and grammar.

| e-ISSN: 2319-8753, p-ISSN: 2347-6710| www.ijirset.com | Impact Factor: 8.118|

|| Volume 11, Issue 12, December 2022 ||

| DOI:10.15680/IJIRSET.2022.1112028 |

A. Building & Compiling

- **The Environment**

Go tools and compilers on a system, which follow official instructions
andcompiles it from source code. GNU/Linux distributions provide binary packages for Go.Workspaces in Go have multiple modules simultaneously without having to edit go.mod files for each module. Each module within a workspace is treated as a main module when resolving dependencies.

- **Building**

Go program no need for writing scripts or Makefiles. It focused on standard build-tool named and referred because this is the most used tool. There are interesting buildtoolstargetting e.g. *goxc*.One of the problems the Go creators wanted to solve is how a C-compiler has to resolve by Imports header files. Imports and opening files in Go, each compiled object file containsinformation about imported symbols.The **Go** Programming Language Build fast, reliable, and efficient software and Easy to learn .

e.gRunning a Go program

```
package main

import "demo"

func main()
{
demo.Println("Hello World")
}
```

```
go run helloworld.go
```

Syntax to run the the go file is-

go run filename

$ go run <*. go/ package >
$go build [-o output] [build flags] [<*. go/package >]

For the helloworld program we would see that the go tool first creates a temporary work directory, theninvokes the Go compiler and then the linker.

- **gc&gccgo**

when the compilers disagree, we fix the spec, and change one or both compilers accordingly. Gc is the original compiler, and the go tool uses it by default. Gccgo is a different implementation with a different focus, and in this post we'll take a closer look at it. Gccgo is distributed as part of GCC, the GNU Compiler Collection. gccgo is a Go frontend connected to the GCC backend. The Go frontend is separate from the GCC project and is designed to be able to connect to other compiler backends, but currently only supports GCC. This is not surprising since two of Go's designers, Ken Thompson and Rob Pike, also were involved in the developmentof Plan 9. In this toolchain architecture there is, for each target architecture, a separatecompiler, linker and assembler. The gc compiler supports only the most popular processors: x86 (32-bit and 64-bit) and ARM. Gccgo, however, supports all the processors that GCC supports. Not all those processors have been thoroughly tested for gccgo, but many have, including x86 (32-bit and 64-bit), SPARC, MIPS, PowerPC and even Alpha. Gccgo has also been tested on operating systems that the gc compiler does not support, notably Solaris.Gccgo provides the standard, complete Go library. Many of the core features of the Go runtime are the same in both gccgo and gc, including the goroutine scheduler, channels, the memory allocator, and the garbage collector. Gccgo supports splitting goroutine stacks as the gc compiler does, but currently only on x86 (32-bit or 64-bit) and only when using the gold linker (on other processors, each goroutine will have a large stack, and a deep series of function calls may run past the end of the stack and crash the program).

- **Cross-Compilation**

Programs written in Go can easily be compiled for a wide variety of target operating systems such as Windows, macOS, and Linux by using the GOARCH and GOOS environmental variables

| e-ISSN: 2319-8753, p-ISSN: 2347-6710| www.ijirset.com | Impact Factor: 8.118|

|| Volume 11, Issue 12, December 2022 ||

| DOI:10.15680/IJIRSET.2022.1112028 |

e.g*go env* command to view the values of these variables on your machine

```
$ go env
...
GOARCH="amd64"
GOHOSTARCH="amd64"
GOHOSTOS="linux"
GOOS="linux"
...
```

to compile your Go project for a 64-bit Windows machine

```
GOOS=windows GOARCH=amd64 go build -o
bin/app-amd64.exe app.go
```

GOOS is windows, and *GOARCH* is *amd64* indicating a 64-bit architecture. If you need to support a 32-bit architecture, all you need to do is change *GOARCH* to *386*.

```
GOOS=windows GOARCH=386 go build -o
bin/app-386.exe app.go
```

GCC

GCC stands for "GNU Compiler Collection". GCC is an integrated distribution of compilers for several major programming languages. These languages currently include C, C++, Objective-C, Objective-C++, Fortran, Ada, D, and Go. The abbreviation GCC has multiple meanings in common use**.** C standard library (e.g. glibc, eglibc, newlib, uclibc, musl), helper tools for executablesand system headers (i.e. Linux header files) for any practical usage.Officially crosstool-NG supported version 4.8.1 but we were able to hack it tobuild version 4.8.2 by manually adding it to the install-wizard through a script among thefiles provided by crosstool-NG .

The Go Tool

How to do cross-compilation correctly with the go tool using gccgo. This led us to experiment ourselves and later start a discussion at the Go. The go tool is not easy to use directly in this situation. Cross-compiling tools have a "triplet prefix" in their name typically in the format of "<cpu>-<vendor>-<os>-<tool>"

- **C-Integration**

Golang was formerly written in C but is now written in Go itself. It is also popular as a system programming language. Go can integrate with C-programs if it is to be adopted inthese environments. To solve this the Go distribution ships with a tool called *cgo*.Cgo lets Go packages call C code. Given a Go source file written with some special features, cgo outputs Go and C files that can be combined into a single Go package. The programmer import and access symbols from a C-library. C-code canbewritten in a comment in a Go source file. Such code and any imports will be available in special namespace in the Go-code. To build cgo packages, just use go build or go install as usual. The go tool recognizes the special "C" import and automatically uses cgo for those files.While calling Go functions from C is supported, the main function must be in Go, to start the Go runtime, etc.The cgo command documentation has more detail about the C pseudo-package and the build process. Comment of the runtime package's cgocall.go.A callback function is a function passed into another function as an argument, which is then invoked inside the outer function to complete some kind of routine or action.

- **Development Tools**

Testing, Debugging, Documentation, IDEs & Text Editors, Other
Linter Package Manager.

| e-ISSN: 2319-8753, p-ISSN: 2347-6710| www.ijirset.com | Impact Factor: 8.118|

|| Volume 11, Issue 12, December 2022 ||

| DOI:10.15680/IJIRSET.2022.1112028 |

- **TheGo Programming Language**

Syntax & Types&Object-orientation

Line Separator
Statement terminator by semicolon (;).

Comments
They are ignored by the compiler. They start with /* and terminates with the */ .

Identifiers
It can be Variable, Function or other defined items. It does not allow @, $, and % within identifiers

Keywords
Keywords are reserved words.(Break, default, defer, case, chan, const, fallthrough, else, continue, for, func, Go, Goto, if, import, interface, map, package, range, return, select, Struct, Switch, Type, Var).

Datatype
How the bit pattern stored is interpreted(Boolean types, Numeric types, String types, Derived types, Integer Types-[uint8,uint16, uint32, uint64, int8, int16, int32, int64] Floating Types-[float32 float64 complex64 complex128]Other Numeric Types–[byte, rune,uint,int,uintptr]).

Variable
It tells the compiler where and how much storage to create for the variable.
Syntax-
varvariable_listoptional_data_type;
or
variable_name = value;

Constant
Constants refer to fixed values. It can be of any of the basic data types like an integer constant, a floating constant, a character constant, or a string literal.

Operator
It is a symbol that tells the compiler to perform specific mathematical or logical manipulations(Arithmetic Operators, Relational Operators, Logical Operators, Bitwise Operators, Assignment Operators, Miscellaneous Operators).

Decision making
It is structures require to specify one or more conditions to be checked. (if statement, if-else statement, nested if statement, switch statement, select statement).

loop statement
It allows us to execute a statement multiple times.(for loop, nested loop, break statement , continue statement, goto statement).

Function
It perform specific block of task.
Syntax
funcfunction_name([parameter list]) [return_types]
{
body of the function
}

| e-ISSN: 2319-8753, p-ISSN: 2347-6710| www.ijirset.com | Impact Factor: 8.118|

|| Volume 11, Issue 12, December 2022 ||

| DOI:10.15680/IJIRSET.2022.1112028 |

IV. CONCLUSION

Go different types of features like interface and inheritance. Similar concepts like in other languages. It is easy to use and handle. Go is a really nice language for development.

REFERENCES

Those are following websites we visited:

1. https://go.dev/ref/spec
2. https://ieeexplore.ieee.org/document/6898707
3. https://en.wikipedia.org/wiki/Go_(programming_language)
4. https://www.infoworld.com/article/3198928/whats-the-go-programming-language-really-good-for.html
5. https://www.gopl.io

INNO SPACE
SJIF Scientific Journal Impact Factor
Impact Factor: 8.118

doi cross ref

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

निस्केयर NISCAIR

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

9940 572 462 6381 907 438 ijirset@gmail.com

Scan to save the contact details