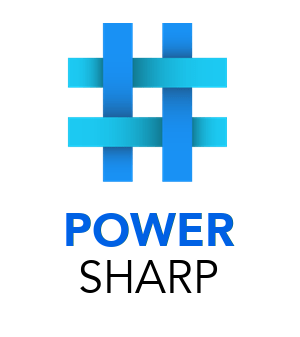
**March 2023**



**PowerSharp Programming Language**

**Reference Manual**

Version 0.3 – PowerMess

Developed by Gabriel Margarido

**Resume**

PowerSharp is a strong, explicit or inferred and static typed programming language, that compiles to Go source/executable binary. It aims make easy Go development for normal people, it’s syntax was inspired in C, C++, Solidity, Ruby, Crystal, Go and Lua programming languages.

To run PowerSharp correctly you should have installed before it: Node.js 14+, NPM 8+, GNU Make and Golang.

**You can download them through this links:**

Node.js and NPM: [www.nodejs.org](http://www.nodejs.org/)

Golang: www.go.dev

GNU Make for Windows: <https://gnuwin32.sourceforge.net/packages/make.htm>

**Gabriel Margarido,**

**March 2023**

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**Installing compiler from sources:**

1. Install these softwares first: GNU Make, Node.js 12+, NPM 8+ and Golang.

(And also **Git Bash** if you are running in Windows.)

**Installing Go v1.20.2 from sources (UNIX/Windows)**

(Enter inside the unzipped directory)

B. Installing Go from sources (macOS/Linux):

cd go/src && ./all.bash

C. Installing Go from sources (Windows):

cd go\src && start all

**Installing PowerSharp Linux**

Install Go lang: https://go.dev/dl/

A. On Ubuntu or Debian you can run:

sudo apt install nodejs npm make -y

sudo make all install test

**Installing PowerSharp MacOS X**

Install Node.js and NPM: https://www.nodejs.org

Install Go lang: <https://go.dev/dl/>

C. (unzip and enter inside the downloaded directory,

next run the following commands)

sudo make all install test

**Installing PowerSharp Windows**

Install Node.js and NPM: https://www.nodejs.org

Install GNU Make: https://gnuwin32.sourceforge.net/packages/make.htm

Install Go lang: <https://go.dev/dl/>

(unzip and enter inside the downloaded directory,

next run the following commands)

C. Then, run inside the unzipped directory

start all

D. Or you can run directly the Makefile

make microsoft-win64

They’re gonna be installed on UNIX systems at:

/usr/local/bin/powerc

/usr/local/powerc-sample

And for Microsoft Windows inside:

dist-win64/powerc.exe

dist-win64/powerc-sample

4. To compile a source file

powerc -new myproject

4. To compile a source file

cd myproject

powerc main.pwr -o main

You can uninstall the compiler by running:

sudo make remove

These are all existing datatypes in PowerSharp:

|  |  |
| --- | --- |
| **Datatype** | **Description** |
| int int8 int16 int32 int64 | Signed Integer (negative or positive) value |
| uint uint8 uint16 uint32 uint64 | Unsigned (positive) integer value |
| rune | Integer 32-bit value with unicode for symbols |
| byte | Alias for unsigned integer 8-bit |
| float32 float64 | Decimal positive or negative real value |
| complex64 complex128 | Float 64-bit/128-bit for imaginary values |
| string | String value |
| bool | Boolean (true or false) / 0 or 1 |

*Variable declaration:*

x = 53

int x = 53

x = -53

int8 x = -53

int16 x = -53

int32 x = -53

int64 x = -53

uint x = 53

uint8 x = 53

uint16 x = 53

uint32 x = 53

uint64 x = 53

byte x = 53

y = 7.52

float32 y = 7.52

float64 y = 7.52

z = “Hello world”

string z = “Hello world”

w = true

w = false

bool w = true

bool w = false

*How to assign an undefined value:*

string s = nil

r = nil → Not recommended

int i = nil

r = nil → Not recommended

float32 f = nil

f = nil → Not recommended

bool b = nil

b = nil → Not recommended

*Variable with error handling declaration:*

***A.*** *How we do in PowerSharp*

@error err

file = os.Open(“filename.txt”)

***B.*** *How we do in Go*

f, err := os.Open("filename.ext")

if err != nil {

log.Fatal(err)

}

*Variable reassignment:*

x := 5

y := 0.5

z := “Bye world”

w := true x := false

***Errors*** *with variable reassignment (Strong-typed):*

x := 5.6 → Error! Trying to cast integer to float

y := 2 → Error! Trying to cast float to integer

z := 0 → Error! Trying to cast string to int

w := “Hello world” → Error! Trying to cast bool to string

*Arrays declaration:*

int a[6] = (-0.5, 5.4, -332.45, -1.5, 4, 15)

uint a[6] = (0, 5, 3, 1, 4, 15)

float32 b[6] = (0.5, 5.23, 3.43, 1.15, 4.02, 15.43)

string c[4] = (“Julia”, “Maria”, “Clara”, “Miriam”)

int a[] = (-0.5, 5.4, -332.45, -1.5, 4, 15)

uint a[] = (0, 5, 3, 1, 4, 15)

float32 b[] = (0.5, 5.23, 3.43, 1.15, 4.02, 15.43)

string c[] = (“Julia”, “Maria”, “Clara”, “Miriam”)

*Showing messages on the screen:*

print(“Hello world\n”)

puts(“Hello world\n”)

*Getting user data:*

* *First way (most recommended):*

string x = nil

gets(x)

* *Second way (less recommended):*

gets(&x)

*If-Conditional*

if (*condition*) do

...

elsif (*condition*) do

...

else

...

end

*While Loop*

while (*condition*) do

...

end

*Repetition loops*

for *iterator* 0 to 5 do

...

end

5 times do

...

end

*Human-readable operators:* is isnot and or  
*Machine-readable operators:* == != and or

*Writing mathematical expressions on the screen*

float x = 42+b+z\*k+(1/2+45/4)+(456/4)

puts(x)

*Private function declaration:*

def foo(a: string, b: int32, c: float32) float32

...

float32 d = (a+c)\*b

return d

end

def foo(a string, b int32, c float32) float32

...

float32 d = (a+c)\*b

return d

end

*Function calling:*

foo(45, 3.5, 420)

*Public function declaration:*

def Foo(a: string, b: int32, c: float32) float32

...

float32 d = (a+c)\*b

return d

end

def Foo(a string, b int32, c float32) float32

...

float32 d = (a+c)\*b

return d

end

*Public function calling:*

Foo(45, 3.5, 420)

*Concatenating strings*

a = “Hello”

b = “ ”

puts(a+b+”world”)

*1. This section requires:*

include “string\_handling”

import “strings”

*Getting length of string*

string x = “Hello world”

int c = Length(x)

puts(c)

*Putting string to lowercase*

string x = “HELLO WORLD”

string c = Lowercase(x)

puts(c)

*Putting string to uppercase*

string x = “hello world”

string c = Uppercase(x)

puts(c)

*2. This section requires:*

include “env”

import “os”

*Getting Environment Operating System*

string x = GetOS()

puts(x)

Possible returns:

*\* -> "windows"*

*\* -> "linux"*

*\* -> "darwin"*

*\* -> "freebsd"*

*\* -> "openbsd"*

*\* -> "netbsd"*

*\* -> "dragonfly"*

*\* -> "solaris"*

*\* -> "zos"*

*\* -> "plan9"*

*\* -> "hurd"*

*\* -> "illumos"*

*\* -> "nacl"*

*\* -> "js"*

*\* -> "ios"*

*\* -> "android"*

*\* -> "aix"*

*Getting Environment CPU Architecture*

string x = GetArch()

puts(x)

Possible returns:

\* -> "386"

*\* -> "amd64"*

*\* -> "amd64p32"*

*\* -> "arm"*

*\* -> "arm64"*

*\* -> "arm64be"*

*\* -> "loong64"*

*\* -> "mips"*

*\* -> "mips64"*

*\* -> "mips64le"*

*\* -> "mips64p32"*

*\* -> "mips64p32le"*

*\* -> "mipsle"*

*\* -> "ppc"*

*\* -> "ppc64"*

*\* -> "ppc64le"*

*\* -> "riscv"*

*\* -> "riscv64"*

*\* -> "s390"*

*\* -> "s390x"*

*\* -> "sparc"*

*\* -> "sparc64"*

*\* -> "wasm"*

*Running Shell Commands*

*Parameters → (command::string, isOutput::bool)*

ShellCommand(“ls -a”, true)

ShellCommand(“ls -a”, false)

*Comments in PowerSharp*

@ (YOUR COMMENT HERE)

*3. This section requires:*

include “file”

import “io/ioutil”

*Writing to text file*

string x = “Hello world\n”

WriteToFile(“test.txt”, x)

*Appending to text file*

string x = “Hello world\n”

WriteToFile(“test.txt”, x)

*Read from text file*

string f = ReadFile(“test.txt”)

puts(f)

*4. This section requires:*

include “vector”

*Removing from array by index (In this case: index 5, counting from 0)*

int i[] = (34, 512, 32, 563, 256, 128)

ri = RemoveArrayFromIndex(i, 5)

puts(ri)

*Removing from array by value (In this case: value 512 with index 1 counting from 0)*

int i[] = (34, 512, 32, 563, 256, 128)

rA = RemoveArrayFromValue(i, 512)

puts(rA)

*Appending to array (In this case: value 2048 with last index counting from 0)*

int i[] = (34, 512, 32, 563, 256, 128)

xA = append(i, 2048)

puts(xA)

*Main program structure*

namespace org.yourname.projectname

package main

import “strings”

import “io/util”

import “os”

import “fmt”

include “string\_handling”

include “file”

include “os“

include “vector”

@ (TODO CODE HERE)

def main()

5 times do

puts “Hello world”

end

end

*Import Go modules - Import*

Modules are imported in default mode, like other Go modules,

such as: fmt os io/util, and so on...

/usr/local/go/...

(.)

|

|\_\_\_\_\_\_\_mymodule

|

|\_\_\_\_\_\_\_\_\_\_\_ mymodule.go

import “mymodule”

*Include Go libraries - Include*

Library is read and stored inside the memory, then PowerC compiler

writes to the file where it was called, unlike Go modules, they don’t

be inside the Go global path or be a module.

(.)

|

|\_\_\_\_\_\_\_ power\_modules

|

|\_\_\_\_\_\_\_mymodule

|

|\_\_\_\_\_\_\_\_\_\_\_ init.go

include “mymodule”

*Call Go native functions*

*You can also call functions written*

*in Go inside PowerSharp source-code.*

fmt.Println(“Hello world”)

fmt.Scanln(&x)

fmt.Println(x)

*Declare Structures*

*Organize related data inside a single structure.*

*Declaration Syntax:*

struct *identifier* do

declare *property* int

declare *property* float64

declare *property* string

end

*Instantiating Syntax:*

*identifier* *name* = nil

*Attributing Syntax:*

*name*.*property* := *value*

*Example:*

struct vehicle do

declare year int

declare distance float64

declare model string

end

vehicle honda = nil

honda.year := 2022

honda.distance := 512657.67

honda.model := “Civic”

puts(honda.year)

**THE END**