



AWESOME GO — #4

# Build and Use Go Packages as C Libraries



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CGO is an official builtin feature of Go, it enables the creation of Go packages that reference to C libraries. But it isn't just that, it is achievable in the opposite direction, too. It enables creation of C libraries from Go packages so that C code can reference to Go, which is mind-blowing.

. . .

## How to

### Build Go package as C shared library (or shared object)

Every Go `main` package can be built as a C shared library.

```
$ go build -go build -buildmode c-shared -o <c-lib>.so <go-package>
```

Executing above command builds target Go `main` package and all of its dependencies as a single C shared library, which can be distributed, installed and linked to every C application and applications in other programming languages that can reference C shared libraries (C++, Python, Javascript, etc).

**Note:** Output C shared libraries should be named in standard form `lib*.so`.

### Generate C header and export Go functions as C functions

Building a Go `main` package as C shared library doesn't automatically neither generate C header nor expose any Go function as C symbol. Developers have to explicitly indicate which Go functions to be exposed.

To export a Go function as a C symbol:

- Add comment `//export FuncName` on top of the Go function.
- The Go code file containing the function has to `import "C"`.
- The function must belong to `main` package.
- The function signature must not include neither Go struct nor Go interface nor Go array nor variadic argument.

```
package main

import "C"

import (
    "math/rand"
    "time"
)

//export cgoCurrentMillis
func cgoCurrentMillis() C.long {
    return C.long(time.Now().Unix())
}
```

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