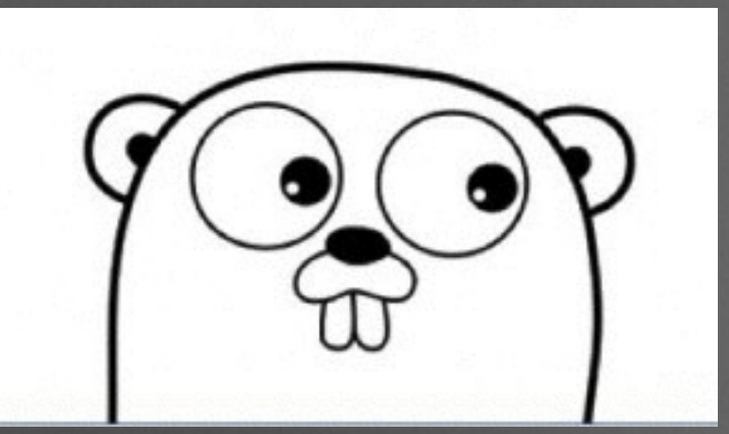
Prospects for using Go libraries in Haxe

A talk by Elliott Stoneham at WWX2015

overview

- Why bother?
- TARDIS Go transpiler
- Math example
- Unicode example
- Image example
- Issues, hopes & dreams



Go vs Haxe

- Active Github repositories Q4 2014:
- Go: 22,264
- Haxe: 1,134
- (data from githut.info)

tardisgo.github.io

For more explanation of how it works, watch my WWX2014 speech

```go
package main

import (
    _ "math"
    _ "strconv"
)

const tardisgoLibList = "math,strconv"

func main() {}
```

simple “math” example

Go code above generates 266 Haxe files containing 71.4k lines of code

```
package ;

import tardis.*; // import the generated Go code

class Main {
    public static function main(){
        trace("Go 'math' and 'strconv' standard library trivial example");

        // for documentation see http://golang.org/pkg/math and http://golang.org/pkg/strconv
        // math.Nextafter returns the next representable float64 value after x towards y.
        var na2to3=Go_math_NNextafter.hx(2.0,3.0);
        var na2to1=Go_math_NNextafter.hx(2.0,1.0);

        // The built-in Haxe float->string conversions for cpp & cs round the results to "2",
        // so Go formatting is used to give a consistent cross-platform result.
        trace("The next valid floating point value after 2.0 towards 3.0 is: "+
            Go_strconv_FFormatFFloat.hx(na2to3,"g".charCodeAt(0),-1,64)); // 2.0000000000000004
        trace("The next valid floating point value after 2.0 towards 1.0 is: "+
            Go_strconv_FFormatFFloat.hx(na2to1,"g".charCodeAt(0),-1,64)); // 1.9999999999999998
    }
}
```

```go
package main

import _ "golang.org/x/text/unicode/norm"

const tardisgoLibList = "golang.org/x/text/unicode/norm"

func main() {}
```

unicode normalisation example

Go code above generates 1,446 Haxe files containing 408.5k lines of code

```
package ;
import tardis.*; // import the generated Go code
class Main {
    public static function main(){
        trace("Go unicode normalization library example");
        // for documentation see https://godoc.org/golang.org/x/text/unicode/norm
        compare("aaa","aaa");                                   // aaa == aaa ? true
        compare("aaa","aab");                                   // aaa == aab ? false
        compare("a\u0300a", "\u00E0a");                         // a`a == àa ? true
        compare("a\u0300\u0320b", "a\u0320\u0300b");            // a`̣b == à̗b ? true
        compare("\u1E0A\u0323", "\x44\u0323\u0307");            // Ḍ̇ == Ḍ̇ ? true
        // A character that decomposes into multiple segments spans several iterations.
        compare("\u3304", "\u30A4\u30CB\u30F3\u30AF\u3099");    // ㌄ == イニング゙ ? true
    }
    static function compare(a1:String,b1:String):Bool{
        // create the Go type
        var form:GoType_golang_dot_org_47_x_47_text_47_unicode_47_norm_dot_FForm;
        // set the type to translate strings to NFKD normal form
        form = Go.golang_dot_org_47_x_47_text_47_unicode_47_norm_NNFFKKDD;
        // translate
        var a2 = form._String(a1);
        var b2 = form._String(b1);
        // test if the same
        var ret = a2 == b2;
        // show that we've done it for debug purposes
        trace(a1,"==",b1,"?",ret);
        return ret;
    }
}
```

```go
package main

import (
    _ "io/ioutil"

    _ "github.com/koyachi/go-nude"
)

const tardisgoLibList = "github.com/koyachi/go-nude,io/ioutil"

func main() {}
```

nudity detection example

Go code above generates 2,044 Haxe files containing 471.3k lines of code

```
static var fName:String;

public static function main(){
    trace("Starting...");
    tardis.Go_main_main.hx();
    trace("Go nude detection library ready");
    js.Browser.document.getElementById("inputFileToLoad").onchange = encodeImageFileAsURL;
}
public static function writeFile(b:haxe.io.Bytes,typ:String):Void{
    var sl=tardis.Slice.fromBytes(b); // make a Go byte slice
    trace(typ,sl.len());
    var p="temp."+typ; // the name of our file
    // write the file in the pseudo file system
    var err=tardis.Go_io_47_ioutil_WWriteFFile.hx(p,sl,438 /*0666*/);
    if(err!=null){
        trace(p," ioutil.WriteFile() had error: ",err);
    }
    trace("wrote file ",p);
    fName=p;
}
public static function isNude():Bool {
    var ret=tardis.Go_github_dot_com_47_koyachi_47_go_45_nude_IIsNNude.hx(fName);
    if(ret.r1!=null){
        trace("nude.IsNude() had error: ",ret.r1);
        return false;
    }
    return ret.r0;
}
```

Nudity Detection: A Go library called from Haxe

The go-nude nudity detection libray takes a jpeg, gif or png image and determines if it contains nudity. Try it below by uploading a thumbnail image, which will be processed in your browser. For example save the Rubens nude on the right and choose it from your disk.

The library has been translated from Go into Haxe using TARDIS Go. The Haxe compiler then translated this program to call the library, and the generated library itself, into JS to enable it to run in this page. The translation process is currently very imature and produces slow code. As a result, please only test with small thumbnail-size images. Finally, be aware that the library does not always give the result you might expect!

Choose File No file chosen

go-nude verdict: no problem.

Live Demo

http://tardisgo.github.io/go-nude/index.html

Issues, hopes & dreams

- **Issues:** the immaturity of TARDIS Go => large code sizes, slow execution speed, and ugly Haxe call interface
- **Hopes:** that it can integrate into the Haxe ecosystem … please tell me how?
- **Dreams:** that most Go libraries are also available in Haxe