

CS51 Final Project

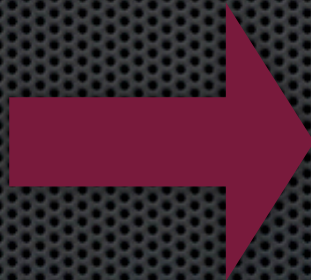
OcamlScript

by Peter Lin

What is OcamlScript?

- small program that translates Ocaml to JavaScript
- for example:

```
let add x y z =  
  x + y + z  
;;
```



```
add = function(x){  
  return function(y) {  
    return function(z) {  
      return x + y + z;  
    }  
  }  
}
```

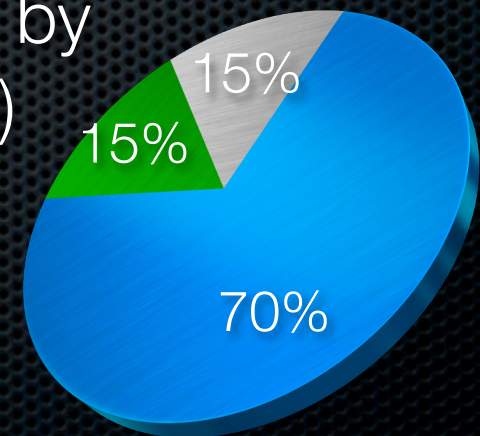
- ... lots more examples later!

Algorithms

- Lex/Parser:
 - Ocamllex/Ocamlyacc using grammar rules to tokenise and parse Ocaml code into ASTs
- Abstract Syntax Trees:
 - Parsed Ocaml expression AST - ParsedOcamlExpr
 - Translated JavaScript expression AST - JavaScriptExpr
- Translator:
 - `let ocamljs (e:P.expression) : J.expression = ...`
- Printer
 - `print_js` function in JavaScriptExpr that outputs JavaScript code

Languages

- ✦ Primarily used Ocaml
 - ✦ Pattern match and ASTs - incredibly powerful
- ✦ Spent some time on JavaScript (research/testing)
 - ✦ All but six lines of JS code generate by OcamlScript (some helper functions)
- ✦ Ocamllex/Ocamlyacc
 - ✦ Grammar was difficult to define!



● Ocaml ● JavaScript ● yacc

Lessons learned

- ✦ Language choice matters a whole lot
 - ✦ Choose the right language for the job!
 - ✦ Sometimes it could be easier to write in a different language and just translate. For example use Ocaml for pattern matching then translate using ocamlscript.
- ✦ Spend more time thinking about programs holistically.
 - ✦ More thinking effort earlier - less coding effort later
- ✦ Good random cow photos are difficult to find

