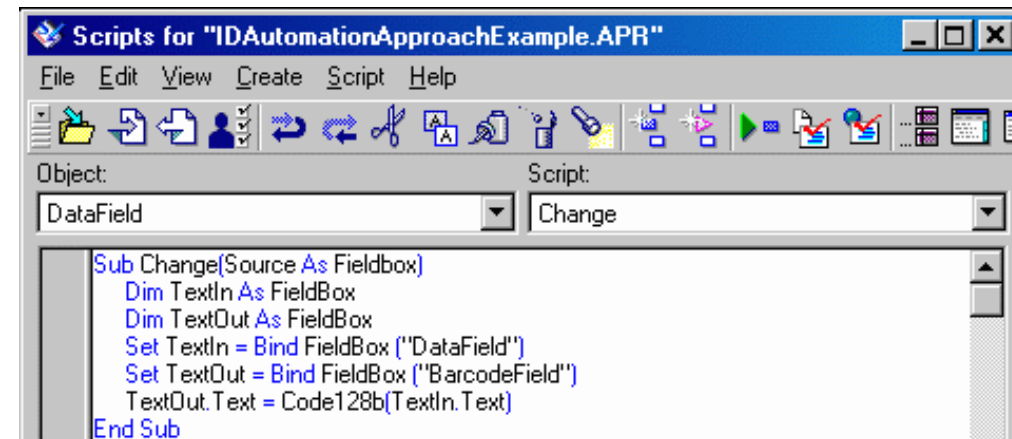


LotusScript to TypeScript

```
1 import * as express from 'express';
2 import { Controller, Get, Post } from 'inversify-express-utils';
3 import { injectable } from 'inversify';
4 import { interfaces } from '../interfaces/interfaces';
5 import { modulesRepository } from '../infrastructure/ioc/injectors';
6
7 @injectable()
8 @Controller('/modules')
9 class ModulesController {
10
11     private readonly _modulesRepository: interfaces.repositories.ModulesRepository;
12
13     public constructor(
14         @modulesRepository modulesRepository: interfaces.repositories.ModulesRepository
15     ) {
16         this._modulesRepository = modulesRepository;
17     }
18
19     @Get("/")
20     public async get(req: express.Request) {
21         return await this._modulesRepository.read();
22     }
23
24     @Post("/")
25     public async post(req: express.Request) {
26         let module: interfaces.entities.Module = req.body;
27         return await this._modulesRepository.create(module);
28     }
29
30 }
31
32 export { ModulesController };
```





Michael Alexander



Jason Roy Gary

History of LotusScript

- A Clone of VisualBasic 3.0
- Released in 1994



And Since . . .

- HTTPRequest
- A Few New Objects
- Array
- Fulltrim
- Booleans

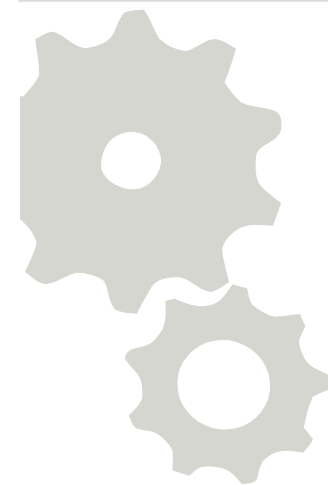
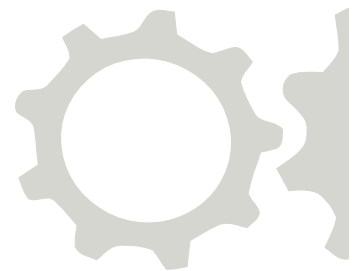


But Visual Basic has Moved On as a Language

- Try / Catch / Finally
- Byte, Char, Date, Dec
- Asynchronous Processes
- Multithreading
- Modules, Operators, Delegates
- Enums, Abstracts
- Static Methods
- Initializers
- Default Arguments
- And

The Challenge with LotusScript

- Virtually No Training Material Remaining
- Obsolete Coding Patterns
- Lack of Skills and Engineers
- Lacking in Modern Programming Features
- Poor IDE
- No Multithreading
- Expensive
- Hard to Debug
- Non-Portable Code
- Few Commercial and Open Source Libraries

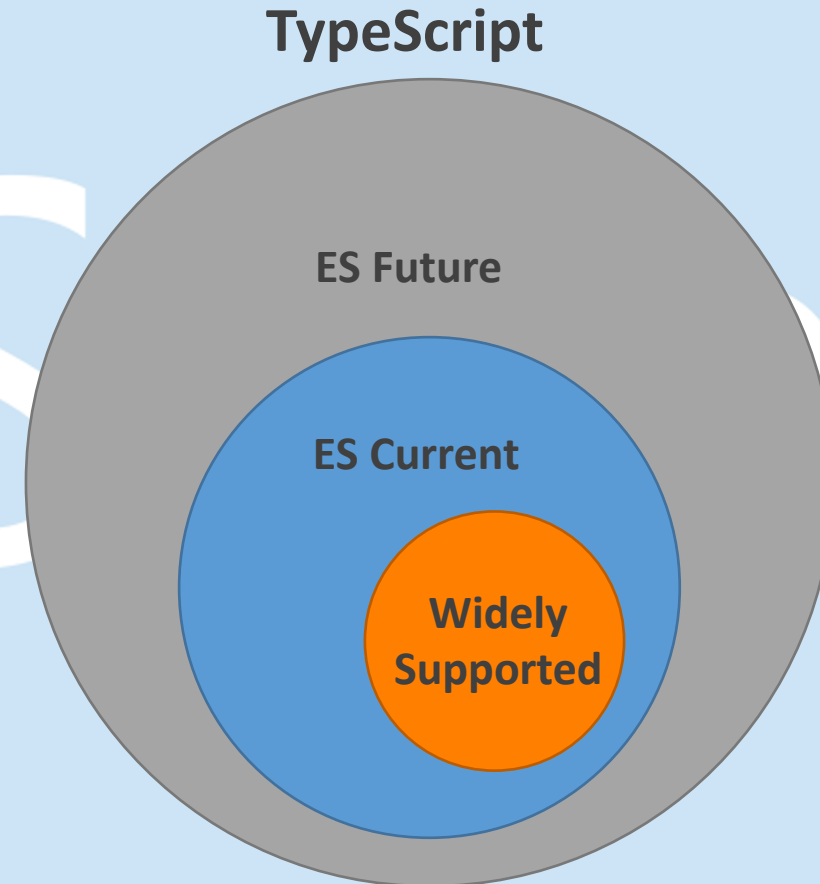


The Solution?

TypeScript

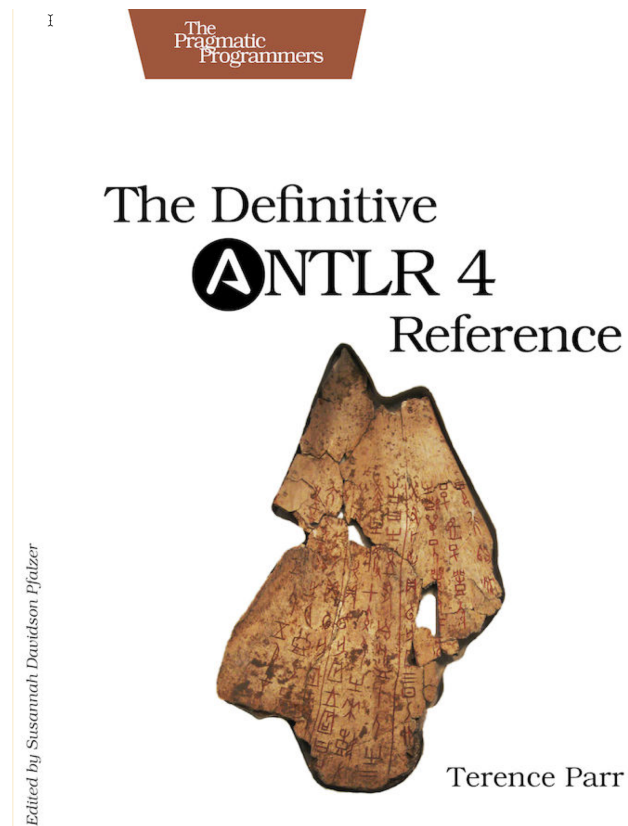
TypeScript

- Superset of JavaScript
- Adds New Features without Changing JavaScript
- Use Future ES Now
- Strong Static Typing
- Transpiler
- Catch Errors at Compile Time Instead of Runtime
- Better Tooling





ANTLR



Parses languages

- ~28 years old (Feb '92)
- 4th generation (built on 3rd generation)

From a formal language description called a **grammar**, ANTLR generates a **parser** for that language that can automatically build parse trees... ANTLR automatically **generates** tree walkers that you can use to visit the nodes of those trees to execute application specific code.

The screenshot shows an IDE window titled "Hello.g4 — tmp". The left sidebar contains an "EXPLORER" view with a tree structure:

- OPEN EDITORS
 - × Hello.g4
- TMP
 - > .antlr
 - ≡ Hello.g4
 - ≡ Hello.interp
 - ≡ Hello.tokens
 - 🔴 HelloBaseListener.class
 - 🔴 HelloBaseListener.java 8
 - 🔴 HelloLexer.class
 - ≡ HelloLexer.interp
 - 🔴 HelloLexer.java 9+
 - ≡ HelloLexer.tokens
 - 🔴 HelloListener.class
 - 🔴 HelloListener.java 2
 - 🔴 HelloParser.class
 - 🔴 HelloParser.java 9+
 - 🔴 HelloParser\$RContext.class
- OUTLINE
- JAVA DEPENDENCIES
- MAVEN PROJECTS

The main editor displays the content of "Hello.g4":

```
1 grammar Hello; // Define a grammar called Hello
2 r : 'hello' ID; // Match keyword hello followed by an identifier
3 ID : [a-z]+ ;
4 WS : [ \t\r\n]+ -> skip ;
```

A "Parse Tree Inspector" window is open, showing the parse tree for the input "hello parrt". The tree structure is:

```
graph TD
    r --> hello
    r --> parrt
```

The window also includes a list of tokens on the left and buttons for "OK", "Export as PNG", and "Export as SVG" at the bottom.

The status bar at the bottom indicates: "Ln 4, Col 26 Spaces: 4 UTF-8 LF ANTLR [off]".

Project

Istojs

src

test

java

com

hcl

Istojs

TranslateAllSamplesTest

TranslateAllSamplesTest.java

LotusScript.g4

VbTestBase.java

411

412

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436

```

onGoSubStmt
: ON WS valueStmt WS GOSUB WS valueStmt (WS? COMMA WS? valueStmt)*
;

openStmt
: OPEN WS valueStmt WS FOR WS (APPEND | BINARY | INPUT | OUTPUT | RANDOM) (WS ACCESS WS (READ | WRITE | READ_WRITE))? (WS (SHARED | LOCK_READ | LOCK_WRITE | LOCK_READ_WRITE)? (WS? COMMA WS? (SHARED | LOCK_READ | LOCK_WRITE | LOCK_READ_WRITE)))?
;

outputList
: outputList_Expression (WS? (SEMICOLON | COMMA) WS? outputList_Expression?)*
| outputList_Expression? (WS? (SEMICOLON | COMMA) WS? outputList_Expression?)*
;

outputList_Expression
: (SPC | TAB) (WS? LPAREN WS? argsCall WS? RPAREN)?
| valueStmt
;

printStmt
: PRINT WS valueStmt WS? COMMA? (WS? outputList)?
;

propertyGetStmt
: (visibility WS)? (STATIC WS)? PROPERTY_GET WS ambiguousIdentifier typeHint? (WS? argList)? (WS asTypeClause)? NEWLINE + (block NEWLINE +)? END_PROPERTY
;

```

ANTLR Preview

LotusScript.g4 start rule: printStmt

Input

File

/test/resources/lotusscript/abs_func_print.ls

1

2

3

4

5

6

7

8

9

10

```

Print Abs(12) ' Prints 12
Print Abs(-12) ' Prints 12
Print Abs(13 - 25) ' Prints 12
Print TypeName(Abs(-12)) ' Prints INTEGER

Dim someV As Variant
someV = "123"
Print Abs(someV) ' Prints 123
someV = NULL
Print Abs(someV) ' Prints #NULL#

```

Parse tree

Hierarchy

Profiler

```

graph TD
    printStmt --> PRINT["PRINT: 'Print'"]
    printStmt --> WS1["WS: ' '"]
    printStmt --> valueStmt1["valueStmt: vsICS"]
    printStmt --> outputList1["outputList: 1"]
    valueStmt1 --> implicitCall["implicitCallStmt_InStmt: 2"]
    implicitCall --> iCS["iCS_S_VariableOrProcedureCall"]
    iCS --> ambiguousIdentifier["ambiguousIdentifier: 1"]
    ambiguousIdentifier --> IDENTIFIER["IDENTIFIER: 'Abs'"]
    outputList1 --> outputList_Expression["outputList_Expression: 2"]
    outputList_Expression --> valueStmt2["valueStmt: vsStruct"]
    valueStmt2 --> LPAREN["LPAREN: '('"]
    LPAREN --> valueStmt3["valueStmt: vsLiteral"]
    valueStmt3 --> literal["literal"]
    literal --> INTEGER_LITERAL["INTEGER_LITERAL: '12'"]
    valueStmt2 --> RPAREN["RPAREN: ')'"]

```

ANTLR Preview

Tool Output

Find

Run

Services

Terminal

Git

TODO

Event Log

#engageug

engage

HCL Digital Solutions

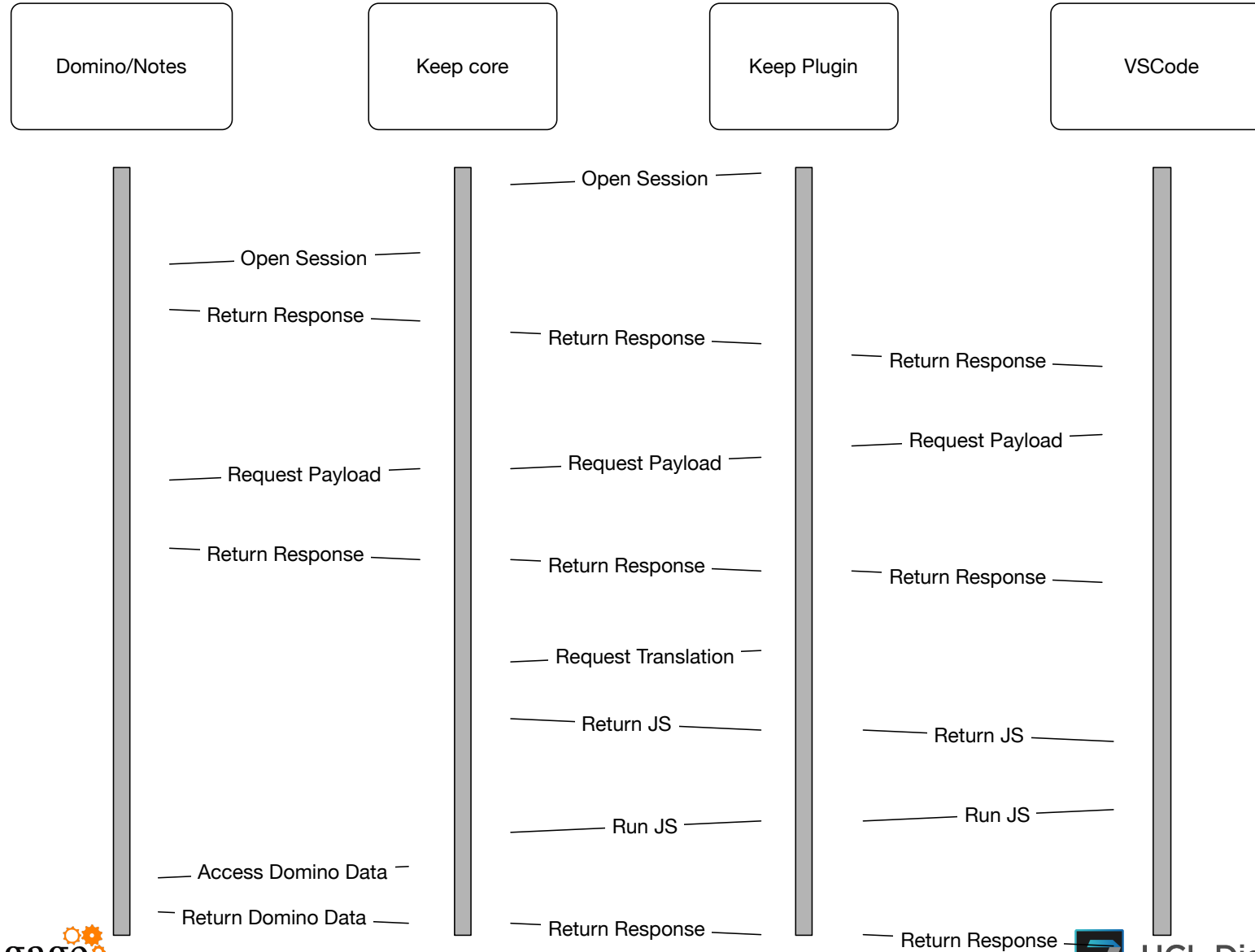
12


```

1    /.../
17
18    package com.hcl.lstojs;
19
20    import ...
21
31
32    /**
33     * @author Stephan H. Wissel
34     */
35    class TranslateAllSamplesTest {
36
37        final static File INPUT_DIRECTORY = new File(pathname: "src/test/resources/lotusscript");
38        final static File EXPECTEDRESULTS_DIRECTORY = new File(pathname: "src/test/results");
39        final static File OUTPUT_DIRECTORY = new File(pathname: "target/javascript");
40        final static File ERROR_LOG = new File(pathname: "target/javascript/error.log");
41        private static PrintStream err;
42
43        /**
44         * @throws java.lang.Exception
45         */
46        @BeforeAll
47        static void setUpBeforeClass() throws Exception {
48            Files.createParentDirs(TranslateAllSamplesTest.ERROR_LOG);
49            Files.createParentDirs(TranslateAllSamplesTest.EXPECTEDRESULTS_DIRECTORY);
50            TranslateAllSamplesTest.err = new PrintStream(TranslateAllSamplesTest.ERROR_LOG);
51        }
52
53        /**
54         * @throws java.lang.Exception
55         */
56        @AfterAll
57        static void tearDownAfterClass() throws Exception {

```

Tests are cool, but how does this get used?



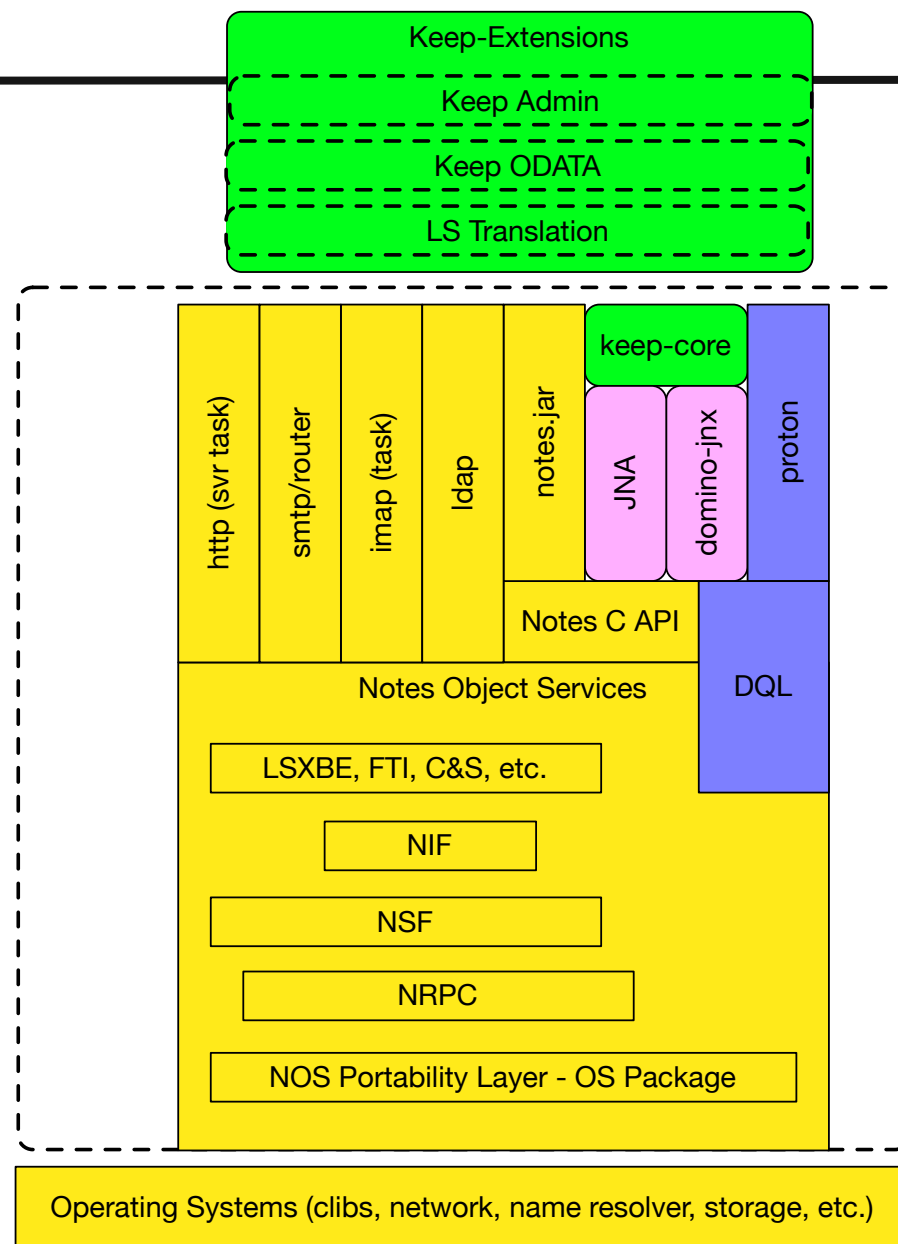
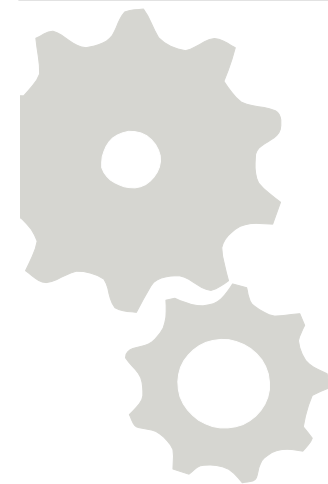
Woods Ocoee POS - Reporting\By Type\By Week - HCL Notes

Search Woods Ocoee POS - Reporting\By Type\By Week

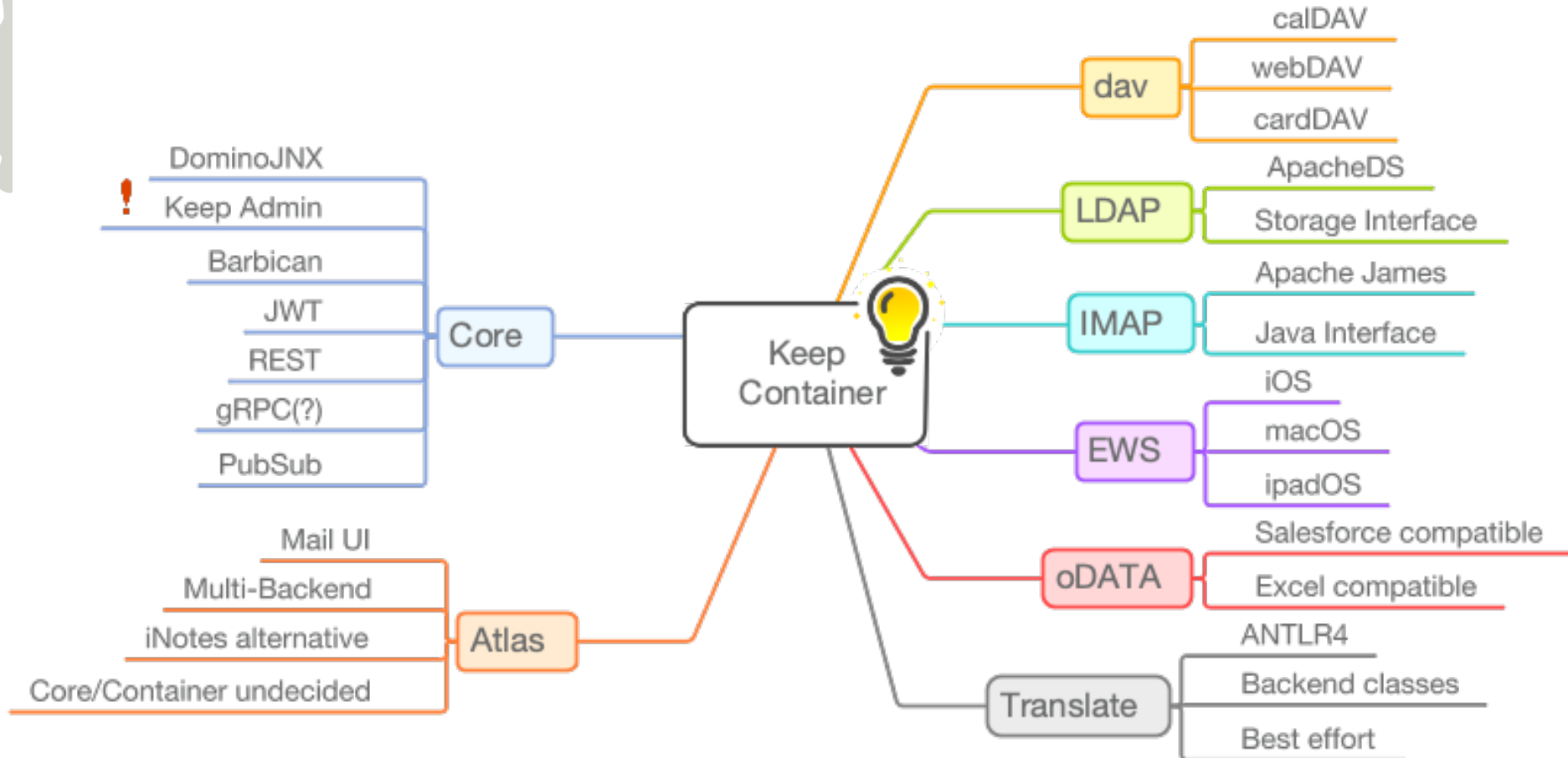
Woods Ocoee POS - Reporting\By Type...

	Revenue	Laser Tag	Bumper Cars	Unlimited	Party	Ad Hoc	Vending	Food Vending	Arcade
2013-W02	\$0.00	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2013-W01	\$323.22	\$77	\$0	\$269	\$0	\$0	\$0	\$0	\$0
2013-W01	\$3675.42	\$677	\$0	\$1,585	\$1,354	\$0	\$0	\$0	\$0
2012-W52	\$4301.73	\$1,354	\$26	\$2,616	\$229	\$0	\$0	\$0	\$0
2012-W51	\$1392.16	\$333	\$75	\$643	\$325	\$0	\$0	\$0	\$0
2012-W50	\$2525.90	\$858	\$79	\$471	\$1,125	\$0	\$0	\$0	\$0
2012-W49	\$1963.68	\$432	\$388	\$163	\$994	\$0	\$0	\$0	\$0
2012-W48	\$2272.62	\$452	\$0	\$260	\$1,344	\$0	\$192	\$0	\$0
2012-W47	\$2427.59	\$1,511	\$0	\$170	\$658	\$0	\$0	\$0	\$0
2012-W46	\$2444.99	\$1,657	\$12	\$100	\$792	\$0	\$0	\$0	\$0
2012-W45	\$1717.88	\$1,193	\$0	\$365	\$227	\$0	\$0	\$0	\$0
2012-W44	\$2298.97	\$1,053	\$18	\$708	\$300	\$144	\$0	\$0	\$0
2012-W43	\$1950.30	\$990	\$0	\$710	\$629	\$0	\$0	\$0	\$0
2012-W42	\$2076.61	\$1,132	\$26	\$355	\$615	\$19	\$0	\$0	\$0
2012-W41	\$2398.43	\$1,308	\$52	\$519	\$460	\$0	\$0	\$0	\$0
2012-W40	\$2015.60	\$572	\$0	\$413	\$975	\$0	\$0	\$0	\$0
2012-W39	\$1871.50	\$644	\$26	\$719	\$405	\$0	\$38	\$0	\$0
2012-W38	\$2172.61	\$787	\$0	\$658	\$665	\$0	\$38	\$0	\$0
2012-W37	\$2073.89	\$707	\$2	\$734	\$555	\$0	\$5	\$0	\$0
2012-W36	\$3725.75	\$1,347	\$0	\$1,027	\$1,229	\$0	\$52	\$0	\$0
2012-W35	\$1808.19	\$624	\$0	\$728	\$520	\$0	\$7	\$0	\$0
2012-W34	\$1938.11	\$1,086	\$2	\$212	\$689	\$0	\$0	\$0	\$0
2012-W33	\$3164.04	\$1,434	\$44	\$1,876	\$450	\$0	\$0	\$0	\$0
2012-W32	\$4552.51	\$3,700	\$556	\$684	\$475	\$6	\$34	\$0	\$0
2012-W31	\$3453.01	\$2,766	\$14	\$709	\$345	\$0	\$48	\$0	\$0
2012-W30	\$4369.12	\$3,526	\$34	\$730	\$381	\$0	\$66	\$0	\$0
2012-W29	\$4615.02	\$3,008	\$22	\$728	\$884	\$0	\$30	\$0	\$0
2012-W28	\$7295.91	\$3,796	\$62	\$6,081	\$523	\$0	\$10	\$0	\$0
2012-W27	\$3314.22	\$1,209	\$4	\$1,419	\$150	\$0	\$10	\$0	\$0
2012-W26	\$5264.57	\$3,776	\$260	\$1,566	\$462	\$0	\$1	\$0	\$0
2012-W25	\$4231.22	\$1,827	\$24	\$1,511	\$960	\$0	\$20	\$0	\$0
2012-W24	\$3268.21	\$2,281	\$16	\$1,593	\$240	\$1	\$48	\$0	\$0
2012-W23	\$5915.92	\$2,026	\$10	\$2,463	\$1,912	\$5	\$124	\$0	\$0
2012-W22	\$3623.77	\$1,467	\$16	\$2,246	\$293	\$0	\$27	\$0	\$0
2012-W21	\$1800.15	\$749	\$9	\$377	\$540	\$0	\$82	\$4	\$0
2012-W20	\$4416.91	\$1,209	\$50	\$836	\$1,822	\$3	\$102	\$9	\$0
2012-W19	\$2369.99	\$902	\$100	\$527	\$780	\$0	\$104	\$9	\$0
2012-W18	\$3899.05	\$1,187	\$8	\$658	\$1,771	\$0	\$96	\$9	\$0
2012-W17	\$4343.45	\$1,995	\$78	\$2,258	\$904	\$0	\$32	\$9	\$0
2012-W16	\$4085.72	\$1,544	\$10	\$1,259	\$1,115	\$0	\$54	\$0	\$0
2012-W15	\$3666.92	\$2,036	\$43	\$389	\$850	\$0	\$64	\$0	\$0
2012-W14	\$2658.55	\$1,156	\$18	\$431	\$971	\$0	\$19	\$0	\$0
2012-W13	\$4820.08	\$2,518	\$83	\$1,210	\$773	\$25	\$105	\$0	\$0
2012-W12	\$2530.58	\$1,625	\$22	\$504	\$355	\$0	\$21	\$0	\$0
2012-W11	\$3981.90	\$1,763	\$86	\$1,258	\$1,350	\$0	\$0	\$0	\$0

Ln 1, Col 1 Spaces: 4 UTF-8 LF Plain Text English



Projects Keep



Questions & discussion

