

DSLs in F#

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Roadmap

1. Examples of DSLs and MDSD
2. DSLs vs DSELs
3. Intro to F#
4. Why DSELs in F# are easy

Interrupt and Ask Questions

Don't Be Scared of DSLs



Source: [Brian Hathcock on Flickr](#)

What is a Domain Specific Language?

Definition:

A special purpose grammar/syntax

What is a Domain Specific Language?

Definition:

A special purpose programming language

Better Definition:

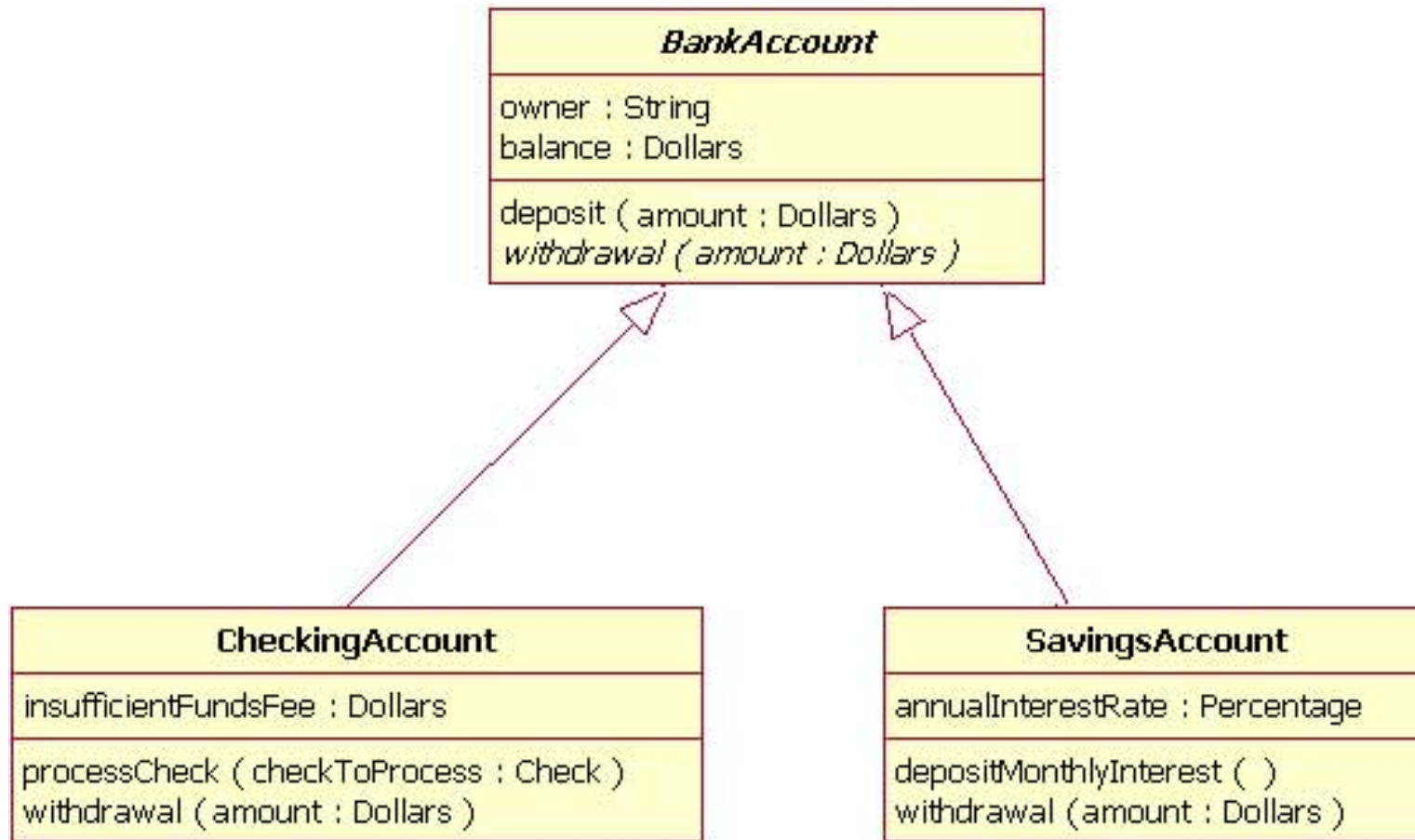
Bringing domain logic to the syntax level

Some Examples

LINQ

```
var query = from c in custs
             from o in orders
             where o.Customer == c.Name
             select new {
                 c.Name, o.OrderID,
                 o.Amount, c.Age
             };
```


UML



Gherkin

Scenario: eat 5 out of 12

Given there are 12 cucumbers

When I eat 5 cucumbers

Then I should have 7 cucumbers

CoffeeScript

CoffeeScript

```
square = (x) -> x * x
```

JavaScript

```
square = function(x) {  
  return x * x;  
};
```

Source: [CoffeeScript Docs on Github](#)

CoffeeScript

CoffeeScript

```
launch() if ignition is on
```

JavaScript

```
if(ignition === true) {  
  launch();  
}
```

Source: [CoffeeScript Docs on Github](#)

SASS - Syntactically Awesome Stylesheets

SASS

`$blue: #3bbfce`

`$margin: 16px`

```
.content-navigation
  border-color: $blue
  color: darken($blue, 9%)
```

```
.border
  padding: $margin / 2
  margin: $margin / 2
  border-color: $blue
```

CSS

```
.content-navigation {
  border-color: #3bbfce;
  color: #2b9eab;
}
```

```
.border {
  padding: 8px;
  margin: 8px;
  border-color: #3bbfce;
}
```

Now you know
what a DSL is...

The low down

aka What your boss wants to see

Risks

- Use it or lose it
- Startup Cost
- NTK Business

Benefits

- Development Speed
- Executable Specification

The Main Point

Sometimes OOP
abstractions aren't enough

The Main Point

Sometimes OOP abstractions aren't enough

**MDSD and DSLs are about
abstracting the Domain**

Not OOP vs MDD OOP alongside MDD



Source: [Topatoco](http://topatoco.com)

Shared Knowledge



Source: <http://andrealizette.com/my-drawings/>

FDD and Mobile

End Intro to DSL/MDD

Questions?

What is the biggest tech-risk
in building a DSL?

Biggest technical challenge to building a DSL?

Parsing

YACC Parser Combinator ANTLR

Parsing is Hard...

*Let's go
shopping!*

Source: [Layout Locator](#)

Domain Specific *Embedded* Language

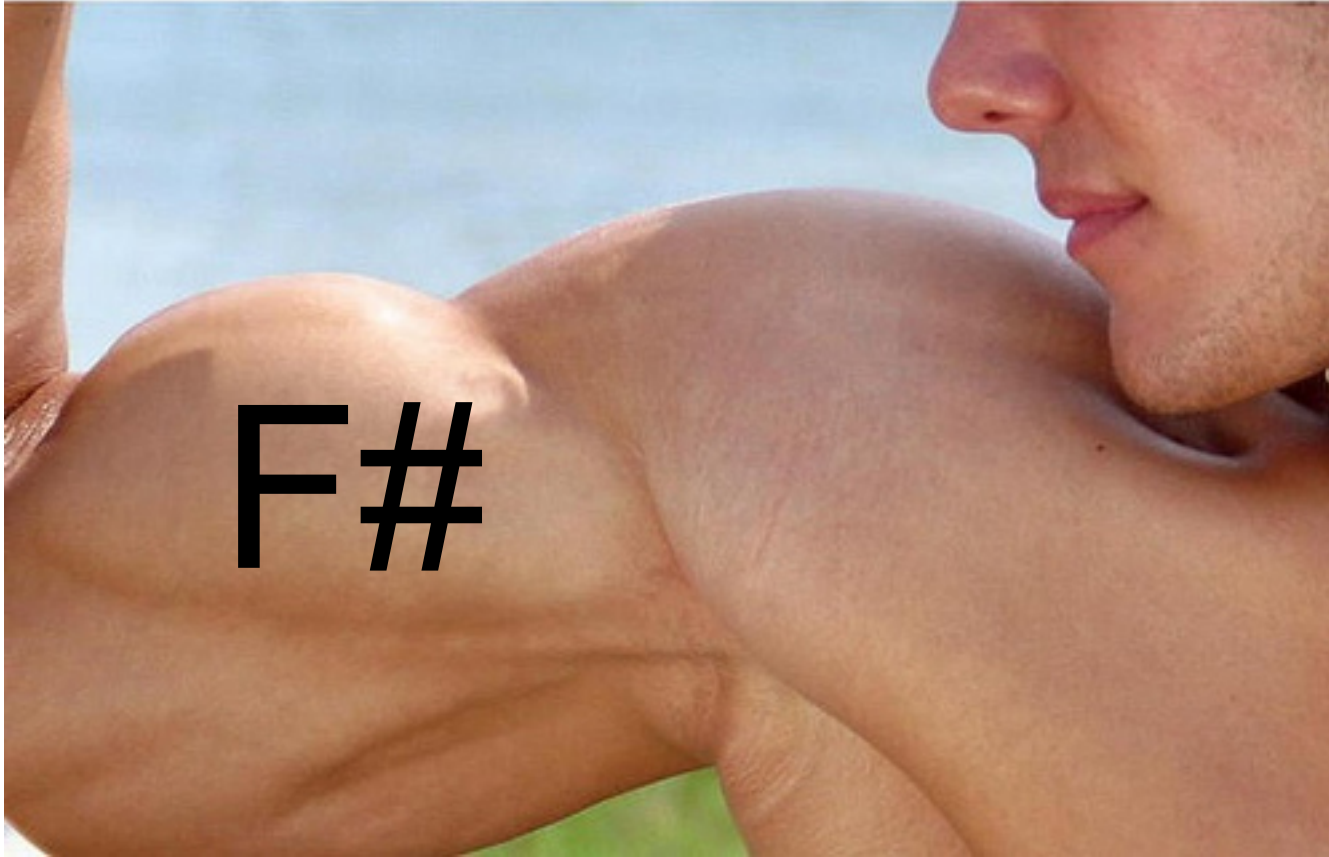
Heterogenous
(Stratego/XT)

and

Homogenous
(LINQ)

Why use DSEL?

Why use DSEL?



Source: <http://www.muscle-fitness-tips.net/training-biceps.html>

DSL vs API

```
new Coffee(16, true, false)
```

DSL vs API

`new Coffee(16, true, false)`

vs

Coffee 16 ounces sugar no milk

On to Code...

References

- Software Engineering Radio: Episodes 5, 6, 52, 57, 96
 - <http://www.se-radio.net/tag/dsls/>
- "*Modular Domain Specific Languages and Tools*", by Paul Hudak
 - [\[Link to PDF\]](#)
- "*Little Languages, Little Maintenance*", by Arie Van Deursen and Paul Klint
 - [\[Link to PDF\]](#)
- "*Comparative Study of DSL Tools*", by Navenetha Vasudevan and Laurence Tratt
 - [\[Link to PDF\]](#)