ArcherCalc Guide

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Contents

Chapter 1

Introduction

ArcherCalc provides a way to break down Archer calculations into re-usable and manageable pieces that can be type-checked, documented, tested, and compiled back into a format suitable for Archer.

Here is an example. The following is a file named “test.ac”:

```
//Archer fields that will be used in our calculations.
field incid_date   = "Date of Incident" : Date as ISODate "2015-04-05";
field incid_status = "Incident Status"  : Text as "Open";

// Calculate the number of days ago for a given date.
let daysAgo x = datedif x now Day;

// Given a date, return a color depending on the age.
let date_color dat =
    if ((daysAgo dat) < 30) then
        "Green"
    else if ((daysAgo dat) < 60) then
        "Yellow"
    else if ((daysAgo dat) < 90) then
        "Orange"
    else "Red";

// Color items with a status of "Open"
let incid_color stat dt =
    if (stat == "Open") then
        (date_color dt)
    else
        "";
```

Note that we have not used the fields in the body of our functions, although it is possible to do so. This is considered a best practice for re-usability. Functions with the field embedded can only be used on that particular field, but a function *taking* a field can work with any field of the same type.

Let’s start ArcherCalc and load the file:

```
     _             _                ____      _
    / \   _ __ ___| |__   ___ _ __ / ___|__ _| | ___
   / _ \ | ’__/ __| ’_ \ / _ \ ’__| |   / _‘ | |/ __| Version 0.0.1.0
  / ___ \| | | (__| | | |  __/ |  | |__| (_| | | (__  Type :help for help
 /_/   \_\_|  \___|_| |_|\___|_|   \____\__,_|_|\___|

ArcherCalc is provided with ABSOLUTELY NO WARRANTY.
ArcherCalc> :load test.ac
```

Now lets test the date_color function:

```
ArcherCalc> date_color ISODate "2015-05-05"
"Red" : Text
ArcherCalc> date_color ISODate "2015-08-05"
"Orange" : Text
ArcherCalc> date_color ISODate "2015-09-05"
"Yellow" : Text
ArcherCalc> date_color ISODate "2015-10-05"
"Green" : Text
```

We can also run it with our defined fields:

```
ArcherCalc> date_color incid_date
"Red" : Text
```

Now let’s compile the previous in a format suitable for Acher:

```
ArcherCalc> :emit date_color incid_date
IF(DATEDIF([Date of Incident],NOW(),DAY)<30,"Green",IF(DATEDIF([Date of Incident],
NOW(),DAY)<60,"Yellow",IF(DATEDIF([Date of Incident],NOW(),DAY)<90,"Orange",
"Red")))
```

Chapter 2

Installation

TODO

Chapter 3

Using ArcherCalc

3.1 Introduction

3.2 Command Reference

3.2.1 :browse

3.2.2 :emit

3.2.3 :load

3.2.4 :quit

3.2.5 :type

Chapter 4

Syntax Reference

4.1 Comments

```
// Single-line comment

/* Comment
   that spans
   multiple lines. */
```

4.2 Literals

4.2.1 Numbers

Numbers can be entered verbatim, with the exception that negative numbers need parenthesis.

```
// Normal
1
3.14159

// Hexadecimal
0x90
0xAB
0xfe

// Octal
0o72
0O65

// Scientific notation
1e12
1E-5
```

```
// Negative numbers
(-0.3)
(-3.14159)
```

4.2.2 Text

Text is surrounded by double quotes. Double quotes are escaped with a backslash (\).

```
"This is a test."
"a"
"They said \"All good!\""
```

4.2.3 Boolean

```
True
False
```

4.2.4 Dates

If a time is not specified, midnight UTC is assumed.

```
// ISO Style
ISODate "2015-04-02T02:00:00Z"
ISODate "2015-04-02"
ISODate "2015-04-02T04:00:00PDT"

// Archer Style
ArDate "04/02/2015 02:00:00"
ArDate "04/02/2015"
```

4.3 Functions

```
let double x = x*2;

let circ_area r = pi*r^2;
```

4.4 Control Flow

```
if (temp > 80) then "hot" else "cold";

if (risk >= 4) then
    "red"
else if (risk >= 3) then
```

```
    "orange"
else
    "green";
```

4.5 Fields

The format for defining a field is:

```
field alias = "Field name" : Type as Value;
```

The alias represents how you will refer to the field in ArcherCalc, the "Field name" is the actual name of the field in Archer. The Type is the type of field in Archer (Date, Text, Num, etc.) and is required. The "as Value" is optional, but let's you evaluate and test the field in ArcherCalc.

Here are some examples:

```
field incid_count  = "Number of Incidents" : Num as 132;
field incid_date   = "Date of Incident" : Date as ISODate "2015-04-05";
field incid_status = "Incident Status" : Text as "Open";
field risk_rating  = "Risk Rating" : Text;
```

4.6 Built-in Functions

4.7 Type Signatures