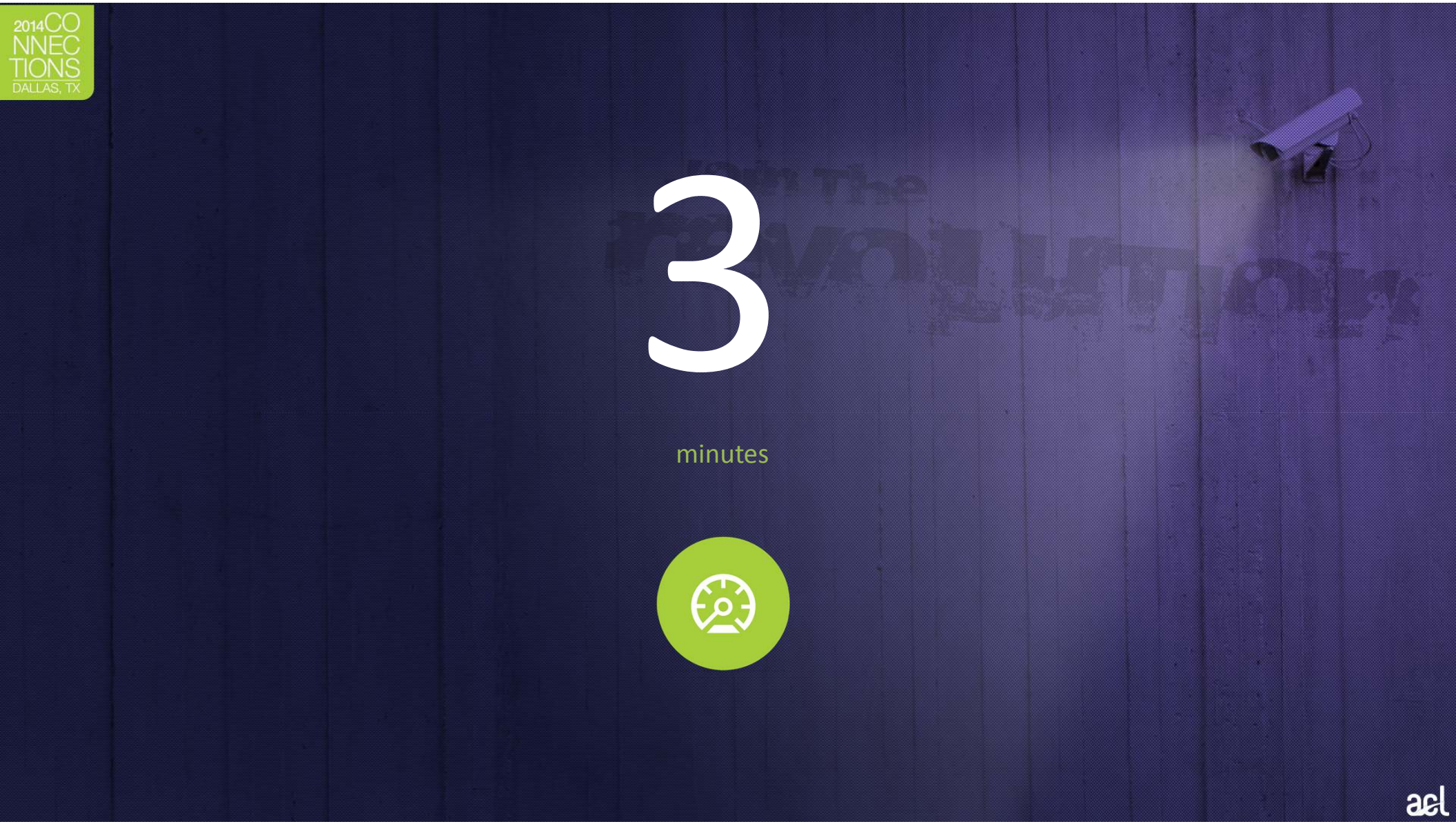
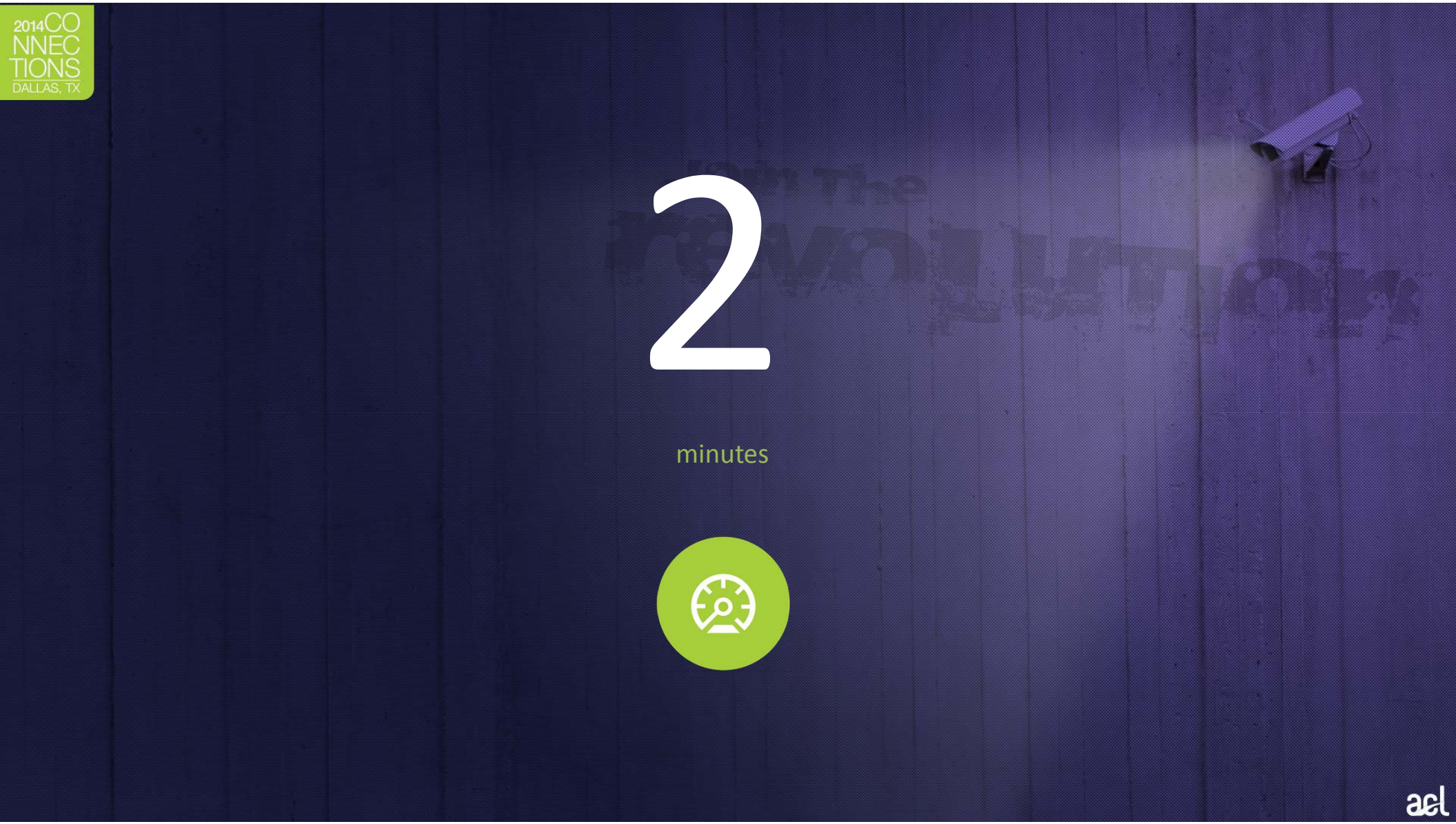
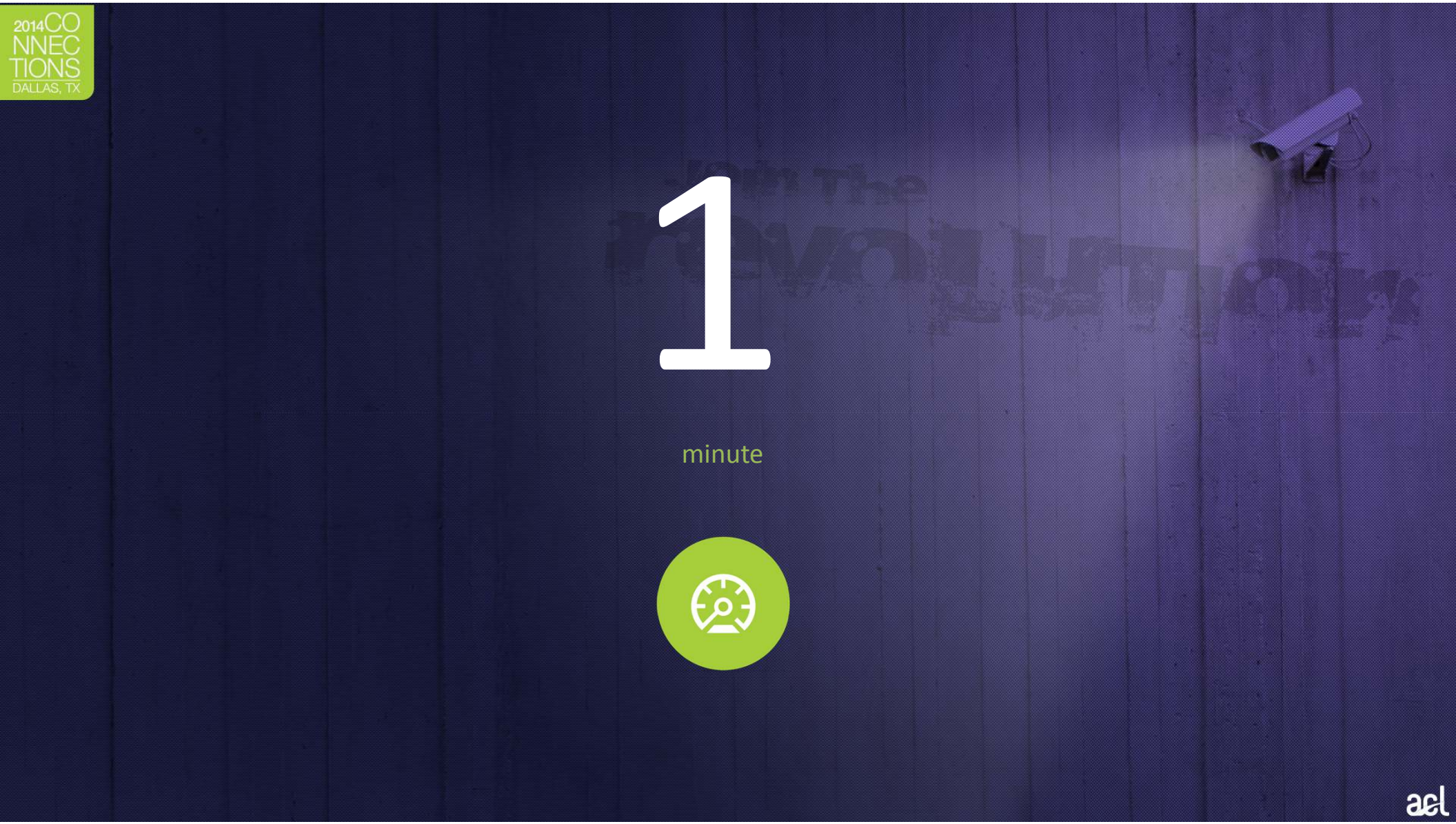

3
minutes


2
minutes


1
minute

2014 CONNECTIONS
DALLAS, TX

ADVANCED SCRIPTING

June 4, 2014
Instructor Name

Agenda

- **Script Overview**
  - What is a script?
  - Creating scripts
- **Data Import Scripts**
  - Delimited File
  - ODBC
  - The PASSWORD command
- **Variables**
  - What is a variable?
  - System variables
  - User defined variables
- **Interactive Dialogs**
  - Dialog builder
- **Scripts Loops**
  - Flag based loop
  - Counter based loop
- **Group Command**
  - Record comparisons

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SCRIPT OVERVIEW

June 4, 2014

Keith Pennifold

What is a Script?

- **A series of ACL™ Analytics commands**
- **Stored in the Project**
  - Visible in the Overview tab of the Project Navigator
  - Right-click a script to run
- **Can run against any table in the Project**
- **Uses:**
  - Continuous monitoring
  - Continuous auditing
  - Complex analysis that cannot be performed in the user interface

Focus for much of this presentation

What is a Script?

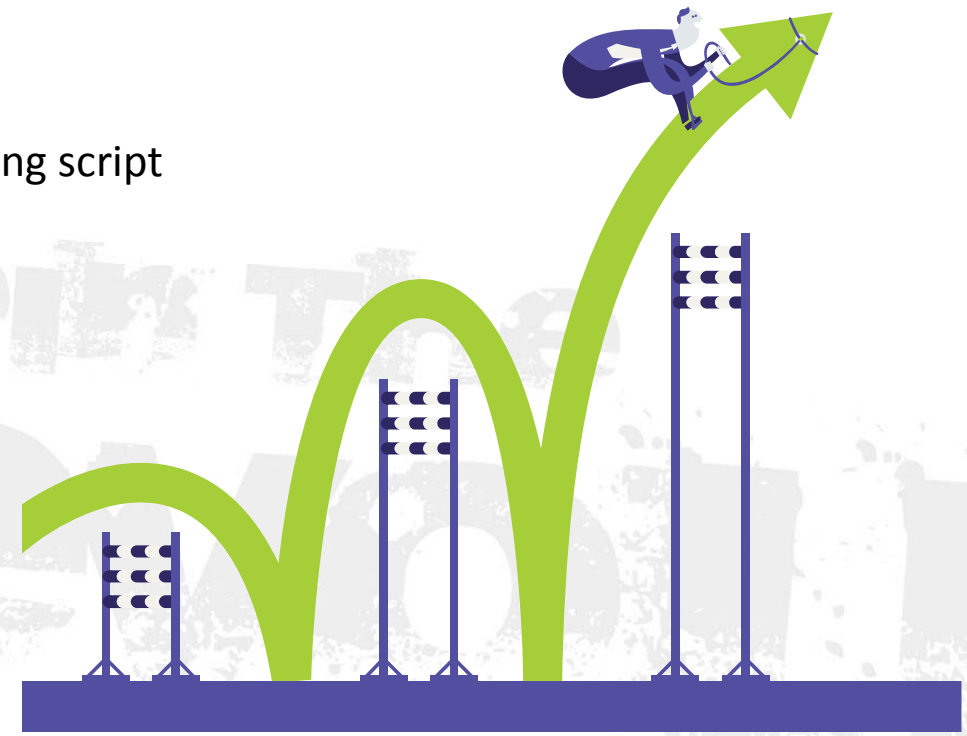
Top 10 Customers

```
1   OPEN Sales2012
2
3   CLASSIFY ON CustoNum SUBTOTAL TotalAmt TO "r_Sales2012ByCustomer.FIL"
4
5   OPEN r_Sales2012ByCustomer
6
7   INDEX ON TotalAmt  D  TO "Sales2012ByTotalAmt" OPEN
8
9   EXTRACT RECORD IF RECNO( ) <= 10 TO "r_Top10Customers"
10
11  OPEN r_Top10Customers
```

Creating Scripts

Two popular methods for creating scripts:

- From the Project Log
  - Run commands manually
  - Copy log entries to a new or existing script
- Edit Mode
  - Manually enter syntax
  - “Syntax Capture” (recorder)
  - Copy/paste

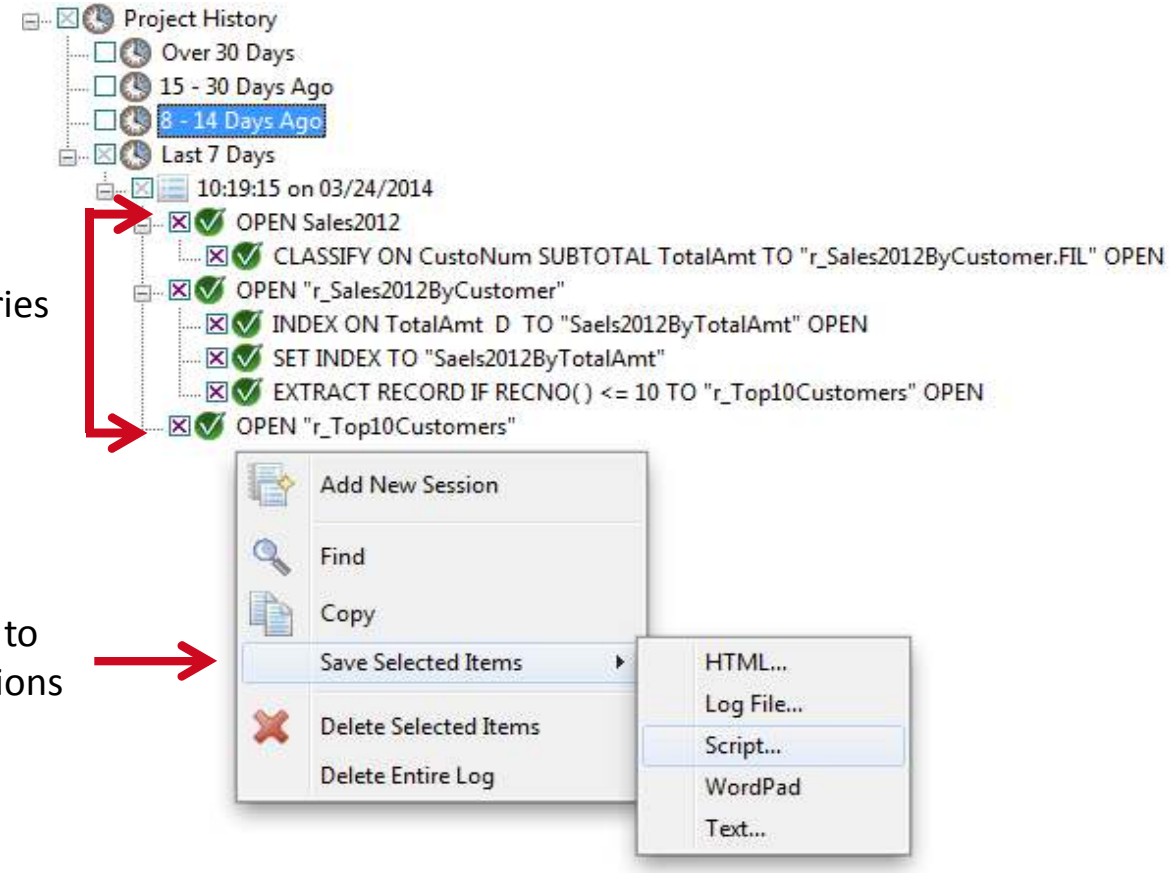


Creating Scripts

Demo2 – Top 10 Customers – Copy From Log

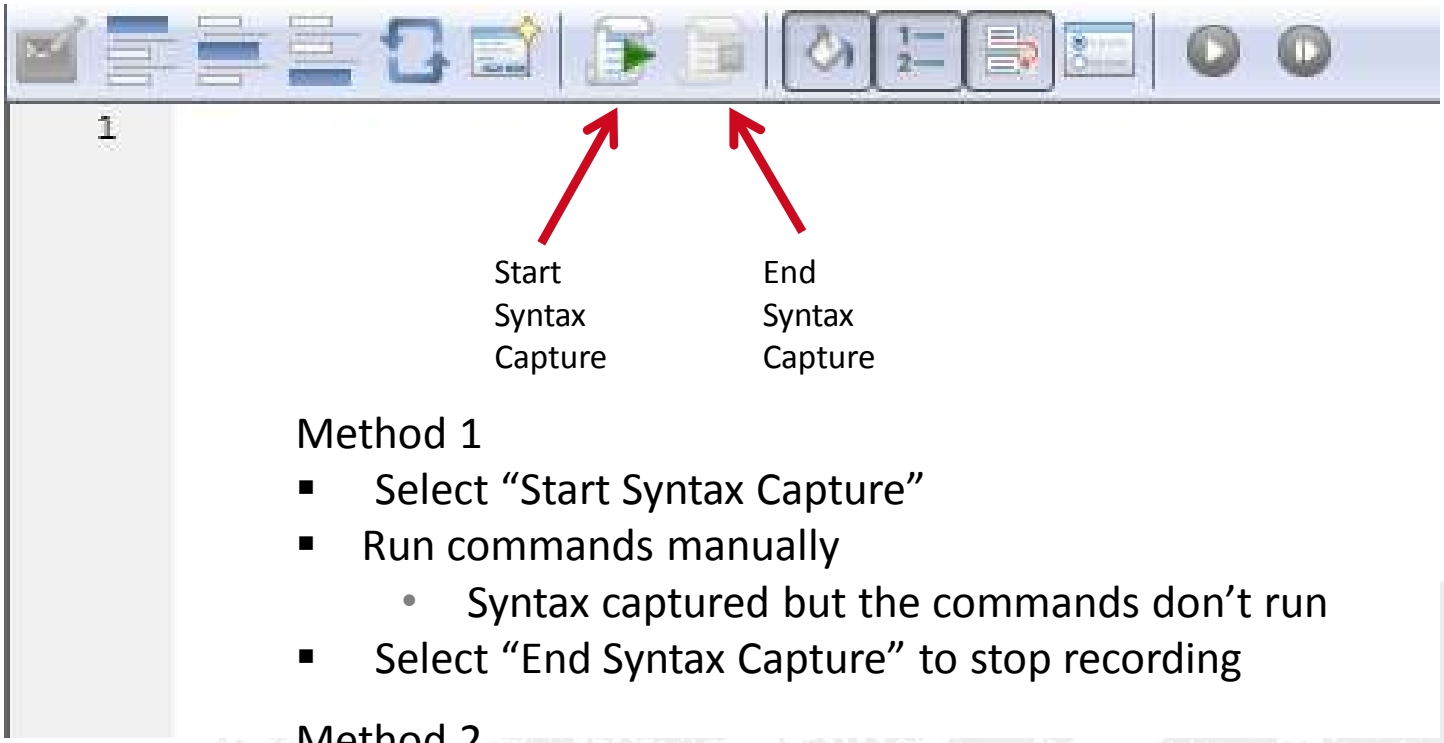
1. Select entries to copy

2. Right-click to access options



Creating Scripts

Demo3 – Top 10 Customers – Edit Mode



Method 1

- Select “Start Syntax Capture”
- Run commands manually
  - Syntax captured but the commands don’t run
- Select “End Syntax Capture” to stop recording

Method 2

- Manually add / modify / delete

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DATA IMPORT SCRIPTS

June 4, 2014

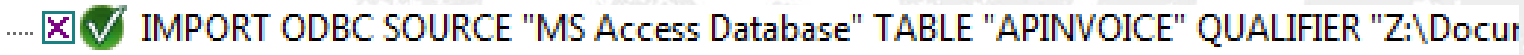
Keith Pennifold

Data Import Script – Delimited File

- Import the delimited file with the Data Definition Wizard
  - Import syntax is automatically captured in the command log
  - Copy syntax from the log to a new or exiting script

Data Import Script – ODBC

- ODBC (Open Database Connectivity)
- Connects ACL™ Analytics to a relational database for data import
- Requirements:
  - ODBC driver
  - User name and password
- Import using ODBC from the Data Definition Wizard
  - Import syntax is automatically captured in the command log
  - Copy syntax from the log to a new or exiting script



PASSWORD Command

- PASSWORD Command prompts for password entry
- Entered password is encrypted
- Up to 10 passwords can be used

```
1  PASSWORD 1 "Enter Database Password"
2
3  IMPORT ODBC SOURCE "MS Access Database" TABLE "APINVOICE" QUALIFIER
   "CorpDB_pwd.MDB" USERID "admin" PASSWORD 1 TO "APINVOICE.fil" WIDTH 50
   MAXIMUM 100 FIELDS "API_COMPANY","API_VENDOR_ID","API_INVOICE_ID",
   "API_INV_CURRENCY","API_INVOICE_DATE","API_PO_NUMBER","API_PO_CODE",
   "API_DESCRIPTION","API_BASE_INV_AMT","API_DISCOUNT_RATE","API_DISCOUNT_DATE",
   "API_DUE_DATE","API_INVOICE_STATUS","API_CREATE_DATE","API_OPERATOR",
   "API_APPRV_OPERATOR","API_APPROVED_FLAG","API_TERMS_CD","API_INVOICE_TYPE"
```

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VARIABLES

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Variables

- **What is a variable?**
  - Named memory space stored in a Project
- **What can be stored in a variable?**
  - Character – “Region1”
  - Numeric – 1250.64
  - Date – `20141231`
  - Logical – T or F
- **Why use a variable?**
  - Allows a value to be saved for later use in the script
  - Prevents manual intervention
- **Are variables permanent?**
  - Only if the variable name starts with an underscore
    v_InvoiceTotal – Temporary
    _v_InvoiceTotal – Permanent
- **What happens to variables when the Project is closed?**
  - Temporary variables are deleted
  - Permanent variables are saved

Caution!

- NEVER use a temporary variable in the syntax of a named expression

Variables

- **System Variables**
  - Created automatically by some commands
  - The Total command creates the TOTAL1 variable
  - The Statistics command creates several variables
  - Always temporary
  - Overwritten each time the variable is created
  - **Help > Index > Variables, System** for a full list

- **User-defined Variables**
  - Created by the user (script author)
  - Temporary or permanent
  - Overwritten each time the variable is created

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INTERACTIVE DIALOGS

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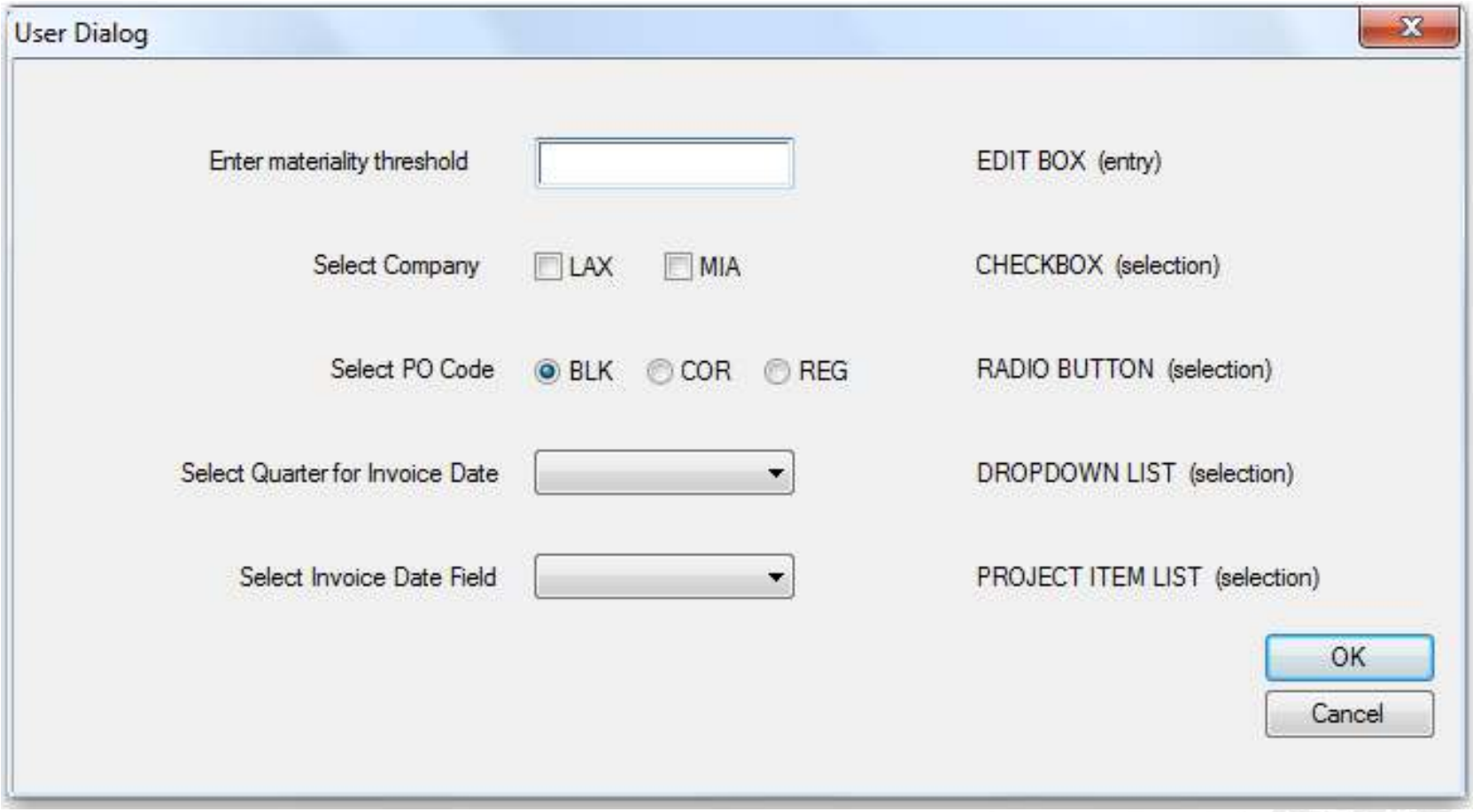
acl

Interactive Dialogs – Dialog Builder

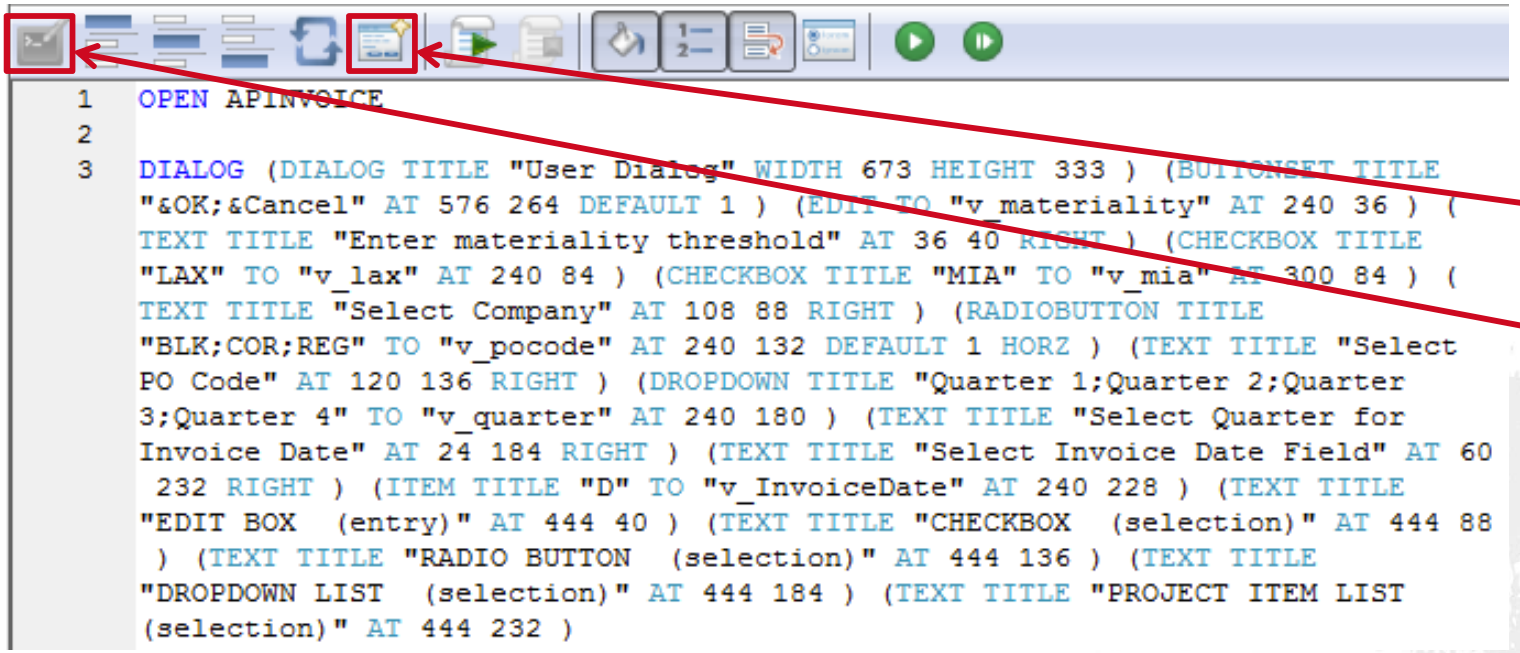
- **What is an Interactive Dialog?**
  - A prompt within a script to allow the user to make an entry or selection
- **What interactions can be created with the Dialog Builder?**
  - Edit Box
  - Check Box
  - Radio Button
  - Project Item List
  - Dropdown List

Interactive Dialogs – Dialog Builder



Interactive Dialogs – Dialog Builder

- **Creating Interaction with the Dialog Builder**
  - Accessible when in script edit mode
  - Automatically creates DIALOG syntax



```
1   OPEN APINVOICE
2
3   DIALOG (DIALOG TITLE "User Dialog" WIDTH 673 HEIGHT 333 ) (BUTTONSET TITLE
    "&OK;&Cancel" AT 576 264 DEFAULT 1 ) (EDIT TO "v_materiality" AT 240 36 ) (
    TEXT TITLE "Enter materiality threshold" AT 36 40 RIGHT ) (CHECKBOX TITLE
    "LAX" TO "v_lax" AT 240 84 ) (CHECKBOX TITLE "MIA" TO "v_mia" AT 300 84 ) (
    TEXT TITLE "Select Company" AT 108 88 RIGHT ) (RADIOBUTTON TITLE
    "BLK;COR;REG" TO "v_pocode" AT 240 132 DEFAULT 1 HORZ ) (TEXT TITLE "Select
    PO Code" AT 120 136 RIGHT ) (DROPDOWN TITLE "Quarter 1;Quarter 2;Quarter
    3;Quarter 4" TO "v_quarter" AT 240 180 ) (TEXT TITLE "Select Quarter for
    Invoice Date" AT 24 184 RIGHT ) (TEXT TITLE "Select Invoice Date Field" AT 60
     232 RIGHT ) (ITEM TITLE "D" TO "v_InvoiceDate" AT 240 228 ) (TEXT TITLE
    "EDIT BOX  (entry)" AT 444 40 ) (TEXT TITLE "CHECKBOX  (selection)" AT 444 88
     ) (TEXT TITLE "RADIO BUTTON  (selection)" AT 444 136 ) (TEXT TITLE
    "DROPDOWN LIST  (selection)" AT 444 184 ) (TEXT TITLE "PROJECT ITEM LIST
    (selection)" AT 444 232 )
```

Build New Dialog

Edit Command

Variable Substitution

- **What is Variable Substitution?**
  - An instruction that tells ACL™ Analytics, *"This is a variable, read the content within it"*.
- **Incorrect: WHERE "API_BASE_INV_AMT > v_threshold"**
  - API_BASE_INV_AMT is a numeric field and can only be greater than a numeric value
  - v_threshold is a variable, but the name is not a numeric value
  - ACL™ Analytics requires an instruction to read the content
- **Correct: WHERE "API_BASE_INV_AMT > %v_threshold%"**
  - Place % symbols (variable substitution) around the variable name
  - ACL™ Analytics now reads the variable content

Dialog Command Variable Types

Interaction	Usage	Variable Type
Text Message	Descriptive Messages	N/A
Edit Box	Free form entry	Character
Check Box	Multiple selections allowed	Logical
Radio Button	Single selection allowed	Numeric
Dropdown List	Single selection of non-project items from a list	Character
Project Item List	Single selection from a list of items that exist in a Project (Table names, field names, etc.)	Character

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SCRIPT LOOPS

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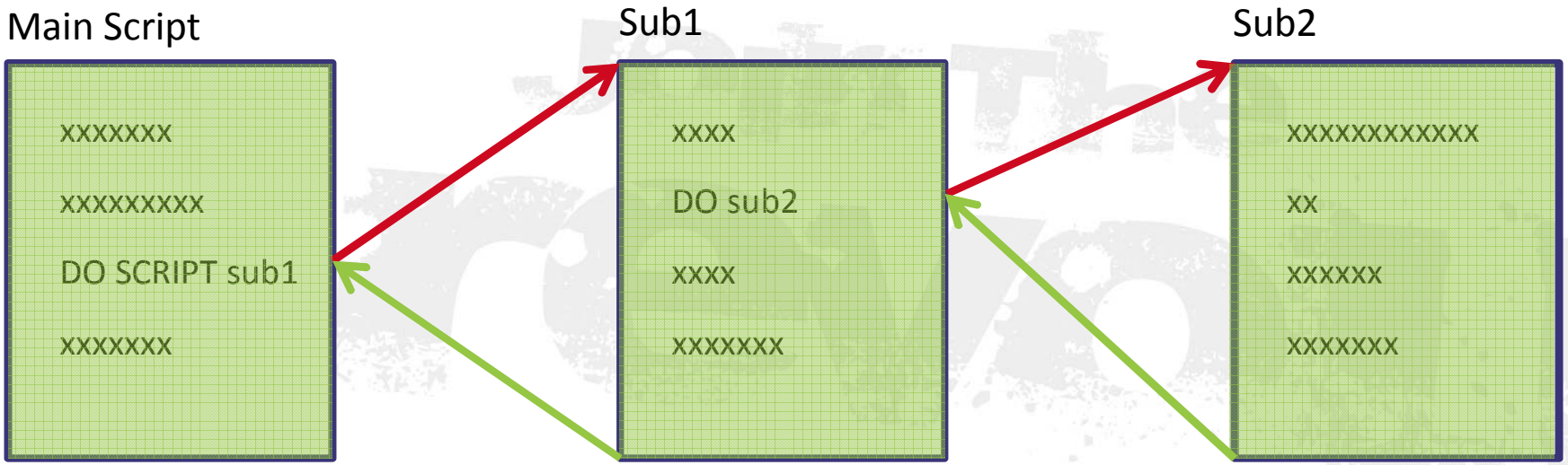
Script Loops

- **What is a Script Loop?**
  - A method for a main script to call prompt script repeatedly until a specified condition has been satisfied
- **Flag Based Loop**
  - Based on a logical concept whereby the prompt script is called repeatedly until the specified variable is true
  - Often used for error trapping user dialogs
- **Counter Based Loop**
  - Based on a numeric concept whereby the prompt script is called repeatedly until the number in a specified variable has been reached
  - Used for repeatedly running the same process against sub-sets of a file

DO SCRIPT Command

- Main Script runs – One script running
- Main Script calls Sub1 – Two scripts running
- Sub1 calls Sub2 – Three scripts running
- Sub2 completes and automatically returns to Sub 1 – Two scripts running
- Sub1 completes and automatically returns to Main Script – One script running
- Main Script completes – zero scripts running



Flag Based Loop – Error Trapping

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1. Create v_flag variable.
2. WHILE commences loop.

ImportODBC_Main

```
1  ASSIGN v_flag = F
2
3  DO SCRIPT ImportODBC WHILE v_flag = F
```

ImportODBC

1. Dialog prompts for threshold amount.
2. v_flag set to T.
3. Pause script with message if v_threshold is blank.
4. v_flag set back to F if v_threshold is blank.
5. PASSWORD and IMPORT commands preceded with IF statement to prevent them from running if v_flag = T.

```
1  DIALOG (DIALOG TITLE "User Dialog" WIDTH 473 HEIGHT 174 ) (BUTTONSET TITLE
   "&OK;&Cancel" AT 360 108 DEFAULT 1 ) (TEXT TITLE "Enter Threshold Amount:" AT 12 52
   WIDTH 186 HEIGHT 19 RIGHT ) (EDIT TO "v_threshold" AT 216 48 )
2
3  ASSIGN v_flag = T
4  IF ISBLANK(v_threshold) PAUSE "A threshold amount must be entered"
5  IF ISBLANK(v_threshold) ASSIGN v_flag = F
6
7  IF v_flag = T PASSWORD 1 "Enter Database Password"
8
9  IF v_flag = T IMPORT ODBC SOURCE "MS Access Database" TABLE "APINVOICE" QUALIFIER
   "CorpDB_pwd.MDB" USERID "%v_username%" PASSWORD 1 TO "APINVOICE.fil" WIDTH 50 MAXIMUM
   100 WHERE "API_BASE_INV_AMT > %v_threshold%" FIELDS "API_COMPANY","API_VENDOR_ID",
   "API_INVOICE_ID","API_INV_CURRENCY","API_INVOICE_DATE","API_PO_NUMBER","API_PO_CODE",
   "API_DESCRIPTION","API_BASE_INV_AMT","API_DISCOUNT_RATE","API_DISCOUNT_DATE",
   "API_DUE_DATE","API_INVOICE_STATUS","API_CREATE_DATE","API_OPERATOR",
   "API_APPRV_OPERATOR","API_APPROVED_FLAG","API_TERMS_CD","API_INVOICE_TYPE"
```

Counter Based Loop - Vendor Statistics

- **Objective – For vendors with a total spend over $1,000, create a table containing one record per vendor that includes:**
  - Vendor Number
  - Transaction Count
  - Total Spend
  - Average Spend
  - Highest Transaction Amount
  - Lowest Transaction Amount

- **Process**
  - Identify the number of vendors in the transaction file (Main Script)
  - Run Statistics once for each vendor (Sub Script)
  - Use the system variables created by Statistics to populate the results table (Sub Script)

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RECORD COMPARISONS

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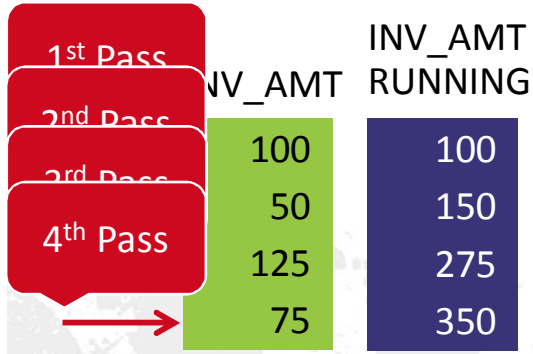
Group Command

- **How does the Group Command process a file?**
  - The entire Group command processes once for every record in the file
  - Record by record processing allows comparisons to be made between records
  - Record comparisons are optional (the objective determines if it is necessary)

- **Group Command without a record comparison – Running Total**

```
1   OPEN APINVOICE
2
3   ASSIGN INV_AMT_Running = 0.00
4
5   GROUP
6      INV_AMT_Running = INV_AMT_Running + API_BASE_INV_AMT
7      EXTRACT ALL INV_AMT_Running TO "r_APINVOICE_Running_Total"
8   END
9
10  OPEN r_APINVOICE_Running_Total
```



Running Total Break – Comparing Records

```
14  ASSIGN %v_runningname%_running = 0.00
15  ASSIGN v_fieldbreak = BLANKS(10)
16
17  GROUP IF v_fieldbreak <> %v_breakname%
18     v_fieldbreak = %v_breakname%
19     %v_runningname%_running = %v_runningname%
20     EXTRACT ALL %v_runningname%_running TO "%v_tablename%_running" OPEN
21  ELSE IF v_fieldbreak = %v_breakname%
22     v_fieldbreak = %v_breakname%
23     %v_runningname%_running = %v_runningname%_running + %v_runningname%
24     EXTRACT ALL %v_runningname%_running TO "%v_tablename%_running" OPEN
25  END
```

= True

= False

1st Pass

2nd Pass

3rd Pass

4th Pass

5th Pass

ENDOR #	INV_AMT	INV_AMT RUNNING
A100	100	100
A100	50	150
A100	150	300
B200	125	125
B200	75	200

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THANK YOU

CONTACT ME AT NAME_LASTNAME@ACL.COM