



# FRESCHE

X-Unicode

# What is Unicode?

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Unicode is a universal encoding scheme for written characters and text that enables the exchange of data internationally. Two transformation formats, UTF\_16 and UCS\_2, of Unicode are supported with DDS.

- **UTF-16** is a 16-bit encoding form designed to provide code values for over a million characters and a superset of Unicode. UTF-16 data is stored in graphic data types. The CCSID value for data in UTF-16 format is **1200**. A UTF-16 code unit is 2 bytes in length. A UTF-16 character can be 1 or 2 code units (2 or 4 bytes) in length. A UTF-16 data string can contain any character including UTF-16 surrogates and combining characters.
- **UCS-2** is the Universal Character Set coded in 2 octets, which means that characters are represented in 16 bits per character. One code unit is used in this topic to describe the size of a UCS-2 character. UCS-2 data is stored in graphic data types. The CCSID value for data in UCS-2 format is **13488**. UCS-2 is a subset of UTF-16 and **can no longer support all of the characters defined by Unicode**. UCS-2 is identical to UTF-16 except that UTF-16 also supports the combining of characters and surrogates. If you do not need support for the combining of characters and surrogates, you can choose to continue to use the UCS-2 format.

# What is the problem?

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- Unicode data is not supported on display devices that currently support the 5250 data stream.
  - ▶ Therefore, conversions between the Unicode data and EBCDIC are necessary during input and output. On output, the Unicode data is converted to the CCSID of the device. On input, the data is converted from the device CCSID to the Unicode CCSID.
  - ▶ Because the device CCSID, which is determined from the device configuration, determines what the Unicode data is converted to, the converted data can appear differently on different devices. For example, a Unicode code unit that maps to an SBCS character is displayed as a DBCS replacement character on a graphic-DBCS-capable device. On a DBCS-capable or an SBCS-capable device, the code unit appears as an SBCS character. A Unicode code unit that maps to a DBCS character is displayed as a graphic-DBCS character on a graphic-DBCS-capable device. On a DBCS device, a DBCS character is displayed and bracketed (enclosed in shift-out and shift-in characters). An SBCS replacement character is displayed on an SBCS device.
  - ▶ It is also suggested that all fields that are capable of Unicode are initialized in the output buffer before writing the fields to the screen. Unpredictable results might occur if default initialization is allowed to take place.

# How to support Unicode?

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- Need a different interface. Open Look from Look Software supports Unicode.
- Choose the CCSID needed to support all the languages.
- Changing my Databases to support Unicode.
- Changing all the programs that use fields that need to support Unicode.
- Need to modify all the display files.
- Cannot have output specification in program. Must have Printer files.

# Required IBM software

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## ■ To print Unicode

- ▶ 57XXSS1 OPT-8 - Font for AFP
- ▶ 57XXSS1 OPT-39 - International components for Unicode
- ▶ 57XXSS1 OPT-43 - Additional fonts

## ■ To print in PDF

- ▶ 57XXSS1 OPT-3 - Support for the IFS
- ▶ 57XXSS1 OPT-33 - Support for PASE
- ▶ 57XXTS1 \*BASE - Transform Services
- ▶ 57XXTS1 OPT-1 - Transform Services

# Unicode Solution

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## X-RPG Migrate

Printer Files needs to be created from O-Specs from the RPG programs.

1

Using the command:

```
XCVTOPRTF PROGRAM (PgmName)  
XALIB (RepositoryName)
```

2

Printer File(s) gets created in the repository's library in the QDDSSRC member

3

A modified copy of the RPG program gets created repository's library in the QRPGLSRC member

4

Developer has to verify the code and make sure to modify anything using the old printer file name. Then recompile printer file, RPG program and any CL programs.

## X-Unicode

This tool allows to do the conversion of the code, devices and files to support Unicode characters.

1

X-Unicode can scope the project for you.

2

Based on your search words it can help you to determine the project inventory.

It modifies all the tables to support UTF-16 CCSID(1200).

3

It modifies all the display files.

It modified all the printer files.

It help you modify 80% to 90% of all the programs.

4

Developers have to verify code and deal with any especial situation that may arise.

Test – Test and Test

## Open Look

In Order to show Unicode characters into the Screen we need Open Look. 5250 does not support Unicode.

1

Convert all the display files to XML using the command: CRTDSPFXML

2

Add special line to support Open Access to all the programs by using the command: QRPGOASRC

3

Recompile all the objects in a new library

4

Multilingual support

# Unicode Process

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- Prerequisite:
  - ▶ Convert O-Specs to Printer Files
  - ▶ Remove any O-Specs that update Unicode Fields
- Set-up – Define Unicode Encoding **UTF-16** or ~~UCS-2~~
- Search Words
- Revise the list of objects to Convert and Recompile
- Revise the list of issues per object (source not found)
- Run Complete Conversion
- Revise ALL the converted objects
- Determine if any of the modified objects needs specific manual modifications
- Create the XML code for all modified and re-compiled screens
- Create OA version of RPG programs
- Recompile RPG-OA version
- Test Application from NewLook

# Unicode Project Aspects

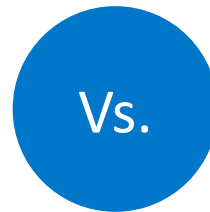
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Business  
Opportunity

Need More

- Acquisitions
- Mergers
- Business growth
- Design / Life exp.



Vs.

Risk

- Losing the business  
opportunity
- Application could  
become unstable



Resources  
&  
Time

Need More

- Developers
- Time
- Analysis and research



# Where do I start?

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- I need a list of all the possible field names that may contain the field designated to Unicode.
- I need the list of all my tables that have the comment field (Physical and logical files)
- I need to cross reference this list of tables with ALL of the objects that are using this tables.
  - ▶ Display Files
  - ▶ Printer Files
  - ▶ Programs

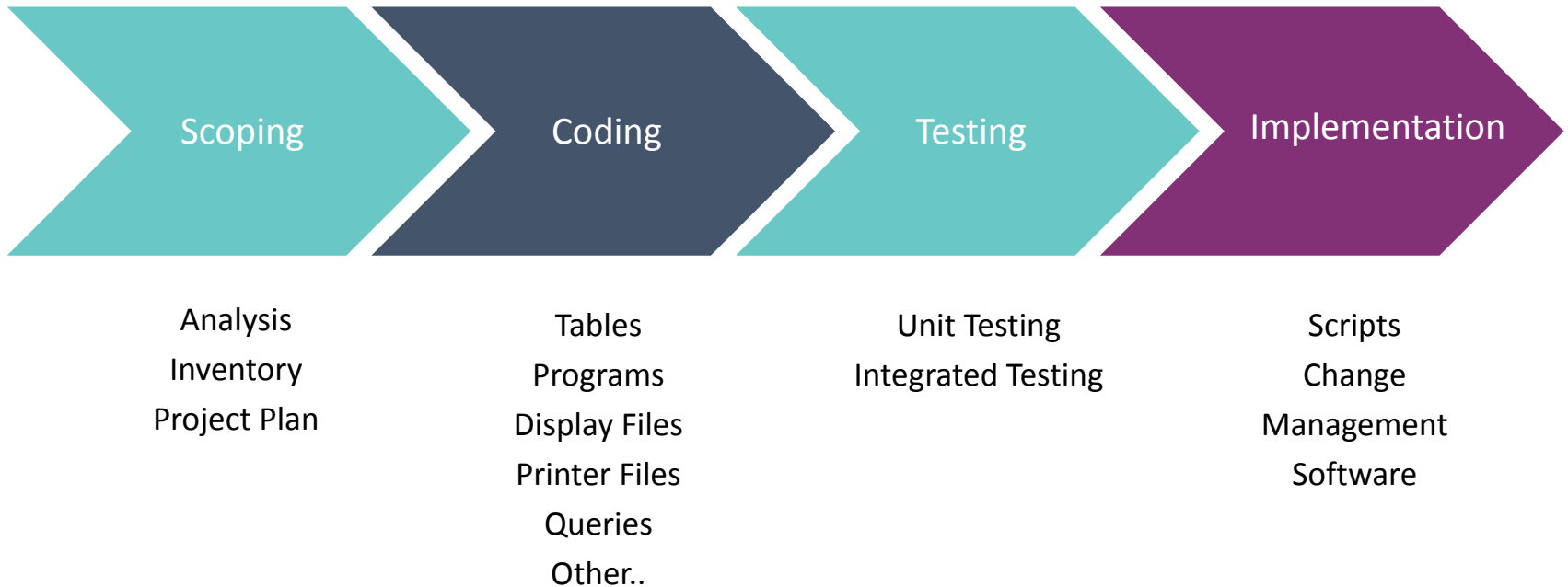
# Do you have your inventory?

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- After spending several weeks taking inventory of all the changes to put together a plan-- now what?
  - ▶ Start assigning resources
  - ▶ Start estimating
- Get your plan together
  - ▶ How many hours is the project going to take?
- How sure do you feel about your inventory?
  - ▶ This answer determines your risk, high or low

# Unicode Project Phases

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# Scoping

## ■ Settings - Unicode Parameters

The image shows a software interface with two overlapping dialog boxes. The background dialog is titled 'General Parameters' and contains a list of settings with corresponding input fields:

- Margin Flag for Converted Code: XUNIC
- Convert Secondary Datastructures: \*YES
- Run Unextended Field WU: \*YES
- Where Used Level: 4
- Allow Changes to Decimals: \*NO
- Use Output Field Truncation: \*NO
- O-Spec fit hierarchy: \*NO
- Exclusion Analysis Where Used level: 2
- Exclusion Threshold ratio FromFields/WU: 999
- Exclusion Threshold ratio ToFields/WU: 50
- Exclusion Threshold ratio XWU/WU: 50
- Track Parameters on Local Key Fields: \*YES
- Track Parameters on Unextended WU: \*NO
- Maximum Invocation Levels on Secondary WU: 2

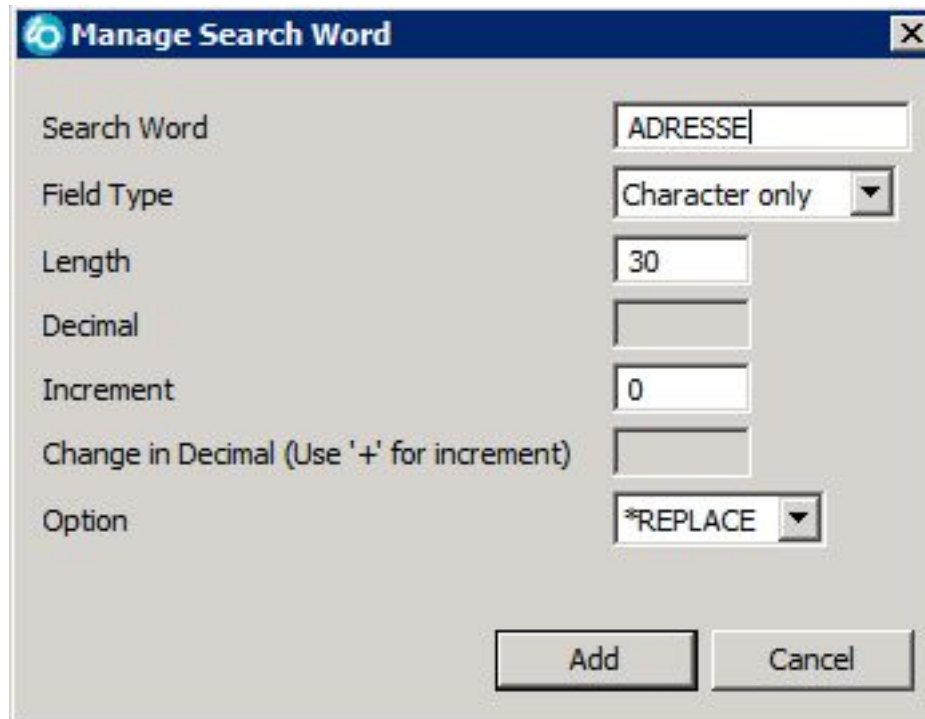
An 'Apply' button is located at the bottom of the 'General Parameters' dialog. Overlaid on top is a smaller dialog titled 'Unicode Parameters' with the following settings:

- Unicode Conversions: \*ON
- Unicode Encoding: UTF-16 (highlighted with a red arrow)
- Limit Processing to Files: UCS-2, UTF-16

An 'Apply' button is also present at the bottom of the 'Unicode Parameters' dialog. At the bottom of the main window, there are two tabs: 'General Parameters' and 'Unicode Parameters', with the latter being the active tab.

# Scoping

## ■ Search Words



The screenshot shows a dialog box titled "Manage Search Word" with a close button (X) in the top right corner. The dialog contains the following fields and controls:

- Search Word:** A text input field containing the word "ADRESSE".
- Field Type:** A dropdown menu currently set to "Character only".
- Length:** A text input field containing the number "30".
- Decimal:** An empty text input field.
- Increment:** A text input field containing the number "0".
- Change in Decimal (Use '+' for increment):** An empty text input field.
- Option:** A dropdown menu currently set to "\*REPLACE".

At the bottom of the dialog, there are two buttons: "Add" and "Cancel".

# Scoping

- Adding exclusions to a word

Search Word for KUHNUP

| Search Word | Field Type | Length | Decimal | Increment | Decimal changes | Option   | Exclusions |
|-------------|------------|--------|---------|-----------|-----------------|----------|------------|
| ADRESSE     |            |        |         | 0         |                 | *REPLACE |            |

- Run Search
- Run Search with Alias
- Add Exclusion
- Delete
- Edit

**Exclusions** ✕

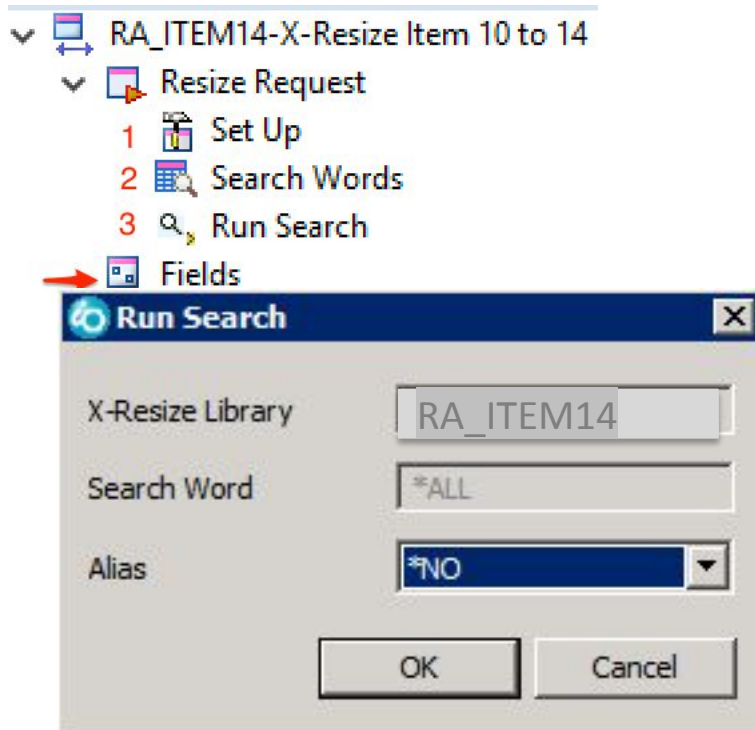
Exclusions

Search Word for KUHNUP

| Search Word | Field Type | Length | Decimal | Increment | Decimal changes | Option   | Exclusions  |
|-------------|------------|--------|---------|-----------|-----------------|----------|-------------|
| ADRESSE     | Character  | 30     |         | 0         |                 | *REPLACE | FOURNISSEUR |

# Scoping

- Run search based on your search words and exclusions



## Process

You can run the search multiple times.

Verify your list of fields that were found and include more fields or exclusions to make sure you have a complete list.

The smart search looks for field names, field text and column headings from fields in all the tables in the system.

# Scoping

## ■ Sample list of fields found

XAnalysis1721618930.hce X-Resize Search Words Fields

**Fields List (File/Field, Selected) for: KUHNUP, Total Objects: 151**

| File      | Field   | Type | Text                   | Length | Dec... | New Length | N | C | Reference... | Reference... |
|-----------|---------|------|------------------------|--------|--------|------------|---|---|--------------|--------------|
| CLIAPPCL  | AADR01  | A    | Adresse 1              | 30     |        | 30         |   |   |              |              |
| CLIAPT    | AADR01  | A    | Adresse 1              | 30     |        | 30         |   |   |              |              |
| CLIENT    | AADR01  | A    | Adresse 1              | 30     |        | 30         |   |   |              |              |
| CLIENTCRM | AADR01  | A    | Adresse 1              | 30     |        | 30         |   |   | CLIENP       | ADR01        |
| CLIAPPCL  | AADR02  | A    | Adresse2               | 30     |        | 30         |   |   |              |              |
| CLIAPT    | AADR02  | A    | Adresse2               | 30     |        | 30         |   |   |              |              |
| CLIENT    | AADR02  | A    | Adresse2               | 30     |        | 30         |   |   |              |              |
| CLIENTCRM | AADR02  | A    | Adresse 2              | 30     |        | 30         |   |   | CLIENP       | ADR02        |
| CLIAPPCL  | AADR03  | A    | Adresse3               | 30     |        | 30         |   |   |              |              |
| CLIAPT    | AADR03  | A    | Adresse3               | 30     |        | 30         |   |   |              |              |
| CLIENT    | AADR03  | A    | Adresse3               | 30     |        | 30         |   |   |              |              |
| CLIENTCRM | AADR03  | A    | Adresse 3              | 30     |        | 30         |   |   | CLIENP       | ADR03        |
| PRMCHP    | ADFOUM  | A    | ADRESSE DU FOURNISSEUR | 30     |        | 30         |   |   |              |              |
| PRMCHT    | ADFOUM  | A    | ADRESSE DU FOURNISSEUR | 30     |        | 30         |   |   |              |              |
| SOETRPHI  | ADRDES1 | A    | ADRESSE DESTINATAIRE   | 30     |        | 30         |   |   | CLIENP       | ADR01        |
| SOETRPHS  | ADRDES1 | A    | ADRESSE DESTINATAIRE   | 30     |        | 30         |   |   | CLIENP       | ADR01        |
| SOETRPHI  | ADRDES2 | A    | ADRESSE2 DESTINATAIRE  | 30     |        | 30         |   |   | CLIENP       | ADR02        |
| SOETRPHS  | ADRDES2 | A    | ADRESSE2 DESTINATAIRE  | 30     |        | 30         |   |   | CLIENP       | ADR02        |
| SOETRPHI  | ADRDES3 | A    | ADRESSE3 DESTINATAIRE  | 30     |        | 30         |   |   | CLIENP       | ADR03        |
| SOETRPHS  | ADRDES3 | A    | ADRESSE3 DESTINATAIRE  | 30     |        | 30         |   |   | CLIENP       | ADR03        |

## Process

1. Add the word "Fournisseur" as an exclusion to remove these items from the list.

2. Run search

3. Verify list again



# Scoping

- Reviewing the list of fields

Search Word for KUHNUP

| Search Word | Field Type | Length | Decimal | Increment | Decimal changes | Option   | Exclusions  |
|-------------|------------|--------|---------|-----------|-----------------|----------|-------------|
| ADRESSE     | Character  | 30     |         | 0         |                 | *REPLACE | FOURNISSEUR |

| File      | Field   | Type | Text                  | Length | De... | New Length | N | C. | Reference... | Reference... |
|-----------|---------|------|-----------------------|--------|-------|------------|---|----|--------------|--------------|
| CLIAPPCL  | AADR01  | A    | Adresse 1             | 30     |       | 30         |   |    |              |              |
| CLIAPT    | AADR01  | A    | Adresse 1             | 30     |       | 30         |   |    |              |              |
| CLIENT    | AADR01  | A    | Adresse 1             | 30     |       | 30         |   |    |              |              |
| CLIENTCRM | AADR01  | A    | Adresse 1             | 30     |       | 30         |   |    | CLIENP       | ADR01        |
| CLIAPPCL  | AADR02  | A    | Adresse2              | 30     |       | 30         |   |    |              |              |
| CLIAPT    | AADR02  | A    | Adresse2              | 30     |       | 30         |   |    |              |              |
| CLIENT    | AADR02  | A    | Adresse2              | 30     |       | 30         |   |    |              |              |
| CLIENTCRM | AADR02  | A    | Adresse 2             | 30     |       | 30         |   |    | CLIENP       | ADR02        |
| CLIAPPCL  | AADR03  | A    | Adresse3              | 30     |       | 30         |   |    |              |              |
| CLIAPT    | AADR03  | A    | Adresse3              | 30     |       | 30         |   |    |              |              |
| CLIENT    | AADR03  | A    | Adresse3              | 30     |       | 30         |   |    |              |              |
| CLIENTCRM | AADR03  | A    | Adresse 3             | 30     |       | 30         |   |    | CLIENP       | ADR03        |
| SOETRPHI  | ADRDES1 | A    | ADRESSE DESTINATAIRE  | 30     |       | 30         |   |    | CLIENP       | ADR01        |
| SOETRPHS  | ADRDES1 | A    | ADRESSE DESTINATAIRE  | 30     |       | 30         |   |    | CLIENP       | ADR01        |
| SOETRPHI  | ADRDES2 | A    | ADRESSE2 DESTINATAIRE | 30     |       | 30         |   |    | CLIENP       | ADR02        |
| SOETRPHS  | ADRDES2 | A    | ADRESSE2 DESTINATAIRE | 30     |       | 30         |   |    | CLIENP       | ADR02        |
| SOETRPHI  | ADRDES3 | A    | ADRESSE3 DESTINATAIRE | 30     |       | 30         |   |    | CLIENP       | ADR03        |
| SOETRPHS  | ADRDES3 | A    | ADRESSE3 DESTINATAIRE | 30     |       | 30         |   |    | CLIENP       | ADR03        |
| PRMCHP    | ADREVM  | A    | ADRESSE DU REVENDEUR  | 30     |       | 30         |   |    |              |              |
| PRMCHT    | ADREVM  | A    | ADRESSE DU REVENDEUR  | 30     |       | 30         |   |    |              |              |

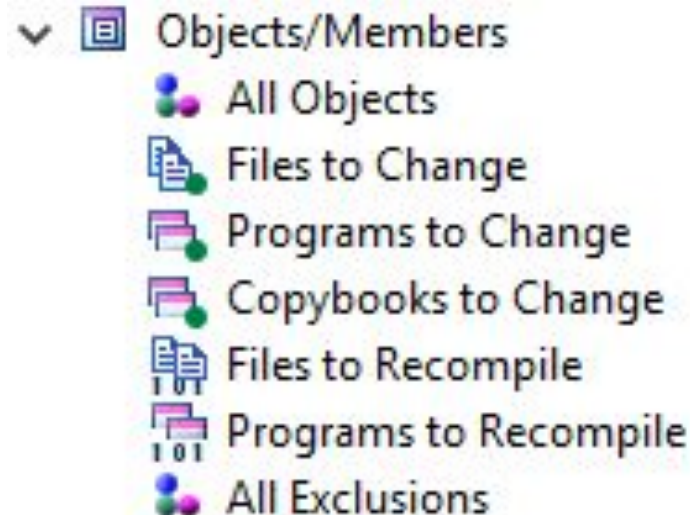
Adresse Du Fournisseur fields were removed.

# Scoping

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- Where is my inventory?

If the lists are completed then run the Built List. Once this process runs the inventory of all the objects to be expanded can be found under the Objects node at All Objects and any of the other specific lists

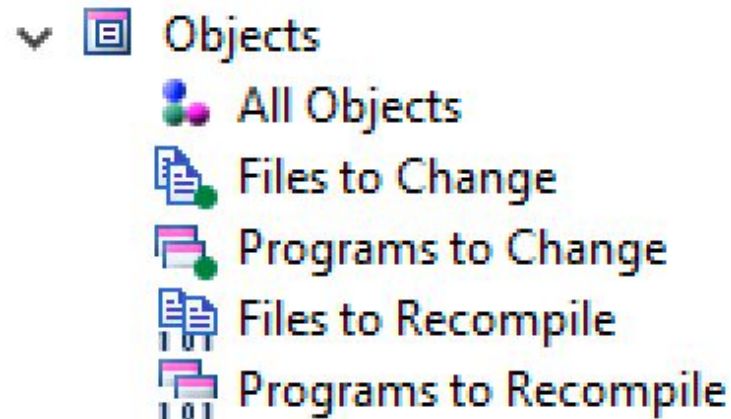


# Scoping

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- Where is my inventory?

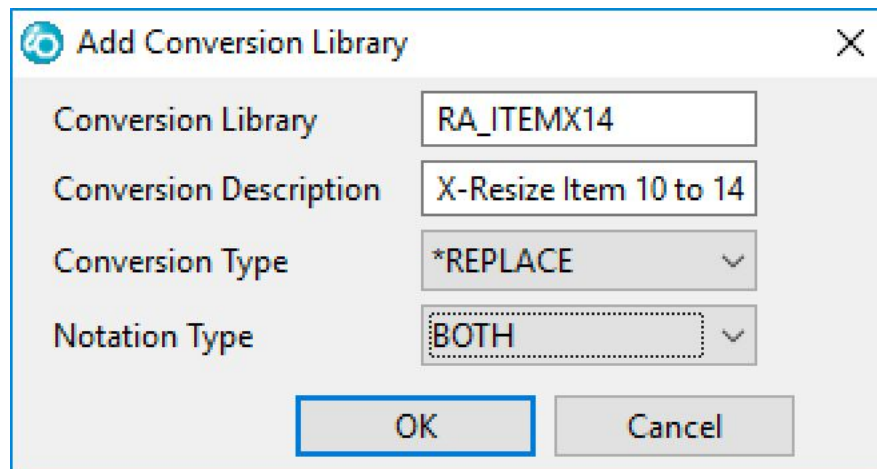
If the lists are completed then run the Built List. Once this process runs the inventory of all the objects to be expanded can be found under the Objects node at All Objects and any of the other specific lists



# Scoping + Coding

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- Add the Conversion Library
  - ▶ This library will have all the converted code
  - ▶ This library will contain all the re-compiled objects



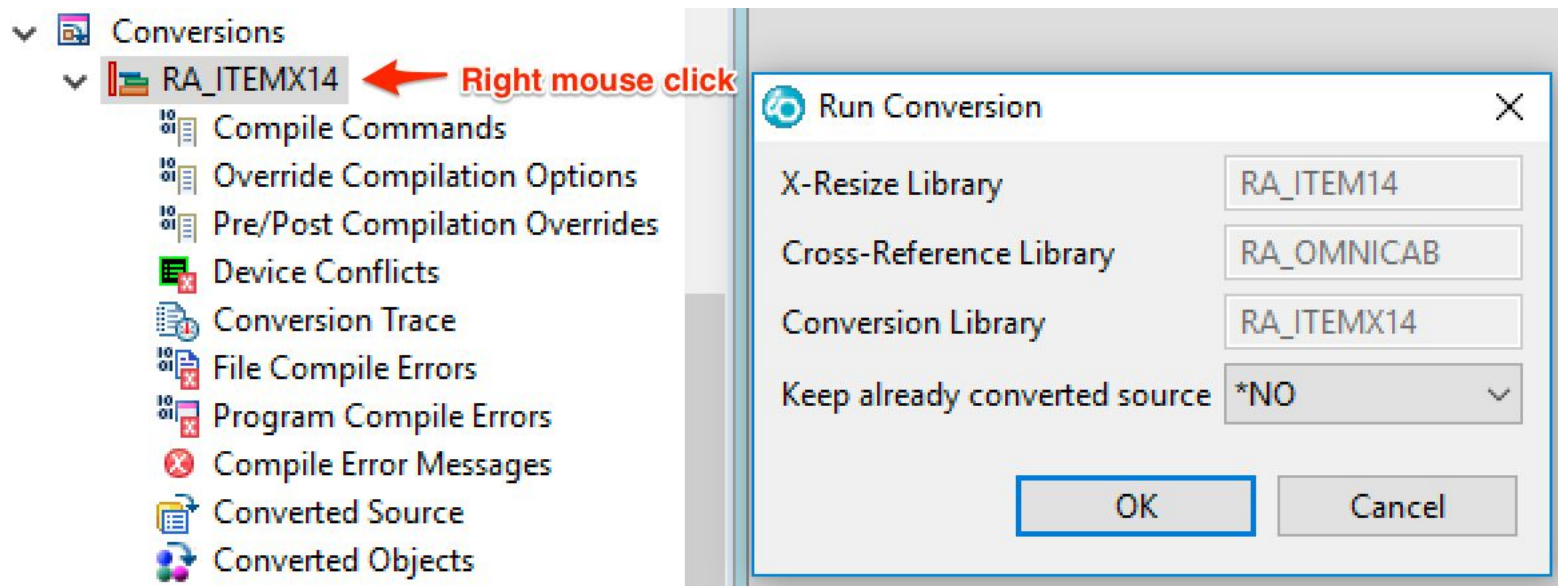
The screenshot shows a dialog box titled "Add Conversion Library" with a close button (X) in the top right corner. The dialog contains four input fields and two buttons at the bottom. The fields are: "Conversion Library" with the value "RA\_ITEMX14", "Conversion Description" with the value "X-Resize Item 10 to 14", "Conversion Type" with a dropdown menu showing "\*REPLACE", and "Notation Type" with a dropdown menu showing "BOTH". The "OK" button is highlighted with a blue border.

|                        |                        |
|------------------------|------------------------|
| Conversion Library     | RA_ITEMX14             |
| Conversion Description | X-Resize Item 10 to 14 |
| Conversion Type        | *REPLACE               |
| Notation Type          | BOTH                   |

Buttons: OK, Cancel

# Scoping + Coding

## ■ Run the complete conversion



## ■ Once it is finished you can check on:

- ▶ Converted code
- ▶ Compilation errors

# Expansion Project Phases with X-Unicode

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# Physical File example

Code Added to support Unicode

```
Colonne . . : 1 71 Examen PF 2RA/QDDSSRC
SEU==> _____ CMCDEP17
FMT A* .....A*. 1 ...+... 2 ...+... 3 ...+... 4 ...+... 5 ...+... 6 ...+... 7
0003.30 *-----*
0003.40 Modified * ZONES RELATIVES AUX COMMENTAIRES
0003.50 *-----*
0003.60 XRSZEA*?Changed by X-RESIZE
0003.70 XRSZEA COCDC 71G → CCSID(1200)
0003.80 XRSZEA COLHDG('COMMENTAIRE CDE')
0003.90 A DELET 1A COLHDG('ENRGT' 'GENERE')

Colonne . . : 1 71 Examen TS001B/QDDSSRC
SEU==> _____ CMCDEP17
0024.09 *-----*
0025.09 Original * ZONES RELATIVES AUX COMMENTAIRES
0026.09 *-----*
0027.09 A COCDC 71A COLHDG('COMMENTAIRE CDE')
0028.09 A DELET 1A COLHDG('ENRGT' 'GENERE')
```



# Display File example

Code Added to support Unicode

Source List of CMCDEEIN in KUHNUNI2RA/QDDSSRC, Lines: 1780, View Level: 5

| Seq No  | *...+... 1                     | ...+... 2 | ...+... 3 | ...+... 4 | ...+... 5  | ...+... 6 | ...+... 7  | ...+... 8                           |
|---------|--------------------------------|-----------|-----------|-----------|------------|-----------|------------|-------------------------------------|
| 0075.90 | A                              | R         | CLCDEF17  |           | SFL        |           |            |                                     |
| 0076.00 | A*                             | %TS       | SD        | 20050309  | 103958     | STIRK     | REL-V5R3M0 | 5722-WDS                            |
| 0076.10 | XRSZE * Line added by X-Resize |           |           |           |            |           |            |                                     |
| 0076.20 | XRSZEA                         |           | COCDC     | R         | <u>71G</u> | O         | 6          | <u>2CCSID(1200 *MIN)</u>            |
| 0076.30 | XRSZEA                         |           |           |           |            |           |            | REFFLD(CMCDEF17/COCDC *LIBL/CMCDEL) |
| 0076.40 | A                              |           |           |           |            |           |            | COLOR(BLU)                          |



# PRTF example

Code Added to support Unicode

```
Colonnes . . : 1 71 Examen PRTF 2RA/QDDSSRC
SEU==> _____ CMCMSGED$1
FMT DP .....AAN01N02N03T.Name+++++RLen++TDpBLinPosFunctions+++++
0011.90 - A R ETETE3
0012.00 - A SPACEA( 1)
0012.10 XRSZE * Line added by X-Resize
0012.20 XRSZEA COCDC 71G 11CCSID(1200)
0012.30 A R DAREA
0012.40 A SPACEA( 1)
0012.50 A 11'*** Prime de r{approvisi'
0012.60 A 35'onnement jusqu'au'
0012.70 A DTREAN 8 0 54
```

Source List of CMCMSGED\$1 in RA/QDDSSRC, Lines: 643, View Level: 5

| Seq No  | *...+... 1 | ...+... 2              | ...+... 3 | ...+... 4 | ...+... 5                    | ...+... 6 | ...+... 7 | ... |
|---------|------------|------------------------|-----------|-----------|------------------------------|-----------|-----------|-----|
| 0011.90 | A          | R ETETE3               |           |           |                              |           |           |     |
| 0012.00 | A          |                        |           |           | SPACEA( 1)                   |           |           |     |
| 0012.10 | XRSZE *    | Line added by X-Resize |           |           |                              |           |           |     |
| 0012.20 | XRSZEA     | COCDC                  | 71G       |           | 11CCSID(1200)                |           |           |     |
| 0012.30 | A          | R DAREA                |           |           |                              |           |           |     |
| 0012.40 | A          |                        |           |           | SPACEA( 1)                   |           |           |     |
| 0012.50 | A          |                        |           |           | 11'*** Prime de réapprovisi' |           |           |     |
| 0012.60 | A          |                        |           |           | 35'onnement jusqu''au'       |           |           |     |
| 0012.70 | A          | DTREAN                 | 8         | 0         | 54                           |           |           |     |



# RPG example

Code Added to support Unicode

```
*****  
XRSZE * Line added or changed by X-Resize  
XRSZEH CCSID(*UCS2 : 1200 )
```

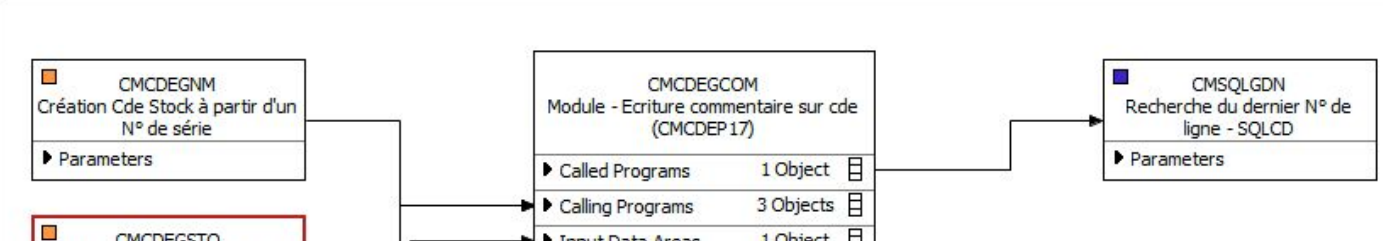
```
Colonne . . : 1 71 Examen :2RA/QRPGLESRC  
SEU==> CMAUDGOF  
FMT D .....DName+++++++ETDsFrom+++To/L+++IDc.Keywords+++++++  
0010.70 d  
0010.80 XRSZE * Line added or changed by X-Resize  
0010.90 XRSZEd CM s 71c DIM(99)
```

```
XRSZE * Line added or changed by X-Resize  
XRSZEc eval cocdc = %ucs2('SEAL NR ') + %ucs2(NOPL0)  
s . . : 6 100 Examen  
c clear cocdc  
c eval cocdc = 'SEAL NR ' + noplo
```

# Powerful Impact Analysis

Code Added to support Unicode

Program Centered Data Flow Diagram for CMCDEGCOM, Total Objects: 6



**CMCDEGSTO**  
Création commentaires Cde de Stock MTO - Ret Client

Parameters 11 Fields

- ICOSTE
- ICSRVC
- OCDELIEN
- ICPNBF
- TEXTE
- DELET
- COMOF

```

Colonne . . . : 1 71 Examen 2RA/QRPGSRC
SEU==> CMCDEGCOM
FMT ** . . .+ . . . 1 . . .+ . . . 2 . . .+ . . . 3 . . .+ . . . 4 . . .+ . . . 5 . . .+ . . . 6 . . .+ . . . 7
0000.80 *****
0000.90 XRSZE * Line added or changed by X-Resize
0001.00 XRSZEH CCSID(*UCS2 : 1200 )
0001.10 h DECEDIT('0,') DATEDIT(*YMD/) option(*nodebugio)
0001.20 fCMCDEP17 UF A E K DISK
0001.30
0001.40

```

```

..... *. 1 ...+... 2 ...+... 0001.50 XRSZE * ///////////////////////////////////////////
XRSZE * Line added or change 0001.60 XRSZE * X-Resize Unicode Field Definitions
XRSZEH CCSID(*UCS2 : 1200 ) 0001.70 XRSZE * Line added or changed by X-Resize
h DECEDIT('0,') DATEDIT 0001.80 XRSZEd Itexte s 71c

```

```

*- Variables -----
d refCde S 14
XRSZE * Line added or changed by X-Resize
XRSZEd texte s 71c

```

```

Colonne . . . : 1 71 Examen 2RA/QRPGSRC
SEU==> CMCDEGCOM
FMT ** . . .+ . . . 1 . . .+ . . . 2 . . .+ . . . 3 . . .+ . . . 4 . . .+ . . . 5 . . .+ . . . 6 . . .+ . . . 7
0007.80 // Texte Commentaire
0007.90 c eval cocdc = iTEXTE

```

# RPG Open Access

Required coding

```
Fichier spoule
Fichier . . . . : QUEPRT                               Page/Ligne  1/6
Contrôle . . . . : _____                       Colonnes   1 - 78
Recherche . . . . : _____
*...+...1...+...2...+...3...+...4...+...5...+...6...+...7...+...
  IBM COMPARE V7R1M0  100416                               10/09/16
NOUVEAU :          2RA/QRPGOASRC(ACRVTGFA)                ANCIEN :
                  SECTION DE SORTIE DE LISTE (COMPARAISON LIGNE)

ID      LIGNES SOURCE
-----+-----1-----+-----2-----+-----3-----+-----4-----+-----5-----+-----6-----+-----7-----+
I -     F      These are the two lines
I -     F      added by CRTROASRC → HANDLER('LOOKDA/DAHANDLER-
                                     (DAWORKSTN)')

  IBM COMPARE V7R1M0  100416                               10/09/16
NOUVEAU :          2RA/QRPGOASRC(ACRVTGFA)                ANCIEN :
                  RECAPITULATIF ET STATISTIQUES COMPARAISON LIGNE
NOMBRE DE CORRESPONDANCES LIGNE.....:                2
TOTAL MODIFICATIONS (MODIF COUPLEES+NON COUPLEES).....:
LIGNES REFORMATEES.....:
                                                                    À suivre...

F3=Exit  F12=Annuler  F19=Gauche  F20=Droite  F24=Autres touches
```



# Using the application

Showing Chinese Language

PRISE EN CHARGE DE LA COMMANDE

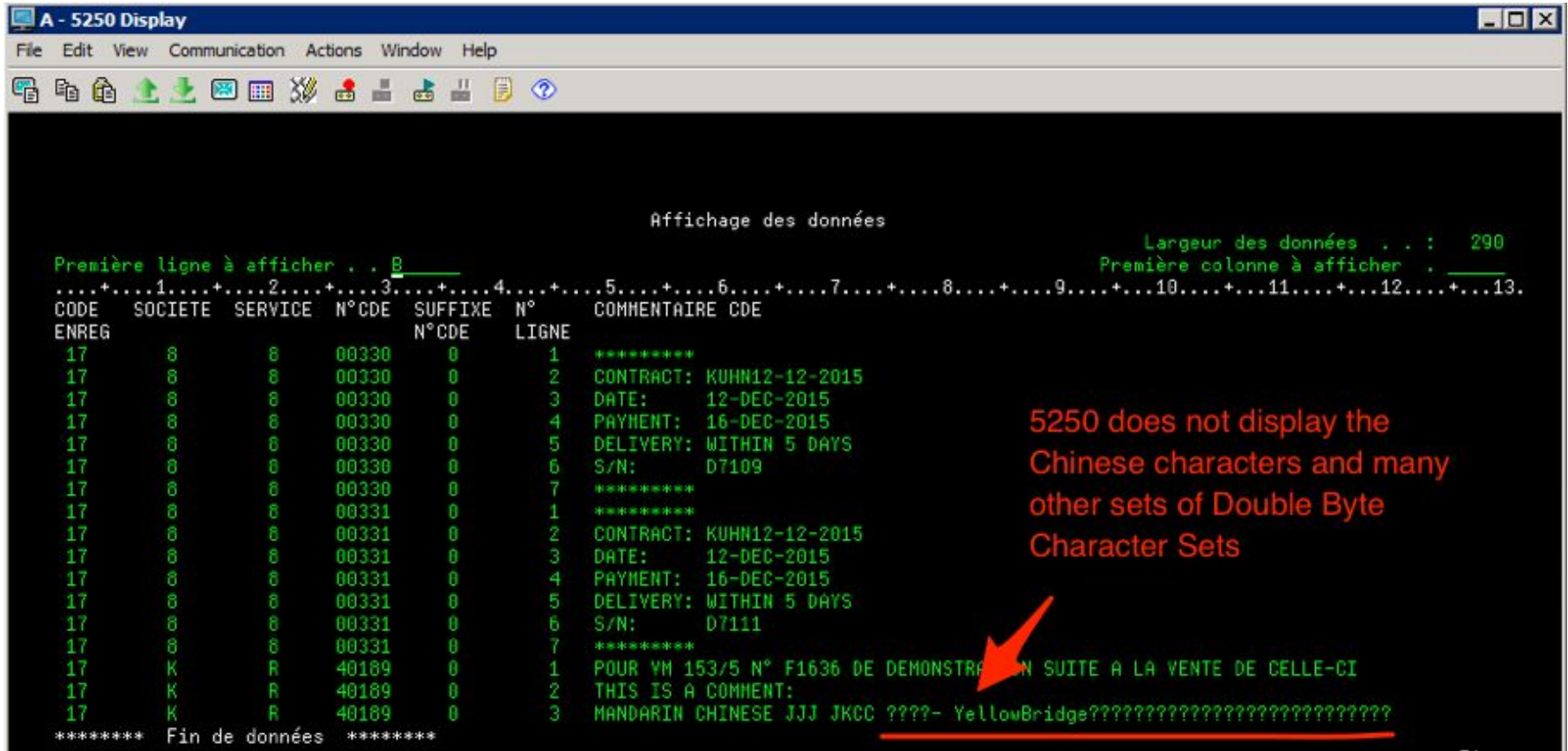
File Session Tools

Commande N° R 40189 Délai  
Client DEMONSTRAT F F  
CHATEAUBRIANT CEDEX C C AA Texte

| Texte du commentaire   | H | F | E | C |
|--|---|---|---|---|
| POUR VM 153/5 N° F1636 DE DEMONSTRATION SUITE A LA VENTE DE CELLE-CI | X | X | X | X |
| THIS IS A COMMENT:   | X | X | X | X |
| MANDARIN CHINESE JJJ JKCC 中英字典 - YellowBridge                        | X | X | X | X |
|  | X | X | X | X |
|  | X | X | X | X |
|  | X | X | X | X |
|  | X | X | X | X |
|  | X | X | X | X |
|  | X | X | X | X |
|  | X | X | X | X |
|  | X | X | X | X |
|  | X | X | X | X |
|  | X | X | X | X |
|  | X | X | X | X |
|  | X | X | X | X |
|  | X | X | X | X |
|  | X | X | X | X |

# 5250 Emulator does not show DBCS

Showing Chinese Language



A - 5250 Display

File Edit View Communication Actions Window Help

Affichage des données

Première ligne à afficher . . : 8

Largeur des données . . : 290

Première colonne à afficher . . :

| CODE ENREG | SOCIETE | SERVICE | N°CDE | SUFFIXE N°CDE | N° LIGNE | COMMENTAIRE CDE  |
|------------|---------|---------|-------|---------------|----------|--|
| 17         | 8       | 8       | 00330 | 0             | 1        | *****  |
| 17         | 8       | 8       | 00330 | 0             | 2        | CONTRACT: KUHN12-12-2015   |
| 17         | 8       | 8       | 00330 | 0             | 3        | DATE: 12-DEC-2015  |
| 17         | 8       | 8       | 00330 | 0             | 4        | PAYMENT: 16-DEC-2015   |
| 17         | 8       | 8       | 00330 | 0             | 5        | DELIVERY: WITHIN 5 DAYS  |
| 17         | 8       | 8       | 00330 | 0             | 6        | S/N: D7109   |
| 17         | 8       | 8       | 00330 | 0             | 7        | *****  |
| 17         | 8       | 8       | 00331 | 0             | 1        | *****  |
| 17         | 8       | 8       | 00331 | 0             | 2        | CONTRACT: KUHN12-12-2015   |
| 17         | 8       | 8       | 00331 | 0             | 3        | DATE: 12-DEC-2015  |
| 17         | 8       | 8       | 00331 | 0             | 4        | PAYMENT: 16-DEC-2015   |
| 17         | 8       | 8       | 00331 | 0             | 5        | DELIVERY: WITHIN 5 DAYS  |
| 17         | 8       | 8       | 00331 | 0             | 6        | S/N: D7111   |
| 17         | 8       | 8       | 00331 | 0             | 7        | *****  |
| 17         | K       | R       | 40189 | 0             | 1        | POUR YM 153/5 N° F1636 DE DEMONSTRATION EN SUITE A LA VENTE DE CELLE-CI      |
| 17         | K       | R       | 40189 | 0             | 2        | THIS IS A COMMENT:   |
| 17         | K       | R       | 40189 | 0             | 3        | MANDARIN CHINESE JJJ JKCC ????- YellowBridge???????????????????????????????? |

\*\*\*\*\* Fin de données \*\*\*\*\*

5250 does not display the Chinese characters and many other sets of Double Byte Character Sets

# Extraction of Printer file from O'specs

XCVTOPRTF PROGRAM(ZAUDCUSF) XALIB(RA\_DEMO2)

File XEXTPRTF in my repository

```
.....+.....1.....+.....2.....+.....3.....+.....4.....+.....5.....+.....6.....+.....7.....+.....8.....+...
PRTFPGM      PRTFOFIL      PRTFOFMT      PRTFOSEQ      PRTFNFIL      PRTFNFMT      PRTFOVFL      PRTFIND
ZAUDCUSF     QSYSPRT      HEADINGS      1      ZAUDCUSF$1    HEADINGS
ZAUDCUSF     QSYSPRT      HEADINGS      2      ZAUDCUSF$1    HEADING_1      *INOF
ZAUDCUSF     QSYSPRT      HEADINGS      3      ZAUDCUSF$1    HEADING_2      *INOF
ZAUDCUSF     QSYSPRT      HEADINGS      4      ZAUDCUSF$1    HEADING_3      *INOF
ZAUDCUSF     QSYSPRT      HEADINGS      5      ZAUDCUSF$1    HEADING_4      *INOF
ZAUDCUSF     QSYSPRT      TOTALS        6      ZAUDCUSF$1    TOTALS         *INOF
*****      End of data      *****
```

# Printer file from O'specs

```
H* -----
H debug(*yes) copyright('Databorough Ltd. 2010') da
H option(*srcstmt:*nodebugio:*showcpy)
F*****
F* F i l e s
F*****
Fcusf      if  e          disk
Fcustsl3   if  e          k disk
Fcntacs    if  e          k disk
Fsecf      if  e          k disk
FZAUDCUSF$1o  E          printer oflind(*IN25)
D*****
D* D e f i n i t i o n s
D*****
```

```
0001.00 FMT H .....HKeywords+++++++
0002.00 H* -----
0003.00 H* COPYRIGHT DATABOROUGH LTD 2010
0004.00 H* -----
0005.00 H debug(*yes) copyright('Databorough Ltd. 2010') da
0006.00 H option(*srcstmt:*nodebugio:*showcpy)
0007.00 F*****
0008.00 F* F i l e s
0009.00 F*****
0010.00 Fcusf      if  e          disk
0011.00 Fcustsl3   if  e          k disk
0012.00 Fcntacs    if  e          k disk
0013.00 Fsecf      if  e          k disk
0014.00 Fqsysprt   o  f 132      printer oflind(*INOF)
0015.00 D*****
0016.00 D* D e f i n i t i o n s
0017.00 D*****
0018.00 D custscount  s          7p 0
0019.00 D cntaccount  s          7p 0
F3=Exit F5=Refresh F9=Retrieve F10=Cursor F11=Toggle
F16=Repeat find F24=More keys
M8 A A
```



## Printer file from O'specs

```
/FREE
*IN25 = *ON;
// For each CUSF record
SETLL 1 RCUSF;
READ(E) RCUSF;
DOW NOT %EOF(CUSF);

CUSTSCOUNT = *ZEROS;
CNTACCOUNT = *ZEROS;
SECFCOUNT = *ZEROS;

// Count CUSTS records
ACUSNO = CUSNO;
SETLL %KDS(CUSTSK:1) CUSTSR;
```

```
Columns . . . : 1 100
SEU=>
FMT ** ..... 1 ..... 2 ..... 3 ..... 4 .....
0031.00 - /free
0032.00 *inof = *on;
0033.00 // For each CUSF record
0034.00 setll 1 rcusf;
0035.00 read(e) rcusf;
0036.00 dow not %eof(cusf);
0037.00
0038.00 custscount = *zeros;
0039.00 cntaccount = *zeros;
0040.00 secfcount = *zeros;
0041.00
0042.00 // Count CUSTS records
0043.00 acusno = cusno;
0044.00 setll %kds(custsk:1) custsr;
0045.00 reade(e) %kds(custsk:1) custsr;
0046.00 dow not %eof(custsl3) and not %eof;
0047.00 custscount = custscount + 1;
0048.00 reade(e) %kds(custsk:1) custsr;
0049.00 enddo;
0050.00
```

F3=Exit F5=Refresh F9=Retrieve F10=Cancel F11=

## Printer file from O'specs

```
// Output totals for site
IF *IN25;
    Write HEADINGS;
    Write HEADING_1;
    Write HEADING_2;
    Write HEADING_3;
    Write HEADING_4;
    *IN25 = *OFF;
    // secfcount = *zeros;
ENDIF;

Write TOTALS;
```

```
Columns . . . : 1 100
SEU=>
FMT ** ...+... 1 ...+... 2 ...+... 3 ...+... 4 .
0069.00 _ // Output totals for site
0070.00 if *inof;
0071.00 except headings;
0072.00 *inof = *off;
0072.01 // secfcount = *zeros;
0073.00 endif;
0074.00
0075.00 except totals;
0076.00
0077.00 read(e) rcusf;
0078.00 enddo;
0079.00
0080.00 // Terminate program and exit
0081.00 *inlr = *on;
0082.00 return;
0083.00 /end-free
0084.00 C*****
0085.00 C* * I N Z S R
0086.00 C*****
0087.00 C *inzsr begsr
```

# Printer file from O'specs

```
/END-FREE
C*****
C* * I N Z S R
C*****
C      *inzsr      begsr
C              time
C              z-add      *date
C              endsr
C***** End of data *****
```

```
Columns . . . : 1 100      Browse
SEU==>
FMT C .....CLONG1Factor1+++++Opcode8ExtFactor2+++++Result+++++Len++D+HiLoEq...
0088.00      C              time              tyme
0089.00      C              z-add      *date      today
0090.00      C              endsr
0091.00      0qsysprt  e              headings      1 01
0092.00      0              10 'X-Analysis'
0093.00      0              60 'Audit log for file: CUSF'
0094.00      0              132 'Databorough LTD.'
0095.00      0      e              headings      1
0096.00      0              10 'ZAUDCUSF'
0097.00      0              tyme              120 ' : : '
0098.00      0              today              132 ' / / '
0099.00      0      e              headings      2
0100.00      0              127 'Page:'
0101.00      0              page              z 132
0102.00      0      e              headings      1
0103.00      0              60 'CUSTS'
0104.00      0              75 'CNTACS'
0105.00      0              90 'SECF'
0106.00      0      e              headings      2
0107.00      0              60 'Records'
```

→ No O'specs

# Summary

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- X-Unicode can help 80% or more in your project
- Risk is minimized
- Complete Inventory
- Support of Unicode in all 3 tiers:
  - ▶ DB
  - ▶ Programs
  - ▶ UI (PRTF and DSPF)
- Globalization – Internationalization support is archived