

# Understanding Indexes: WORD and Other

## Ex Libris

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Marie Erdman

# Scope of the Lecture

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## Indexes to be discussed:

- Words
- Direct
- Sort
- Short doc

# Scope of the Lecture

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## Points for discussion in each index:

- Index structure (Oracle tables)
- Specifying index
- Index creation and update
- Performance issues

# Word Index

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- Index structure (Oracle tables)
- Specifying index
- Word breaking routines
- Character conversion
- Synonyms
- Adjacency
- Useful utilities
- Index creation and update
- Performance issues

# Database Tables

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## Word Index:

- **Z97 - word dictionary**
- **Z98/Z980 - bitmap**
- **Z95/Z950 - document and its words**
- **Z970 - synonyms**

# Database Tables

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## Z97 - Word dictionary

- A list of all the searchable words derived from information in the document record.
- Unique words
- Translation of a word as it is stored in the database to its internal representation

# Z97 - Word Dictionary

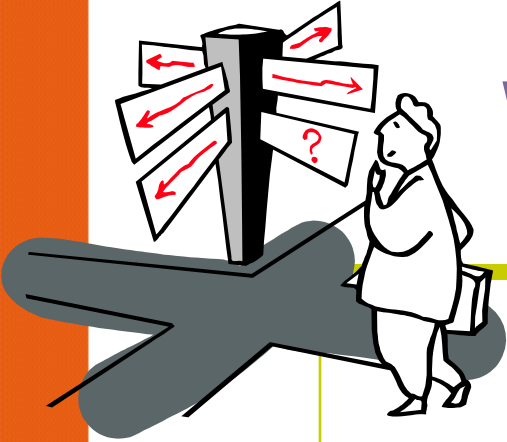
## Record 1 out of 1

Book Number	000003328
LC no.	PZ7.D1515 Wi 1998
ISBN	●0141301104
Main Entry	● <u>Dahl, Roald.</u>
Title	●The <b>witches</b> /
Imprint	● <u>New York : Puffin Books, 1998.</u>
Descr.	206 p. : ill. ; 24 cm.
Abstract	A young boy and his Norwegian grandmother, children by turning them into mice.
Subject - Lib.Cong.	● <b>Witches</b> -- Juvenile fiction. ● <u>Grandmothers -- Juvenile fiction.</u>
Subject - A.C.	● <b>Witches</b> -- Fiction. ● <u>Grandmothers -- Fiction.</u>
Add.Entry	● <u>Blake, Quentin, ill.</u>

# Z97 - Word Dictionary

word	word number
-witches	-000120661
-with	-000120662
-withdrawing	-000120663
-witherspoon	-000120664
-withholding	-000120665
-within	-000120666
-withington	-000120667
-without	-000120668
-witkin	-000120679





# Words → Documents

Z98, Z980, Z95, Z950 maintain pointers from the words registered in Z97 to the documents.



# Z98 - Bitmap

- Map of word occurrences in documents
- Compressed
- One record for every combination of word and index

# Z98 - Bitmap

**Z97 - Dictionary** **Word Number=66750**  
**Word="bob"**

**Word Number=66750**  
**Type="WRD"**  
**Documents:**  
**3466**  
**67508**  
**86671**

**Word Number=66750**  
**Type="WAU"**  
**Documents:**  
**3466**

- Each word (z97 record) has a z98 record per index (e.g. WRD, WAU, WTI, etc.).
- Each z98 record holds numbers of all documents containing the word in the related fields

**Z98 - Bitmaps**

# Z98 - Bitmap

## tab00.Ing

H	WRD	W-001	00	0001	Words
H	WTI	W-002	00	0001	W-titles
H	WUT	W-002	00	0001	W-Unif .Titles
H	WAU	W-003	00	0003	W-authors
H	WSU	W-004	00	0002	W-subjects

Number of index as defined in tab00.Ing

z98

```
-001-000120661-000000001-M-00000012-00000012  
-001-000120662-000000001-M-00000012-00000012
```

z97

Bitmap length  
+ compressed  
bitmap data

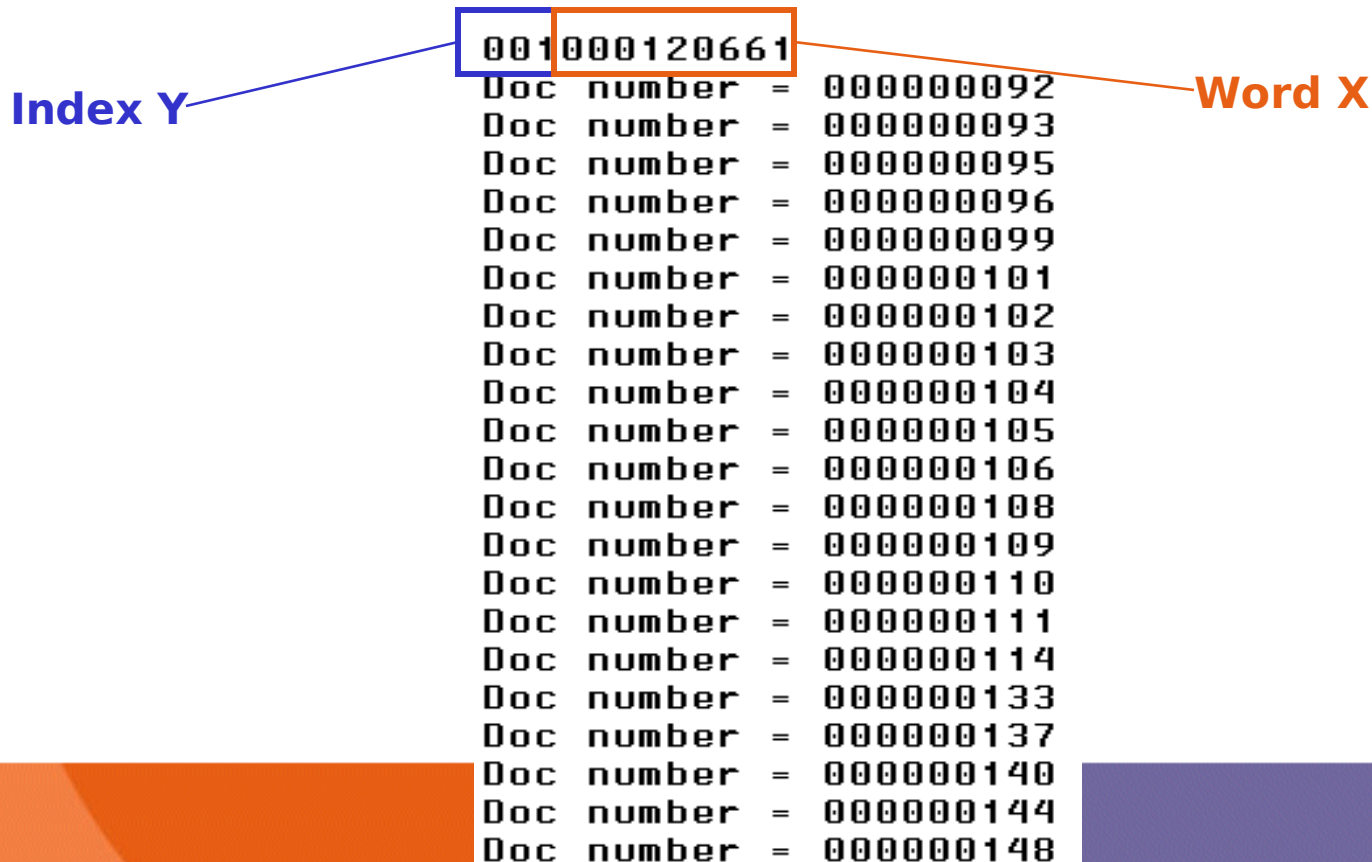
-witches  
-with

-000120661  
-000120662

# Your Bitmap Reading Assistant

## •UTIL F/4 - word3

- This utility reads the bitmap in order to find the documents that contain word X stored in index Y.



# Z980

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- **Z980 - complementary record to z98**
- **Cache of bitmap updates**
- **Stores increments in order to increase speed of large bitmap updates.**

# Z95/Z950

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- Each document has a z95 record containing all of its words and their locations

# Z95/Z950

- Documents and their words, location of words for adjacency search

Document  
Number

-000000500	-L-Z-	000007628	0591	0001
-000000500	-L-Z-	000007628	0591	0010
-000000500	-L-Z-	000009385	0587	0001
-000000500	-L-Z-	000009385	0587	0010
-000000500	-L-Z-	000012251	0274	0001
-000000500	-L-Z-	000012251	0355	0002
-000000500	-L-Z-	000012327	0813	0001
-000000500	-L-Z-	000012327	0813	0004
-000000500	-L-Z-	000014362	0286	0001
-000000500	-L-Z-	000014362	0367	0002
-000000500	-L-Z-	000014362	1039	0001
-000000500	-L-Z-	000014362	1098	0003
-000000500	-L-Z-	000016720	1464	0001
-000000500	-L-Z-	000016720	1464	0040
-000000500	-L-Z-	000017227	0275	0001
-000000500	-L-Z-	000017227	0356	0002

Word number  
as defined in  
z97

Location  
of words

Index number  
as defined in  
tab00.lng



# Z970 - Synonyms

- *Why do we need the 'synonyms' functionality?*

Synonyms enable automatic expansion of the user query using semantic relatives or spelling variants.

For example, if *the following words* are set as synonyms, a FIND on any one of these words will retrieve the docs of all the other words.

Group 1: ***wood, woods, woodland, forest, forests***

Group 2: ***airplane, aeroplane***

# Z970 - Synonyms

- Synonyms are stored in **Z970**.
- A synonym group is identified by a common word (Z970-COMM-WORD); this word is set by the system (first word of the group in the Z970 table).

Group's common word	Group's words
airplane	aeroplane
airplane	airplane
color	color
color	colour

# Z970 - Synonyms

- Synonymous words share the same bitmap value (word number in Z97)

z97

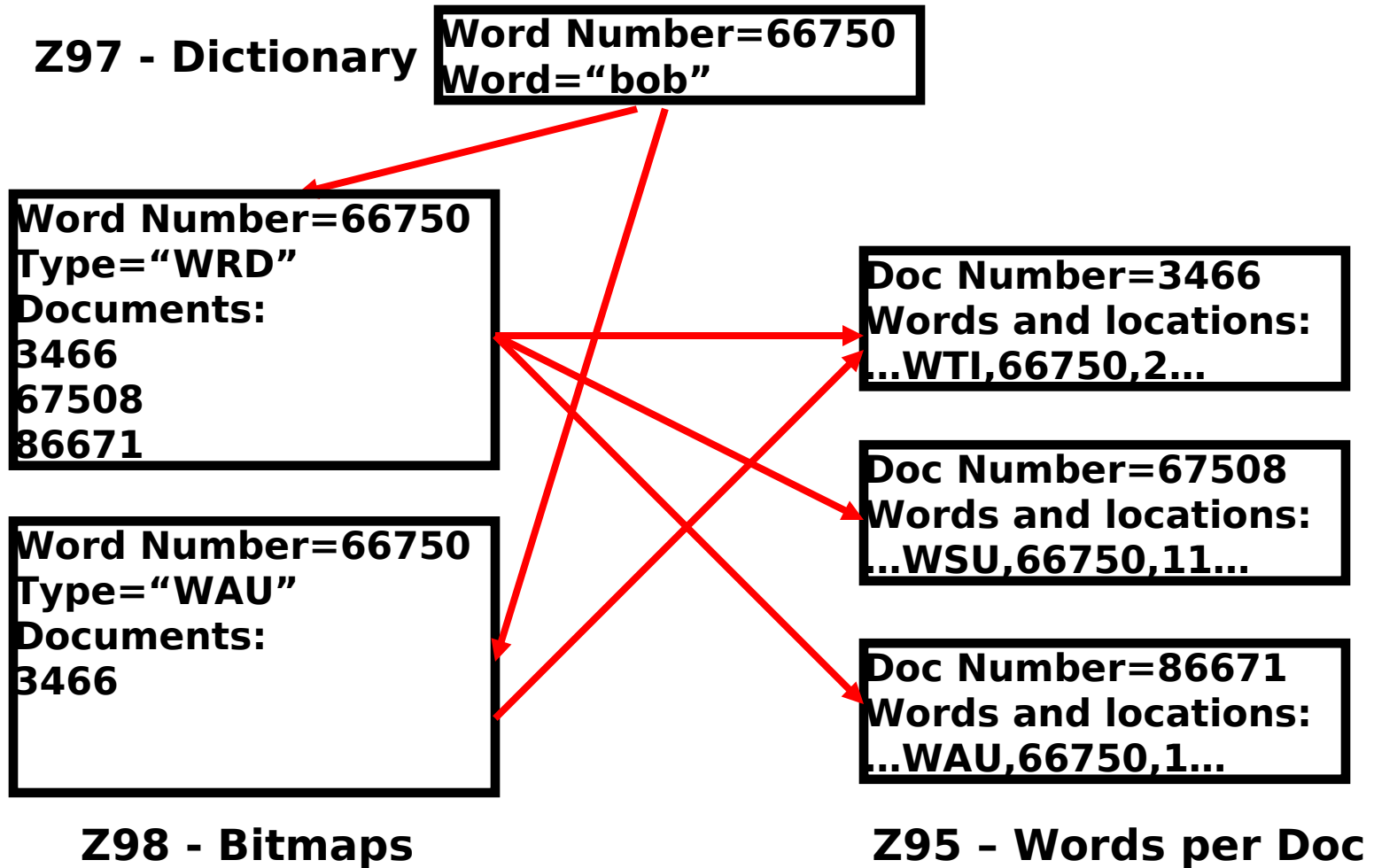
-color	0000000040	0000000040
-colour	0000000040	0000000041

# Z970 - Synonyms

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- The 'synonyms functionality' is optional.
- Z970 has to be set only by the sites which use the synonyms functionality.
- To set up synonym functionality, use UTIL B in order to add, remove unlink and view synonyms.

# Words Index - Structure



# How to Define the Word Index Index?

## •Tables to remember

- tab00.ing** defines the system index codes
- tab11\_word** defines connections between the bibliographic record fields and the indexes
- tab\_expand** defines expand procedures which have to be activated when index is created (WORD)
- tab\_word\_breaking** defines word breaking procedures
- tab\_character\_conversion\_line**  
instance WORD-fix – defines character conversion table for word index normalization
- aleph\_start\_505** adjacency handling definition

# How to Define the Structure of the Word Index - Interrelation of Tables

## tab00.lng

H WRD	W-001	00	0001	Words
H WTI	W-002	00	0001	W-titles
H WUT	W-002	00	0001	W-Unif .Titles
H WAU	W-003	00	0003	W-authors
H WSU	W-004	00	0002	W-subjects

## tab\_expand

WORD	expand_doc_bib_loc_usm
------	------------------------

## tab11\_word

11 W 008	F07-04	01	A	WRD	WYR	
11 W 008	F35-03	01	A	WRD	WLN	
11 W LOC##	-o	03		WRD	WLC	
11 W 041##	abdefg	41	A	WRD	WLN	
11 W 100##	a	01		WRD	WAU	
11 W 110##	-6	01		WRD	WAU	
11 W 111##	-6	01		WRD	WAU	WTI
11 W 130##	-6	03		WRD	WTI	WUT
11 W 210##	a	03		WRD	WTI	
11 W 222##	a	03		WRD	WTI	
11 W 240##	-6	03		WRD	WTI	WUT
11 W 242##	abnp	03		WRD		
11 W 243##	-6	03		WRD	WTI	
11 W 245##	c	03		WAU		

## tab\_word\_breaking

01	# del_subfield
01	# numbers
01	# to_blank
01	# to_lower

!@#\$\$%^()\_={}[ ]:"';<>.,.?|\

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# How to Standardize the Database Dictionary?



# What is a Word?

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The default definition of a **word** is:  
a character string from blank to blank,  
or from the beginning of a line to the  
first blank, or from the last blank to  
the end of a line.

# What is a Word?

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- Problematic cases :
  - I.B.M - IBM
  - Year-book - yearbook

***Word breaking procedures*** are used to define what will be considered a “word”, i.e how to break into words.

# tab\_word\_breaking

- From version 14, the word breaking routines are made up of a group of individual procedures.
- Word breaking routines are defined in **tab\_word\_breaking**:

```
01 # del_subfield
01 # numbers
01 # to_blank           !@#%^()_={}[ ]:";<>,..?|\
01 # to_lower
!
03 # del_subfield
03 # abbreviation
03 # numbers
03 # to_blank           !@#%^()_={}[ ]:";<>,..?|\
03 # to_lower
```

# tab\_word\_breaking

```
1  2      3              4
!!-!-!!!!!!!!!!!!!!!!!!!!-!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
03 # abbreviation
03 # numbers
03 # compress          -
03 # to_blank         !@#$%^&* ( )_+={}[]: "; '<>, .?/|\
```

- Col.1: procedure identifier
- Col.2: alpha of the text
- Col.3: procedure name
- Col.4: procedure parameters

# Word Breaking Procedures

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- **abbreviation**

Compresses a dot between single characters (I.B.M. changes to IBM)

- **numbers**

Compresses a comma and a dot between numbers (e.g., 2,153 changes to 2153)

# Word Breaking Procedures

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- **compress**  
Strips characters listed in col. 4.
- **to\_blank**  
Changes characters listed in col. 4 to blanks.
- **marc21\_41**  
041 for separating languages in MARC21 field 041.

Example:

Input: 041 0#\$aengfreger

Output: eng fre ger

# Word Breaking Procedures

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- **IMPORTANT NOTE**

The procedures must be listed in logical order. For example, **numbers** must be listed before **compress** or **change\_to\_blank** if a comma or a dot is included in them.

Otherwise, they will no longer be present when the **numbers** procedure is used.

# In Addition

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The system automatically carries out triple posting for **hyphens** and **apostrophes**:

- (1) as separate words;
- (2) as is (with hyphen/apostrophe);
- (3) with hyphen/apostrophe compressed.



# In Addition

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Example:

**twenty-five** is indexed as:

- twentyfive
- twenty
- five
- twenty-five

# Character Conversion

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After text has been broken into words, a character conversion table is used to define equivalencies for characters.

# Character Conversion

Use the character conversion table, assigned to the **WORD-FIX** instance in **tab\_character\_conversion\_line**, in order to define equivalencies of characters for the purpose of creating words.

## tab\_character\_conversion\_line

FILING-KEY-01	##### # line_utf2line_utf	unicode_to_filing_01
FILING-KEY-02	##### # line_utf2line_utf	unicode_to_filing_02
WORD-FIX	##### # line_utf2line_utf	unicode_to_word_gen



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# Adjacency & Proximity

# Adjacency & Proximity

Proximity queries are executed in 2 steps:

- Search for “civil and war” to establish a set of candidate records.
- Check each candidate for the positioning of the words to insure that the requested proximity is valid.
- The positioning is stored in the Z95 record.

The second step is extremely slow, especially when all searched words are common.

# Adjacency & Proximity

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Fortunately, it turns out that most proximity queries are actually adjacency queries, like “civil war”.

With version 14.2 it is possible to build the Word index in a way that will improve the performance of adjacency queries dramatically.

# Adjacency Search - Setup

Two ways to setup adjacency search:

- adjacency *works on Z95 as proximity '%0'*
- *word dictionary (Z97) contains paired words for adjacency searching.*

Ex. United States 

When adjacency is requested in the search query, the two words are treated as one concatenated word.



# Adjacency Search - Setup: Advantages and Disadvantages

Creation of paired words for adjacency searching (default and highly recommended):

- + solves performance problems.
- requires additional resources:
  - The dictionary table (Z97) is three times the size
  - The “Words per Doc” table (Z95) is twice the size
  - The number of Bitmaps (Z98) is three times higher, but most of them have very few records, so the effect is less than 3 times the size.

The building process is slightly slower, especially p\_manage\_01\_e.

# Adjacency Search - Setup: Advantages and Disadvantages

adjacency works on Z95 as proximity '%0':

- low performance
- + economizes disc space

Note: There is a limit on proximity searching, dependent on the number of records in the set. In order to retain reasonable performance, the proximity query should be cancelled if the set has more than 1000 records. This is set in **www\_server\_defaults**:

```
setenv set_prox_limit 01000
```

# Adjacency Search - Setup

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Creation of paired words is set in

**aleph\_start\_505 :**

**14.2:**

setenv ADJACENCY :

1 - create; N - do not create

**15.2:**

setenv ADJACENCY :

2 - create; 0 - do not create

# Words Index Creation and Update

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**Creation - p\_manage\_01**

**Update - ue\_01**

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# Retrieval from the Words Index - Performance Issues

-45-

# Retrieval from the Word Index - Performance Issues - *pre 15.2*

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In order to ensure reasonable response time, make sure to setup the following variables in **www\_server\_defaults**:

- **set\_word\_limit**
- **set\_hit\_limit**

# Retrieval from the Word Index - Performance Issues - *pre 15.2*

- **set\_word\_limit:**

- Limits the number of words that will be "collected" when truncation is used (e.g. find a? will perform a find on all words beginning with a).
- A number of Z97 records (i.e. distinct words) retrieved in a given search.

When the limit is exceeded, the search is stopped.

# Retrieval from the Word Index - Performance Issues - *pre 15.2*

- **set\_hit\_limit:**

limits the number of retrieved documents (hits). When the number of hits is above this value, the set is created, but it does not contain pointers to the documents.

NOTE : it is not recommended to set set\_hit\_limit to the value higher than 50000.



# Retrieval from the Word Index - Performance Issues - 15.2

- `set_hit_limit` is obsolete
- **`set_result_set_limit`** - limits the number of documents that will display in a result set.

For example, the FIND command might "find" 20,000 relevant documents, but if `set_result_set_limit` is set to 500, then only the first 500 docs will display, and there is no way to have more docs display.

**NOTE: When REFINE is done on a set, the original FIND is repeated + the "refine", so the REFINE works in a true manner, and not on the result\_set.**

# Normalization of Incoming Request

- It is not possible to consult tab11/ tab11\_word for incoming requests, since the Word index code (e.g., WRD, WAU) does not guarantee the uniqueness of the word breaking procedure.
- Incoming requests always use procedure 90 in tab\_word\_breaking. This is valid for 14.2.4 and higher.

```
90 # to_blank
```

```
@$%^()_={}|:~<>.,\
```

# Direct Index

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- Database tables
- How to define the index
- How to create / recreate the index

# Direct Index

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Direct indexes enable the user to retrieve a specific record. A direct index is suited to **unique** or almost unique identifiers of the record, and provides **quick access** to a record.



# Database Tables - Z11

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```
01 z11_index \  
  02 z11_rec_key \  
    03 ind_code .....ISBN  
    03 filing_text ....0023904100  
    03 sequence_1 .....000001593  
  02 z11_doc_number ...000001593  
  02 z11_alpha .....L  
  02 z11_text .....$$a0023904100
```

# How to Define the Direct Index?

## • Tables to remember

- **tab00.lng** defines the system index codes
- **tab11\_ind** defines connections between the bibliographic record fields and the indexes
- **tab\_filing** defines filing procedures
- **tab\_expand** defines expand procedures which have to be activated when index is created (INDEX)
- **tab\_character\_conversion\_line** – defines character conversion routines
- **unicode\_to\_filing\_nn** – character conversion table used for normalization of headings

# How to Define the Structure of the Headings Index - Interrelation of Tables

## tab00.lng

H	IDN	IND	21	00	0000	Control Number
H	010	IND	21	00	0000	LCCN
H	ISBN	IND	21	00	0000	ISBN
H	ISSN	IND	21	00	0000	ISSN
H	SICI	IND	21	00	0000	SICI Code
H	024	IND	21	00	0000	ISMN (Music)

## tab11\_ind

```

11 I 010##
11 I 010##
11 I 020
11 I 022
11 I LOC0#
11 I LOC1#
11 I LOC2#
11 I LOC3#
11 I LOC4#
11 I LOC5#
    
```

```

010 -bz
STIDN -bz
ISBN az
ISSN ayz
LCI him
LDC hi
MSH hi
GVD hi
CNL j
OTH l
    
```

## tab\_filing

```

21 # del_subfield
21 # compress
21 # to_blank
21 # compress_blank
    
```

## tab\_expand

```

INDEX expand_doc_bib_loc_usm
    
```

# Creation and Update

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## Creation :

1. Z11 is created **when the document is sent to the server (before ue\_01)**
2. **p\_manage\_05** (Create Direct Index)

## Update - ue\_01



# Sort Keys

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- Database tables
- How to define sort keys
- How to create / recreate sort keys

# Sort keys

When a list of brief records is displayed in the OPAC, Z101 is used in order to arrange records in a specified order.

Results for Words= ( history of art ) **Sorted by Year, then Author**

Records 1 -9 of 13

Jump to #

Up

Forward

#	Author	Title	Year	Rank	Hold	Location
<a href="#">1</a>	<input type="checkbox"/> Barzman, Karen-edis.	The Florentine Academy and the early modern state :	2000		<a href="#">Global holdings</a>	<a href="#">Music-Library</a>
<a href="#">2</a>	<input type="checkbox"/> Bradford, Alfred S.	With arrow, sword, and spear :	2000		<a href="#">Global holdings</a>	<a href="#">Music-Library</a>
<a href="#">3</a>	<input type="checkbox"/> Daring, Bonny	The History of Modern Art.	2000			
<a href="#">4</a>	<input type="checkbox"/> Gabriel, Richard A.	Great captains of antiquity /	2000		<a href="#">Global holdings</a>	<a href="#">Music-Library</a>
<a href="#">5</a>	<input type="checkbox"/>	The History of Modern Art.	2000			

# Sort keys - Z101

The fields which are used for building sort keys are defined in the library's `tab_sort` table.

## `tab_sort`

01	008		260##	c			08	04
02	1####	a	7####	a			00	00
03	245##	a	2	240##			00	00
04	050##		LOC##	hjl			00	00
05	440##	av	2					

# Sort keys - z101

## tab\_sort

01	008		260##	c				08	04
02	1####	a	7####	a				00	00
03	245##	a	2	240##				00	00
04	050##		LOC##	hjl				00	00
05	440##	av	2						

**Z101 - sort key 01 for  
Record no. 000000001**

```
01 z101_sort \  
 02 z101_rec_key \  
   03 doc_number ...000000001  
   03 sort_key .....01  
02 z101_data \  
  03 alpha .....L  
  03 text .....1954
```

**Z101 - sort key 02 for  
Record no. 000000001**

```
01 z101_sort \  
 02 z101_rec_key \  
   03 doc_number ...000000001  
   03 sort_key .....02  
02 z101_data \  
  03 alpha .....L  
  03 text ..... S H A K E S P E A R E   W I L L I A M
```

# How to Define Sort Keys - Tables to Remember

- **tab\_sort** defines sort keys
- **tab01.lng** defines filing procedure for creation of sort keys per field. *If nothing is defined, the default filing procedure 99 is used.*
- **tab\_filing** defines filing procedures.
- **tab\_expand** defines expand procedures which have to be activated when index is created.
- **tab\_character\_conversion\_line** defines character conversion routines.
- **unicode\_to\_filing\_nn** character conversion table used for normalization of headings.

# How to Define Sort Keys - Interrelation of Tables - *pre 15.2*

## Tab\_sort

```

01 008          260## c          08 04
02 1#### a    7#### a          00 00
03 245## a    2 240##          00 00
04 050##      LOC## hjl          00 00
05 440## av   2

```

## tab\_expand

```

SORT-DOC      expand_doc_bib_loc_usm

```

## tab01.ing

```

D 100          00 0000   AUT   100   LME-Personal Name
D 245          00 0000   2     245   LTitle
D 260          00 0000          260   LPublication Area
D 440          00 0000   2 SRS  440   LSeries-Title
D 700##       00 0000   AUT   700   LAdded Person Name
D LOC0#       22 00 0000          LOC   LLocation LC
D LOC2#       22 00 0000          LOC   LLocation
D LOC3#       21 00 0000          LOC   LLocation SUDOC
D LOC4#       22 00 0000          LOC   LLocation CNL
D LOC7#       11 00 0000          LOC   LLocation COD
D LOC8#       11 00 0000          LOC   LLocation Other

```

## tab\_filing

```

!* ISBN/ISSN
21 # del_subfield
21 # compress
21 # to_blank
21 # compress_blank
!*
!* LC Call Numbers
22 # del_subfield
22 # to_lower
22 # lc_call_no
!*
!* Default
99 # del_subfield
99 # suppress
99 # numbers
99 # to_lower
99 # mc_to_mac
99 # non_filing
99 # compress
99 # to_blank
99 # expand_num
99 # pack_spaces
99 # char_conv

```

'''<>%  
./-:;,{}[]()?!^\_

FILING-KEY-01

# How to Define Sort Keys - Interrelation of Tables - 15.2

## tab\_sort

```

01 95 008          260## c          08 0
4
02 01 1#### a          00 0
0
03 11 245## a      2 240##      2          00 0
0
04 22 050##          LOC## hjl          00 0
0
  
```

## tab\_filing

```

!* ISBN/ISSN
21 # del_subfield
21 # compress
21 # to_blank
21 # compress_blank
!*
!* LC Call Numbers
22 # del_subfield
22 # to_lower
22 # lc_call_no
!*
!* Default
99 # del_subfield
99 # suppress
99 # numbers
99 # to_lower
99 # mc_to_mac
99 # non_filing
99 # compress
99 # to_blank
99 # expand_num
99 # pack_spaces
99 # char_conv
  
```

## tab01.ing

```

D 100      00 0000  AUT   100  LME-Personal Name
D 245      00 0000  2    245  LTitle
D 260      00 0000          260  LPublication Area
D 440      00 0000  2 SRS  440  LSeries-Title
D 700##    00 0000  AUT   700  LAdded Person Name
D LOC0#    22 00 0000      LOC  LLocation LC
D LOC2#    22 00 0000      LOC  LLocation
D LOC3#    21 00 0000      LOC  LLocation SUDOC
D LOC4#    22 00 0000      LOC  LLocation CNL
D LOC7#    11 00 0000      LOC  LLocation COD
D LOC8#    11 00 0000      LOC  LLocation Other
  
```

```

'''<>%
./-:;,{}[]()?!^_
  
```

# Sort keys - Z101

The fields which are used for building sort keys are defined in the library's `tab_sort` table.

## `tab_sort (14.2)`

01	008		260##	c				08	04
02	1####	a	7####	a				00	00
03	245##	a	2	240##				00	00
04	050##		LOC##	hjl				00	00
05	440##	av	2						

## `tab_sort (15.2)`

01	95	008		260##	c			08	0
4									
02	01	1####	a					00	0
0									
03	11	245##	a	2	240##		2	00	0
0									
04	22	050##		LOC##	hjl			00	0
0									
05	11	440##	av	2				00	0
0									
06		TYP##						00	0
0									



# Creation and Update

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- **Creation** - p\_manage\_27
- **Update** - ue\_01

# Sort Functionality - Performance Issues

- Sorting large sets can be time consuming.
- In order to prevent performance problems, set a reasonable sort limit:

**www\_server defaults** and **pc\_server\_defaults:**

**www\_sort\_limit**                      **1000**

If the number of records exceeds this maximum, the set of records will not be sorted.

Records 1 - 9 of 1869    for W-Call no.= ( ueduc ); not sorted

Jump to #

Up

#		Author	Title	Year	Rank	Hold	Location
<a href="#">1</a>	<input type="checkbox"/>		Updating	2000		<a href="#">Global holdings</a>	<a href="#">Education-Library</a>
<a href="#">2</a>	<input type="checkbox"/>		Journal of Sun.	~~~~		<a href="#">Global holdings</a>	<a href="#">Education-Library</a>
<a href="#">3</a>	<input type="checkbox"/>		Volumes.	~~~~		<a href="#">Global holdings</a>	<a href="#">Education-Library</a>

# Short Bibliographic Record

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- Structure (Oracle table)
- Usage
- Specifying short record
- Index creation and update

# Short Bibliographic Record - Z13

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- A short bibliographic record is an abbreviated version of the bibliographic record in standard Oracle table format.
- The short-doc record is mainly used in order to display bibliographic information in administrative modules, or create library reports.

# Short Bibliographic Record - Z13 - *pre 15.2*

```
01 z13_short_doc \  
  02 z13_rec_key \  
    03 doc_number .....000000500  
  02 z13_year .....1963  
  02 z13_open_date .....20000814  
  02 z13_update_date .....20010216  
  02 z13_call_no_alpha .....L  
  02 z13_call_no_code .....0500  
  02 z13_call_no .....HG538  
  02 z13_author_alpha .....  
  02 z13_author_code .....  
  02 z13_author .....  
  02 z13_title_alpha .....L  
  02 z13_title_code .....24500  
  02 z13_title .....Federal credit agencies : a series of research  
  02 z13_imprint_alpha .....L  
  02 z13_imprint_code .....2600  
  02 z13_imprint .....Englewood Cliffs, N.J., : Prentice Hall, [1963  
  02 z13_isbn_issn_alpha ...  
  02 z13_isbn_issn_code ....  
  02 z13_isbn_issn .....
```

# Short Bibliographic Record - Z13 - pre 15.2

z13

tab22

YR	008	0008				
F1	050##	a	LOC##	h	LOC##	I
F2	1####		910##			
F3	245##		924##			
F4	260##					
F5	020##		022##			

```
01 z13_short_doc \  
02 z13_rec_key \  
03 doc_number .....000000500  
02 z13_year .....1963  
02 z13_open_date .....20000814  
02 z13_update_date .....20010216  
02 z13_call_no_alpha .....L  
02 z13_call_no_code .....0500  
02 z13_call_no .....HG538  
02 z13_author_alpha .....  
02 z13_author_code .....  
02 z13_author .....  
02 z13_title_alpha .....L  
02 z13_title_code .....24500  
02 z13_title .....Federal credit agencies : a series of research  
02 z13_imprint_alpha .....L  
02 z13_imprint_code .....2600  
02 z13_imprint .....Englewood Cliffs, N.J., : Prentice Hall, [1963  
02 z13_isbn_issn_alpha ...  
02 z13_isbn_issn_code ....  
02 z13_isbn_issn .....
```

**NOTE:** The values must be set according to a set strictly according to the following scheme:

YR = z13\_year

F1 = z13\_call\_number

F2 = z13\_author

F3 = z13\_title

F4 = z13\_imprint

F5 = z13\_isbn\_issn

# Z13 -15.2

```
03 doc_number .....000000002
02 z13_year .....1965
02 z13_open_date .....20010204
02 z13_update_date .....20020313
02 z13_call_no_key .....
02 z13_call_no_code .....0500
02 z13_call_no .....PR2779.K8
02 z13_author_code .....10010
02 z13_author .....Shakespeare, William, 1564-1616.
02 z13_title_code .....24513
02 z13_title .....Le roi Lear.
02 z13_imprint_code .....2600
02 z13_imprint .....[Paris] Mercure de France, 1965.
02 z13_isbn_issn_code .....
02 z13_isbn_issn .....
02 z13_user_defined_1_code ...
02 z13_user_defined_1 .....
02 z13_user_defined_2_code ...
02 z13_user_defined_2 .....# Shakespeare, William, 1564-1616. : Le ro
02 z13_user_defined_3_code ...
02 z13_user_defined_3 ..... Shakespeare, William, 1564-1616.: < King
02 z13_user_defined_4_code ...
02 z13_user_defined_4 .....
02 z13_user_defined_5_code ...
```

# Z13 -15.2

tab22

z13

YEAR	1	008		0008		
CALL-NO	1	050###	a		LOC	h
!CALL-NO-K	1	LOC	n			
AUTHOR	1	1####			910##	
TITLE	1	245##	a		924##	
IMPRINT	1	260##				
ISBN-ISSN	1	020##			022##	
USER-DEF-1	2	159				
USER-DEF-2	2	109				
USER-DEF-3	2	009				

```
03 doc_number .....000000002
2 z13_year .....1965
2 z13_open_date .....20010204
2 z13_update_date .....20020313
2 z13_call_no_key .....
2 z13_call_no_code .....0500
2 z13_call_no .....PR2779.K8
2 z13_author_code .....10010
2 z13_author .....Shakespeare, William, 1564-1616.
2 z13_title_code .....24513
2 z13_title .....Le roi Lear.
2 z13_imprint_code .....2600
2 z13_imprint .....[Paris] Mercure de France, 1965.
2 z13_isbn_issn_code .....
2 z13_isbn_issn .....
2 z13_user_defined_1_code ...
2 z13_user_defined_1 .....
2 z13_user_defined_2_code ...
2 z13_user_defined_2 .....# Shakespeare, William, 1564-1616. : Le ro
2 z13_user_defined_3_code ...
2 z13_user_defined_3 ..... Shakespeare, William, 1564-1616.: < King
2 z13_user_defined_4_code ...
2 z13_user_defined_4 .....
2 z13_user_defined_5_code ...
```



# tab22 -15.2

YEAR	1	008		0008		
CALL-NO	1	050##	a		LOC	h
!CALL-NO-K	1	LOC	n			
AUTHOR	1	1####			910##	
TITLE	1	245##	a		924##	
IMPRINT	1	260##				
ISBN-ISSN	1	020##			022##	
USER-DEF-1	2	159				
USER-DEF-2	2	109				
USER-DEF-3	2	009				
USER-DEF-4	2					
USER-DEF-5	2					

• Col.2 - function code:

1=data taken bib record's tag + subfield + position

2=data taken from the bib, using edit paragraph

# Short Bibliographic Record - Z13

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## Creation:

1. Z13 is created **when the document is sent to the server (before ue\_01 is run)**
2. **p\_manage\_07** (Create Short Document)

**Update** - ue\_01

# Structured Full Bibliographic Document- Z00R

- The Z00R table contains separate Z00R records for each of the fields in all documents of the database.

<b>Z00R_SEQUENCE</b>	<b>NOT NULL CHAR(6)</b>
<b>Z00R_DOC_NUMBER</b>	<b>NOT NULL CHAR(9)</b>
<b>Z00R_FIELD_CODE</b>	<b>CHAR(5)</b>
<b>Z00R_ALPHA</b>	<b>CHAR(1)</b>
<b>Z00R_TEXT</b>	<b>VARCHAR2(2000)</b>

# Structured Full Bibliographic Document- Z00R

- Like Z00, Z00R holds doc records, but in a different way: Z00 has an entry for each record , Z00R has an entry for each field in each record.
- The Z00R-SEQUENCE is not unique; rather, it runs separately for each doc number.
- This information can be used for statistical purposes.

# Z00R - Creation and Update

- Z00R is created if TAB10-CREATE-Z00R = 'Y'
- Creation - P\_MANAGE\_07
- Update - when the document is sent to the server (before ue\_01 is run)