IBM

Advanced Technical Support

System z Problem Determination Tools

Overview

Milano/Roma, 17/18 Aprile 2007

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PD & CICS Tools
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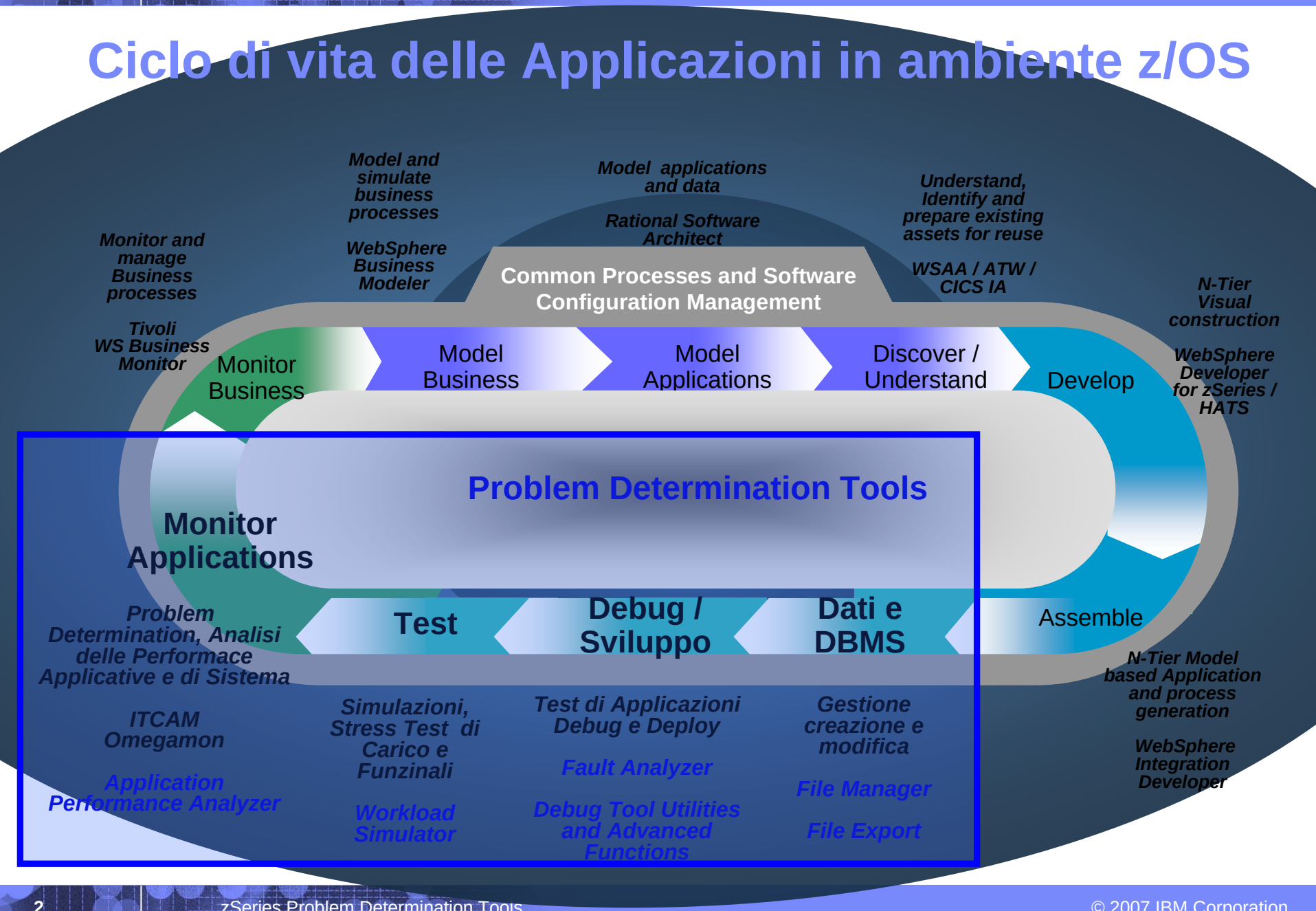
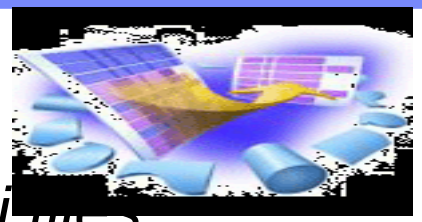
WebSphere. software

Rational. software

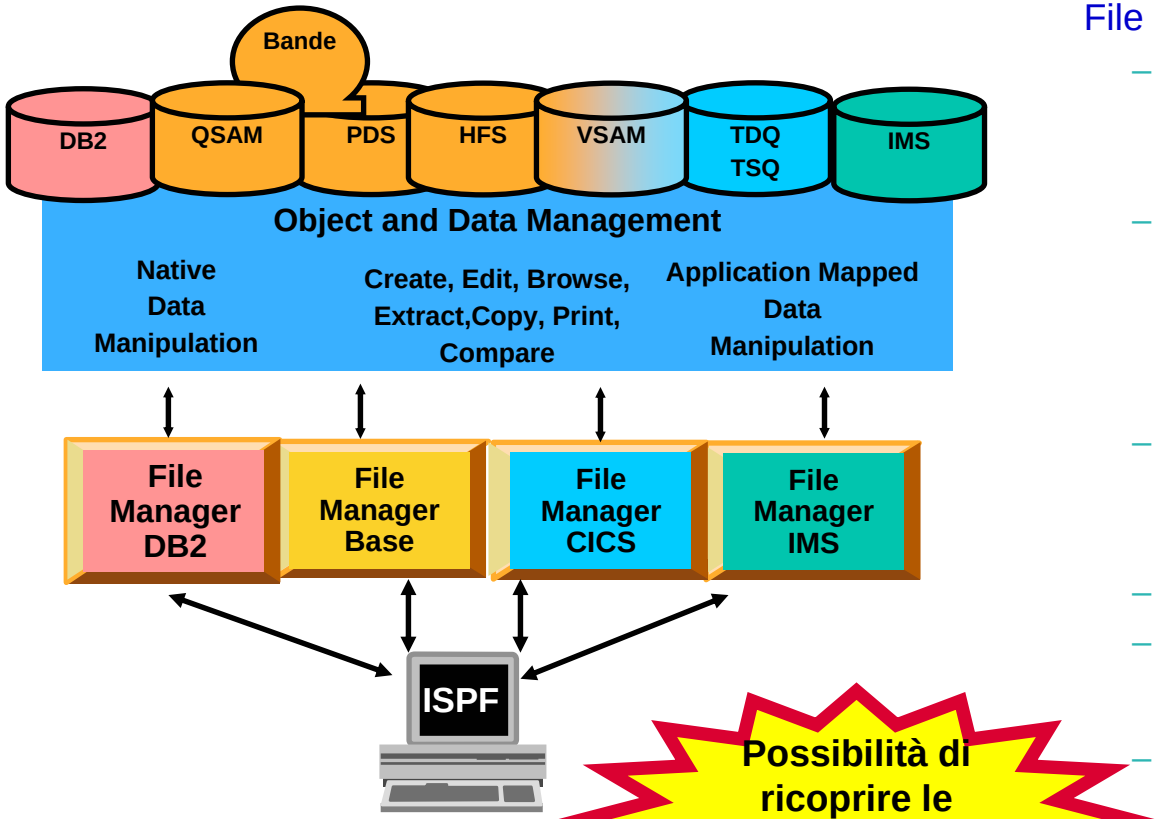
Ciclo di vita delle Applicazioni in ambiente z/OS





File Manager

Supporta una varietà di dati enterprise e strutture di files

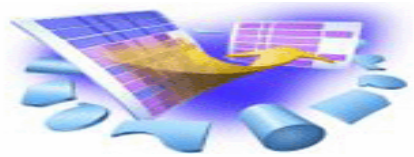


Possibilità di ricoprire le funzionalità del DITTO

File Manager Features:

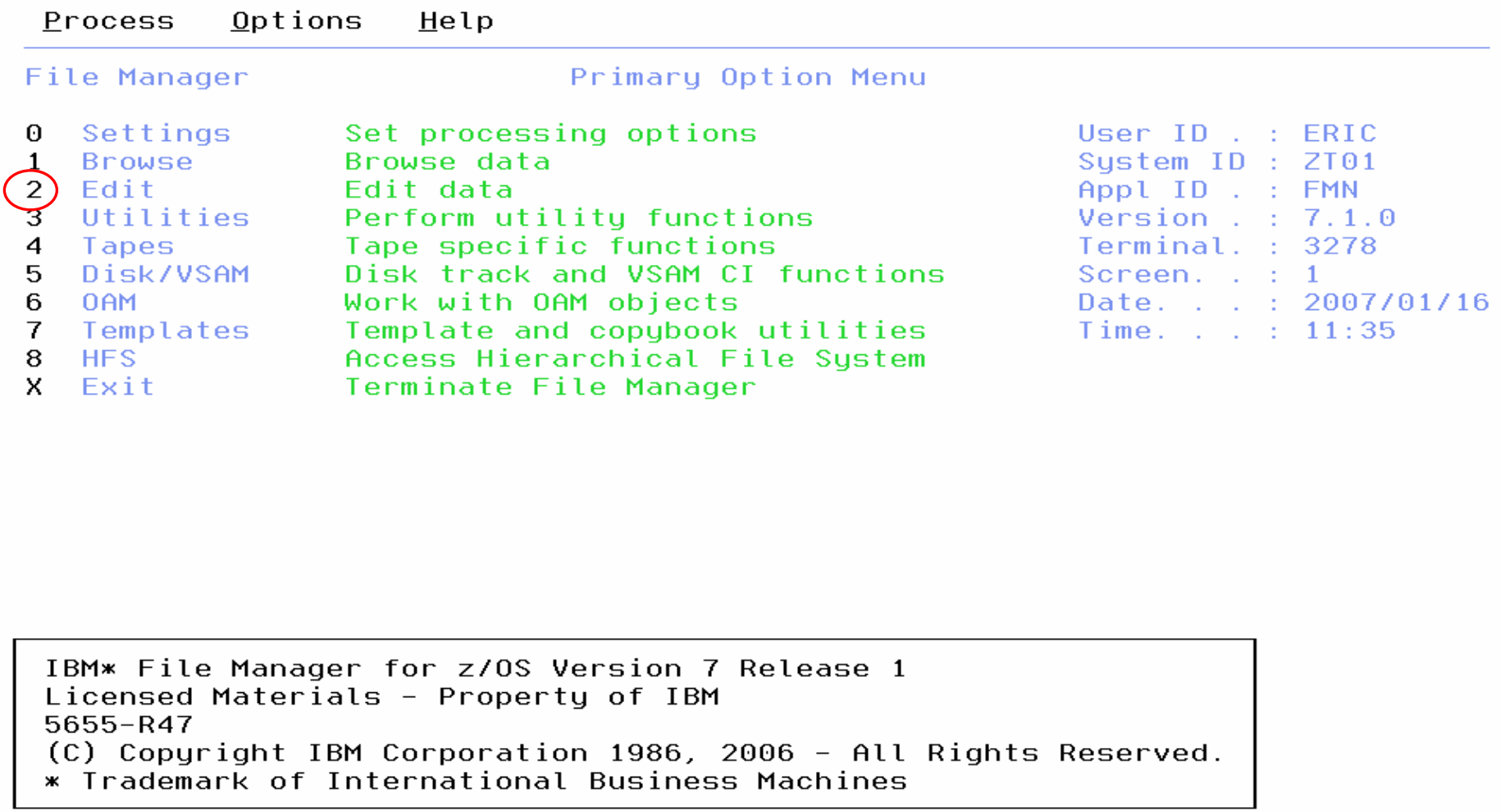
- Supporta molti formati di data in files (VSAM, QSAM, HFS and zFS), DB2 tables (V9), IMS databases (V10), CICS (TDQ, TSQ and VSAM)
- Possibilità di visualizzare le copybook COBOL come:
  - Una Tabella, con il nome della colonna in "Testata"
  - Un record singolo per pannello, con il valore subito dopo il nome del campo
- Selezione dei records utilizzando logica Booleana (selection expression REXX + DFSORT e Multiple Member selection criteria)
- Select a livello Field
- Copiare record e campi sotto specifiche condizioni, con Funzione di insert/reformat dei campi
- Creare dati di Test in funzione di patterns definiti dall'Utente
- Compare tra datasets utilizzando patterns specificati
- Gestione di Records SMF (Mapping)
- Formattazione del LOADMODULE

File Manager MVS - Features principali



- **Pannelli ISPF-like**
- **Funzioni per l'Editing e Browsing dei dati**
  - Table
  - Single
- **Flessibilità nei criteri di selection**
  - Lavora con copybooks o templates
- **Modalità Operative**
  - Interactive
    - TSO ISPF
    - CICS
  - Batch
- **Edit di file senza limiti di size**
- **Create e Print di dati**
- **Copy dei dati**
  - Con possibilità di "File reformatting"
- **Catalog services**
- **Lavora con la VTOC**
- **Search abbinata alla Change dei dati**
  - Insert automatica della "continuation" in statement JCL
- **Compare dei Dati**
- **View o Print di Copybooks e Templates**
- **XML generation**
  - La funzione di Data Set Copy ha un "Output mode" con l'opzione XML.
  - File e template
    - FM può generare testo XML per tutti i tipi di dati in input
    - Option per generare Unicode.

File Manager MVS: Menu principale

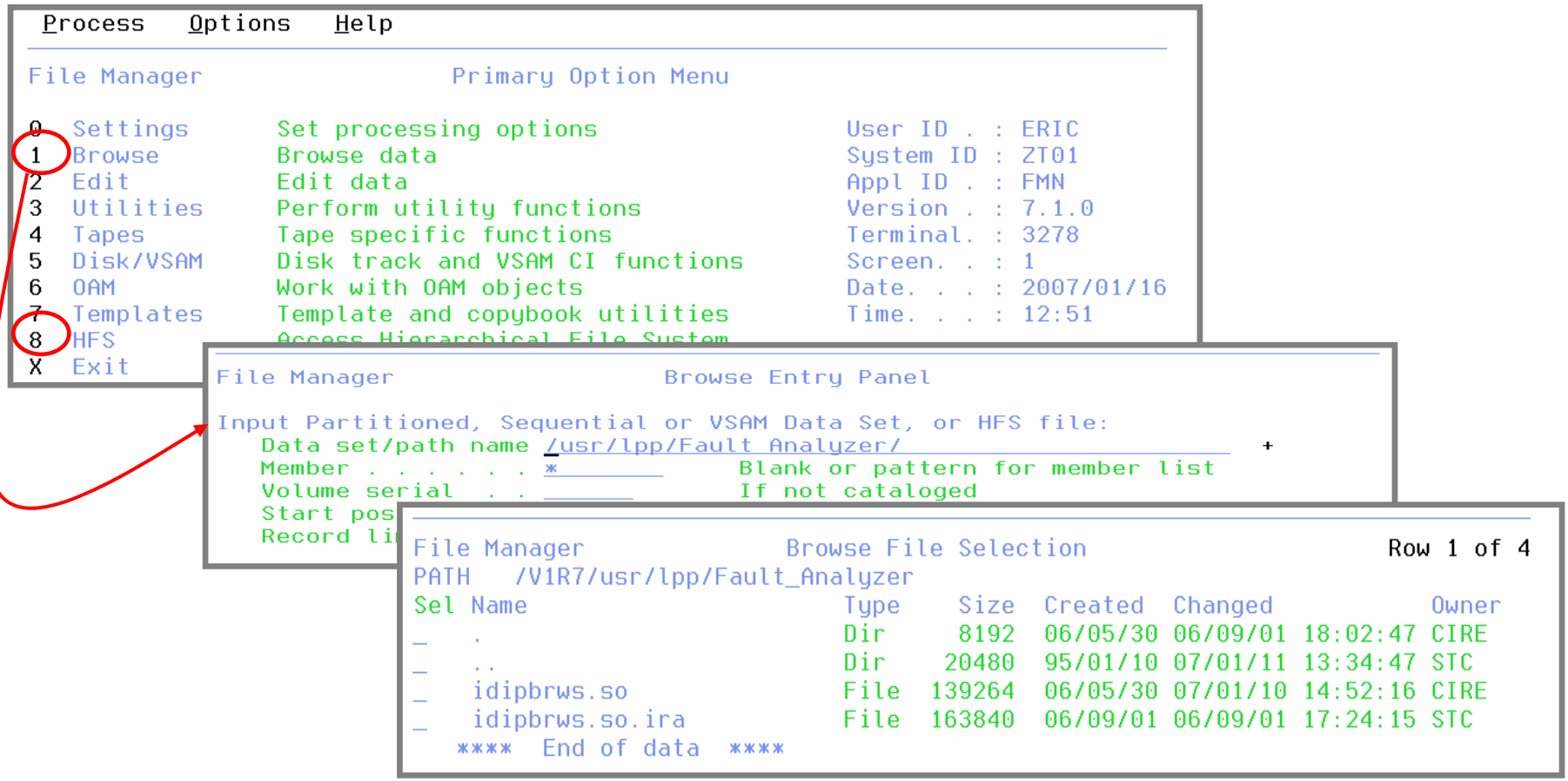


Edit: Formattazione e Mapping dei Dati

```
 Process    Options    Help
--------------------------------------------------------------------------------
Edit                 FILEMGR.V7R1.SFMNSAM1(FMNCDATA  +                Rec 0 of 40
      Col 1          Insert length 80                                 Format CHAR
      ----+----1----+----2----+----3----+----4----+----5----+----6----+----7--
000000 ****  Top of data  ****
000001 01Grant Smith          .....................................................
000002 01Andrew Apple         .5...&...............................................
000003 01Graham Prestcott     .....................................................
000004 01Bill Somers          .....................................................
000005 01Ted Dexter           .....-...............................................
000006 01Roddy Armstrong      .....................................................
000007 01Cliff Roberts        .R...................................................
000008 01James Browne         .)...................................................
000009 01Silvia Carrot        ...../...............................................
000010 01Dan Peters           ."....................................................
000011 01John Laws            .;...................................................
000012 01Liz Childs           .?...................................................
000013 01Bill McCork          .N...................................................
000014 01Keith Sampson        .....................................................
000015 01John Neptune         .....................................................
000016 01Brian Van Der Velde  .....d&...............................................
000017 01Ann Norwich          .....................................................
000018 01Michael Bevan        .!...c...............................................
000019 01Mary Sands           .>...................................................
000020 01Antony Burke         .....................................................
000021 02Grant Smith          Developer     22  Montrose St       Thornlie
000022 02Andrew Apple         Developer     44  Eagle Rise        Riverton
000023 02Graham Prestcott     Developer     256 Hay St            Cannington
000024 02Bill Somers          Developer     84  Murchison Rd      Dianella
000025 02Ted Dexter           Developer     92  Smith St          Belmont
000026 02Roddy Armstrong      Manager       184 Alexander Dve     Swan View
000027 02Cliff Roberts        Manager       28  Bern Rd           Middleswan
000028 02James Browne         Manager       123 Wellington St     Guildford
000029 02Silvia Carrot        Programmer    48  Small Lane        Mt Pleasant
000030 02Dan Peters           Programmer    661 Auton Way         Floreat Park
```

Due tipi record

Supporto ai files *HFS e alla generazione in XML

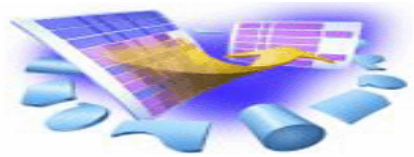


HFS(Hierarchical File System),** **basato sulla struttura dei B-Tree.** ***I B-Alberi (o B-Tree) sono strutture dati ad albero, vengono comunemente utilizzati nell'ambito di fdatabasee filesystem. Il vantaggio dei B-Tree è che essi mantengono automaticamente i nodi bilanciati permettendo operazioni di inserimento, cancellazione e ricerca in tempi ammortizzati logaritmicamente

Utilities – Copy di Dati - XML Export

```
 Process    Options    Help
-------------------------------------------------------------------------------
Copy from ALLANS2.FMDEMO.SIMPLE
Command ===> ____________________________________________________________________
                                                                        More:     +
To Partitioned, Sequential or VSAM Data Set, or HFS file:
   Data set/path name  . . 'ALLANS2.FMDEMO.XML'                                  +
   Member name (or mask) . ________
   Volume serial . . . . . ______

Processing Options:
  Disposition              Execution "/" options        Non-print. characters
  1  1. Old or Reuse       _  Replace members           1  1. Asis
     2. Mod                _  Binary mode, reclen _____    2. Hex
  ISPF Packing             _  Stats Off                    3. Replace with .
  1  1. Asis               _  Include fillers              4. Skip
     2. Pack               _  Include redefines         Special characters
     3. Unpack             _  Convert to Unicode        1  1. Escape
     4. None               _  Split output line            2. CData
     5. Skip                                               3. Hex
  Format                                                   4. Replace with _____
  1  1. XML                   Indent step 1             Invalid data
                                                       1  1. Hex
                                                          2. Replace with *
```

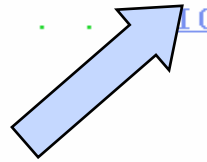
File Manager DB2 Main Features



- **Edit e Browse dei dati**
  - Edit di tabelle DB2 o View
  - Select di righe e colonne visualizzate
- **Print**
  - In formato Table o Single
  - Select di righe e colonne
- **Create e Drop di oggetti DB2**
- **Copy**
  - Select di righe
  - “Mapping” di colonne da una tab. In INPUT ad un’altra in OUTPUT.
  - Reformat e generate dei dati in fase di copia
- **Lavorare con una lista di oggetti DB2**
  - Utilizzo della line commands per attivare le funzioni
- **Grant e Revoke di privileges DB2**
- **Import ed Export dei dati**
  - Select di righe
  - Export in files in formatoFM/DB2 (default), oppure in un formato definito nella copybook, o file (comma-delimited) CSV.
  - Import da un file generato con una funzione di Export, oppure un file descritto con una copybook
- **Generare JCL da utilities DB2**
  - COPY, LOAD, REBUILD, RECOVER, REORG e RUNSTATS
- **Creare ed Eseguire statements SQL**
  - Due metodi: Basic ed Advanced

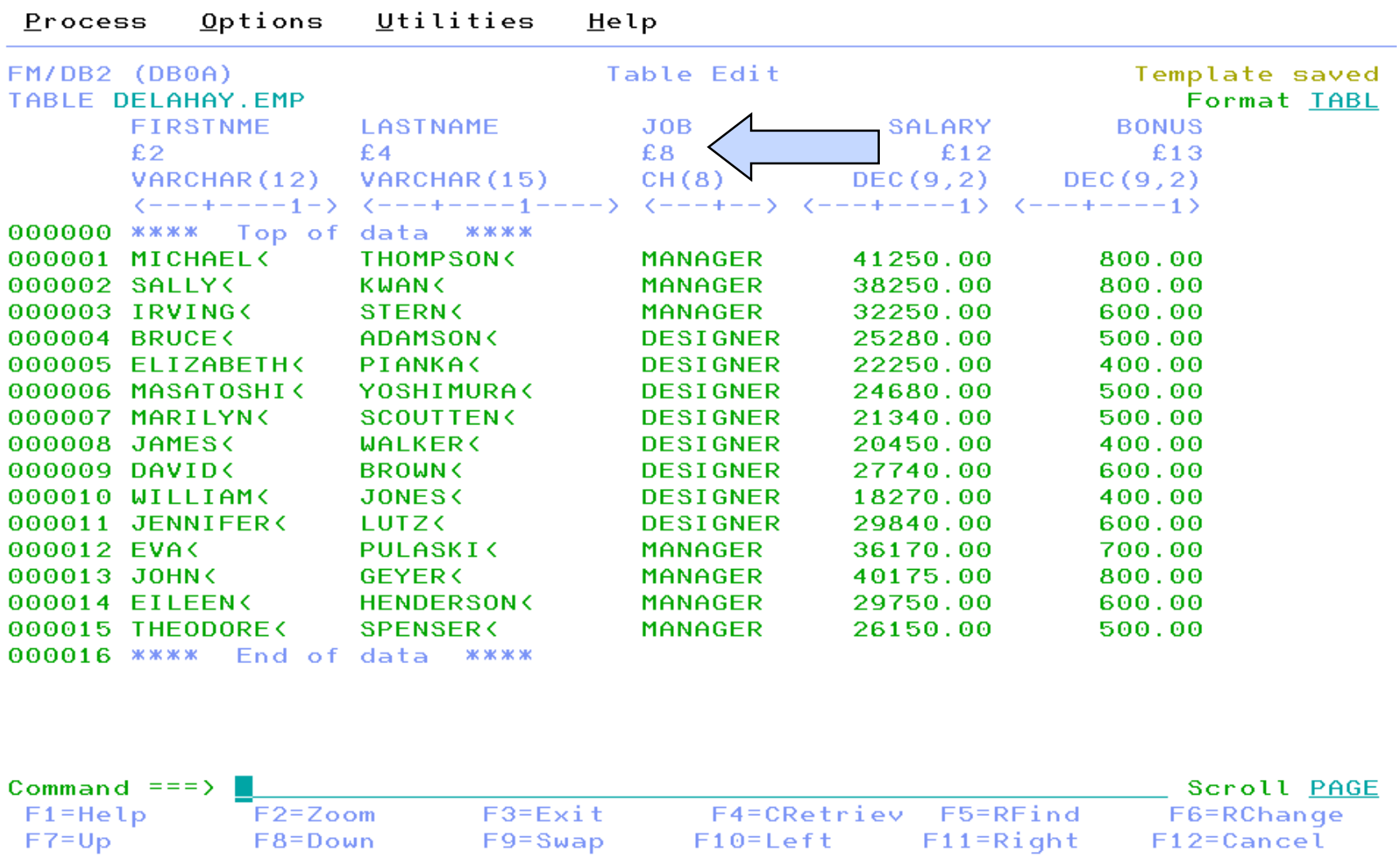
File Manager DB2: Menu principale

```
 Process    Options    Utilities    Help
-------------------------------------------------------------------------------
FM/DB2 (DB21)                    Primary Option Menu

0  Settings      Set processing options                 User ID . : ERIC
1  Browse        Browse DB2 table or view               System ID : ZT01
2  Edit          Edit DB2 table                         Appl ID . : FMN2
3  Utilities     Perform utility functions              Version . : 7.1.0
4  SQL           Prototype, execute and analyze SQL     Terminal  : 3278
5  DB2I          Start DB2 Interactive                  Screen  . : 1
X  Exit          Terminate FM/DB2                       Date  . . : 2007/01/16
                                                        Time  . . : 11:54

                                                        DB2 SSID  . DB21
                                                        SQL ID  . . ERIC      +
```



```
IBM* File Manager for z/OS Version 7 Release 1 DB2 Component
Licensed Materials - Property of IBM
5655-R47
(C) Copyright IBM Corporation 2001, 2006 - All Rights Reserved.
* Trademark of International Business Machines
```

Edit: Come utilizzare le Template (Format: Single)



Referential Integrity

```
FM/DB2 (DB21)                          Table Edit                              0 of 47
TABLE BLAIR.EMP                                                          Format TABL
        EMPNO   FIRSTNME      MIDINIT  LASTNAME        WORKDEPT PHONENO HIREDATE
        £1      £2            £3       £4              £5       £6      £7
        CH(6)   VARCHAR(12)   CH(1)    VARCHAR(15)     CH(3)    CH(4)   DATE
        PU--+>  <---+----1->  -        <---+----1----> <-NF     <-->    <---+---->
000000  ****  Top of data  ****
e530 R  000010  CHRISTINE<    I        HAAS<           ERC      3978    1965-01-01
000002  000020  MICHAEL<      L        THOMPSON<       B01      3476    1973-10-10
```

e

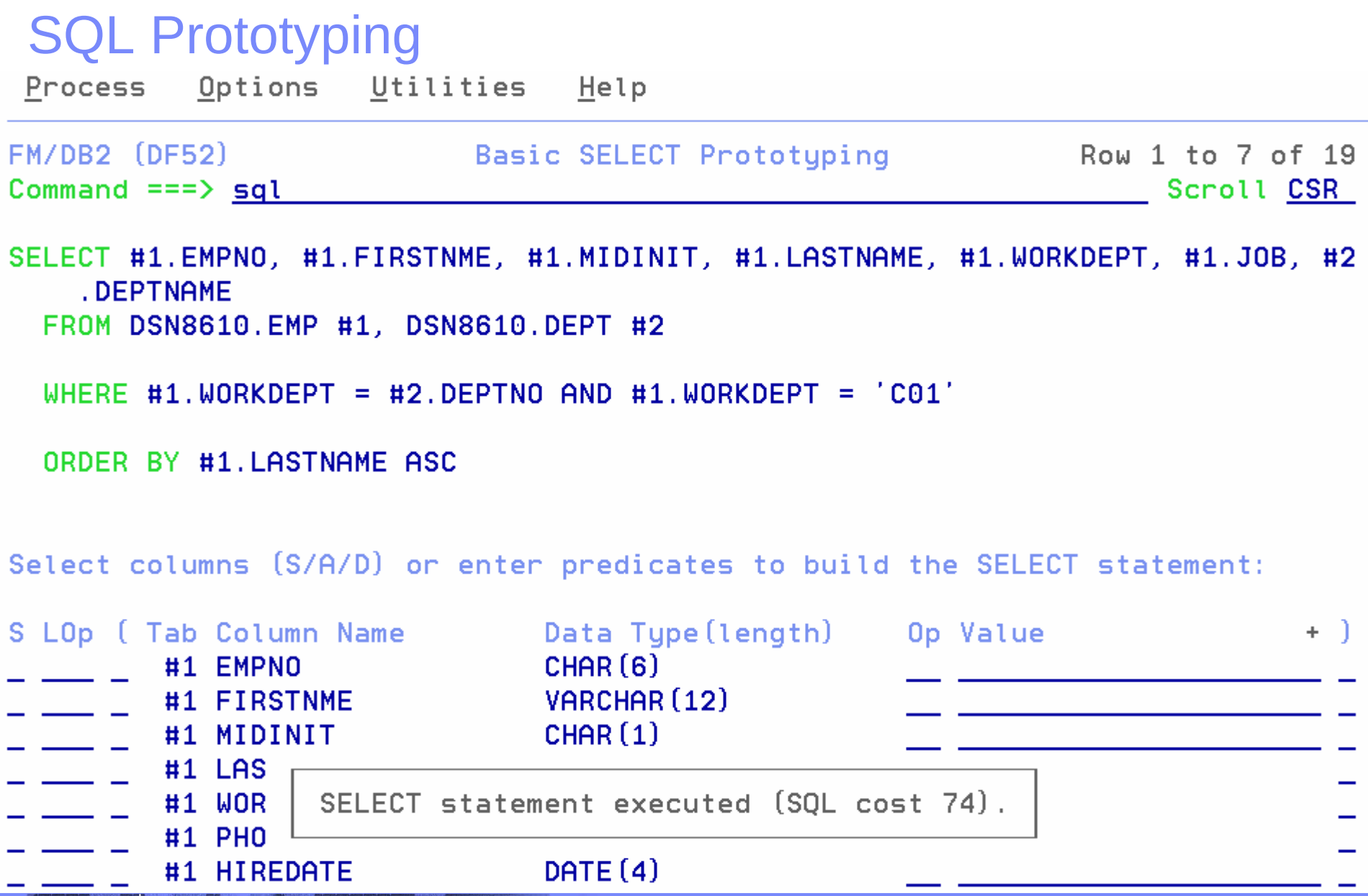
```
 Process    Options    Utilities    Help
FM/DB2 (DB21)                  DB2 Save Error Action                  Row 1 to 1 of 1
Command ===> REDIT

DB2 reported a No Primary Key error while attempting to save this row.

Relationship     : RED                              (See below for key column details)
Parent table     : BLAIR.DEPT
Dependent table  : BLAIR.EMP

Explanation: The insert or update operation on this line would have resulted
in a foreign key value for which there is no corresponding primary key value.

Instructions: Type REDIT on the command line to edit the parent table shown
above.  Press ENTER or enter EXIT to return to the edit session and correct
the error.  Press the CANCEL key to terminate the edit session.  Any changes
made since the last commit point will be lost.

Parent Column Name    Dependnt Column Name   Value
DEPTNO                WORKDEPT               ERC
****************************** END OF DB2 DATA ******************************
```

```
 Process    Options    Utilities    Help
FM/DB2 (DB21)                  Table Edit (related)                  Parent table
14 rows fetched                                                        Format TABL
        DEPTNO  DEPTNAME                                  MGRNO   ADMRDEPT LOCATION
        £1      £2                                        £3      £4       £5        +
        CH(3)   VARCHAR(36)                               CH(6)   CH(3)    CHARACTER(1
        PU>     <---+----1----+----2----+----3----+>      <-NF+>  <-NF     <---+----1-
000000  ****  Top of data  ****
000001  A00     PUFFFY COMPUTER SERVICE DIV.<             000010  A00
000002  B01     PLANNING<                                 000020  A00
000003  C01     INFORMATION CENTER<                       000030  A00
000004  D01     DEVELOPMENT CENTER<                       _       A00
000005  D11     MANUFACTURING SYSTEMS<                    000060  D01
000006  D21     ADMINISTRATION SYSTEMS<                   000070  D01
000007  E01     SUPPORT SERVICES<                         000050  A00
000008  E11     OPERATIONS<                               000090  E01
000009  E21     SOFTWARE SUPPORT<                         000100  E01
000010  F22     BRANCH OFFICE F2<                         _       E01
000011  G22     BRANCH OFFICE G2<                         _       E01
000012  H22     BRANCH OFFICE H2<                         _       E01
000013  I22     BRANCH OFFICE I2<                         _       E01
000014  J22     BRANCH OFFICE J2<                         _       E01
000015  ****  End of data  ****
```

SQL Prototyping

```
 Process    Options    Utilities    Help
 ------------------------------------------------------------------------------
FM/DB2 (DF52)       SQL Prototyping, Execution and Analysis
Command ===> 1

1  Basic          Prototype SELECT statements (basic)
2  Advanced       Prototype SELECT statements (advanced)
3  Enter          Enter, execute and explain SQL statements
4  Edit           Edit and execute SQL statements from a data set
5  Utility        Manage tables used by SQL explain
```

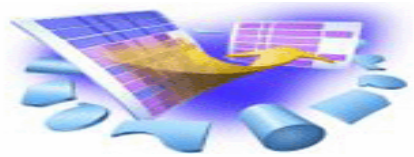
SQL Prototyping



SQL Prototyping

```
 File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
EDIT       SYS04269.T002550.RA000.ALLANT.R0249007          Columns 00001 00072
Command ===> create                                        Scroll ===> PAGE
****** ***************************** Top of Data ********************************
=NOTE= All changes made during this edit session will be discarded at the end
=NOTE= of the edit session.
=NOTE= Use the CREATE or REPLACE commands to take a copy of the SQL.
c90001 SELECT #1.EMPNO, #1.FIRSTNME, #1.MIDINIT, #1.LASTNAME, #1.WORKDEPT, #1.
000002        JOB, #2.DEPTNAME
000003 FROM   DSN8610.EMP #1, DSN8610.DEPT #2
000004 WHERE  #1.WORKDEPT = #2.DEPTNO AND #1.WORKDEPT = 'C01'
000005 ORDER  BY #1.LASTNAME ASC
****** ***************************** Bottom of Data *****************************
```

File Manager IMS – Features pricipali



- **Utilities Online per il DB IMS**
  - Edit ed Browse dei dati
  - Extract di segementi dal database
  - Load dei segmenti nel database
- **Supporto per utilizzare il database in modalità:**
  - Physical DBD
  - Logical DBD
- **Accesso al databases con :**
  - Static PSBs
  - Dynamic PSBs
- **Processare I dati del database utilizzando indici secondari**
- **Supporto per HDAM, HIDAM, HISAM, HSAM, DEDB. MSDB**
- **Supporto ai layouts COBOL o PL/I per il formattamento dei dati**
  - Edit e Browse dei segmenti in formato “tabular o character”
  - Accesso ai source in PDS, PDSE, o librerie Panvalet
- **Lavorare con segmenti che hanno layouts multipli.**
- **Usare criteri di selezione flessibili sui segments per selezionare oppure estrarre I dati da processare in browse o edit.**
- **Cambiare i criteri di selezione e formattare “al volo” I dati, mentre si è in fase di browsing o editing.**

Primary Commands (esempi)

```
FM/IMS                    Browse : Database Positioning
Command ===>                                                  Scroll CSR

Database DI21PART                    Key sequence             Format TABL
View     ERIC.FMN.VIEW(DI21VU01)              Key
Cmd SXE Level     Segment   Description      len  Key value
s_   SX  1        PARTROOT                    17  02AN960C10
___   X   2       STANINFO                     2  ..
___   X   2       STOKSTAT                    16  ................
___   X    3      CYCCOUNT                     2  ..
___   X    3      BACKORDR                    10  ..........
  ****  End of data  ****
```

```
Process   Options   Help
FM/IMS                    Edit : Database Positioning
Command ===> HIER                                             Scroll CSR

Database DI21PART                    Key sequence             Format TABL
View     ERIC.FMN.VIEW(DI21VU01)              Key
Cmd SXE Level     Segment   Description      len  Key value
___  SX  1        PARTROOT                    17  02AN960C10
___   X   2       STANINFO                     2  ..
___   X   2       STOKSTAT                    16  ................
___   X    3      CYCCOUNT                     2  ..
___   X    3      BACKORDR                    10  ..........
  ****  End of data  ****
```

Posizionarsi, con la chiave, all'inizio del segmento per visualizzare i dati

Come visualizzare una rappresentazione grafica della struttura del Database.

```
FM/IMS                    Browse : IMS Database DI21PART
Command ===> _                                                Scroll CSR
                                    SHOW SUP OFF Scope DB     Format TABL
                  PART-TYPE PART-NO        FILLER    PART-DESC
Cmd Level Segment £4        £5             £6        £7
                  AN 1:2    AN 3:15        AN 18:9   AN 27:20
                  <>        <---+----1----> <---+---> <---+----1----+---->
                  ****   Top of window   ****
___ 1     PARTROOT  02        AN960C10                 WASHER
___  2    STANINFO  1 segment
___  2    STOKSTAT  3 segments
___ 1     PARTROOT  02        CK05CW181K               CAPACITOR
___  2    STANINFO  1 segment
___  2    STOKSTAT  3 segments
___ 1     PARTROOT  02        CSR13G104KL              KR1J50KS
___  2    STANINFO  1 segment
___  2    STOKSTAT  3 segments
```

```
Process   Options   Help
FM/IMS                    Database Hierarchy
Command ===> _                                                Scroll CSR

Database   DI21PART

                  ***********
                  * PARTROOT*
                  *******001*
          ________________!________________
          !                                !
     ***********                      ***********
     * STANINFO*                      * STOKSTAT*
     *******002*                      *******003*
                              ________________!________________
                              !                                !
                         ***********                      ***********
                         * CYCCOUNT*                      * BACKORDR*
                         *******004*                      *******005*
```

EDIT: TS Queue (Manipolazione dei dati)

```
 Process    Options    Help
FM/CICS                List CICS Resources Entry Panel

CICS File, Transient Data, Temporary Storage Queue, or Enqueue Name:
   Resource name  . . *
   Sysid  . . . . . .
   TS pool name . . .

Processing Options:
 CICS Resource
 2  1. File
    2. Temporary Storage
    3. Transient Data
    4. Enqueue
```

Per listare le code TSQ

```
 Process    Options    He
FM/CICS         CICS Temporary Storage Selection List          Row 1 of 1

  Queue          Loc  Items      Size   Max   Min Tran     Last Sys  Pool
_ ERIC           AUX      7       704   128     64 FM          31
 ****  End of data  ***
```

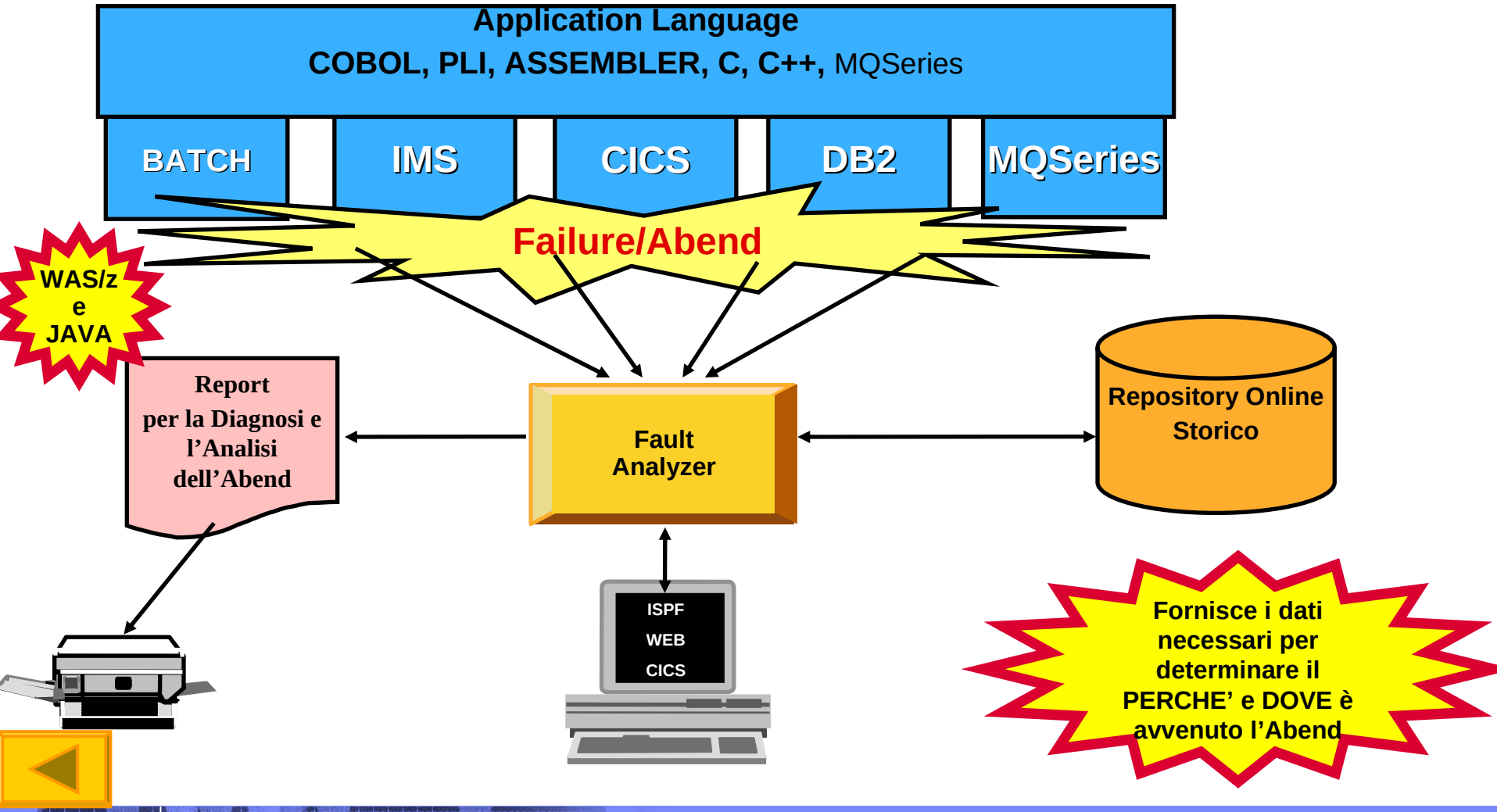
Per Editare le code TSQ

```
 Process    Options    Help
Edit            TS:ERIC                          Rec 0 of 7
      Col 1          Insert length 128                        Format CHAR
      ----+----1----+----2----+----3----+----4----+----5----+----6----+----7--
000000 ****  Top of data  ****
000001 THIS IS A SAMPLE
000002 THIS IS A SAMPLE
000003 THIS IS A SAMPLE
000004 EXEC CICS WRITEQ QUEUE('""CI0028') FROM(&DFHC)
000005 EXEC CICS WRITEQ QUEUE('""CI0029') FROM(&DFHC)
000006 EXEC CICS READQ QUEUE('""CI0028') INTO(&DFHC)
000007 EXEC CICS READQ QUEUE('""CI0029') INTO(&DFHC)
000008 ****  End of data  ****
```

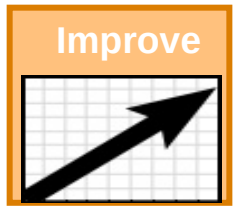
Fault Analyzer

Cod: **5655-P16**

Aiuta a trovare rapidamente il punto dove l'applicazione va in errore ed offre consigli su come risolvere l'abend



Funzionalità principali di Fault Analyzer



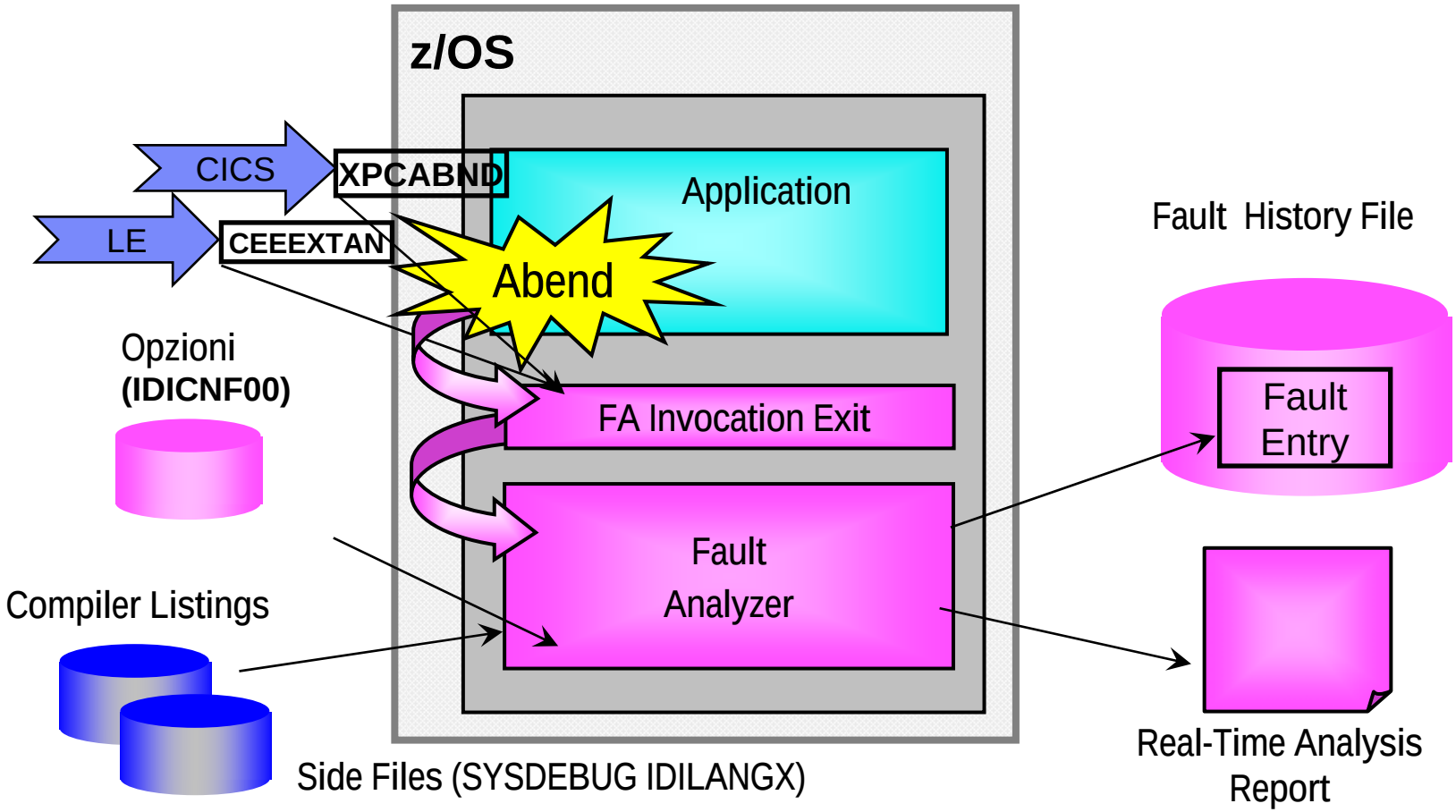
- **Un singolo Prodotto per tutti gli Ambienti**
- **Modalità Operative**
  - Real Time Analysis
  - Batch Dump Re-analysis
  - Interactive Dump Re-analysis

- **Principali Features:**
  - Analisi a Livello Applicazione
  - Informazioni raccolte al momento dell' Abend
  - Traduzione del "Dump" da un basso livello ad informazioni di tipo Application-level
  - Decodifica dell'Abend Code e descrizione dei Messages
  - Non è necessario Ri-compilare le Applicazioni
  - No modifiche ai JCL
  - Nessuna alterazione alle Performance
  - Fault History su ISPFe Log Facility
  - Supporto a qualsiasi livello di Compilatore Cobol e DB2 integrato 64-bit

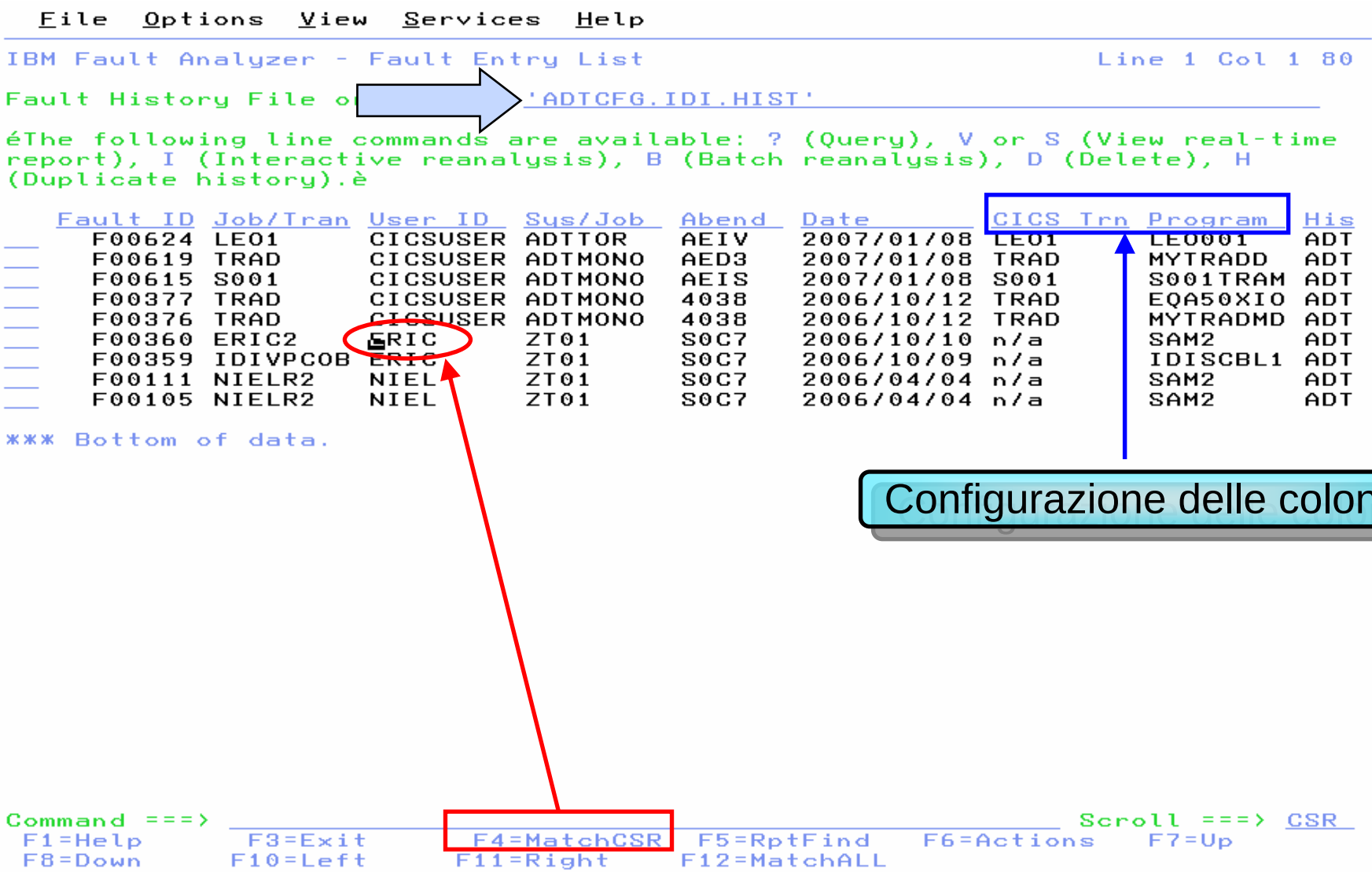
- **Informazioni ulteriori su:**
  www.ibm.com/software/awdtools/deployment

Real-Time Analysis

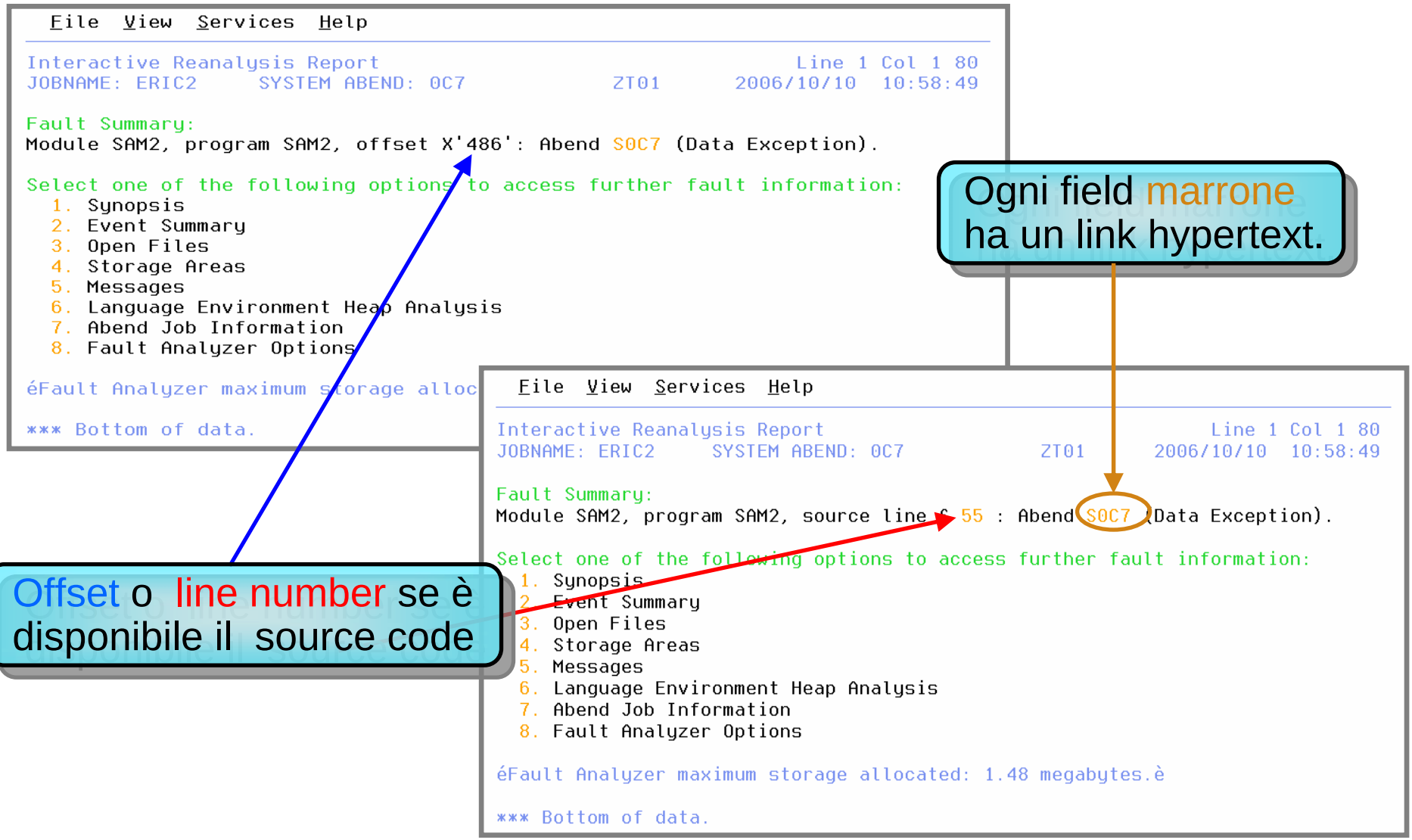
Quando un'Applicazione va in ABEND, un exit invoca FA. Quest'ultimo genererà un Report per l'analisi del Dump.



Fault Analyzer: Filtering



Interactive Reanalysis: Menu Principale



Analisi dell'abend: Synopsis

```
File  View  Services  Help
Interactive Reanalysis Report                              Line 1 Col 1 80
JOBNAME: ERIC2     SYSTEM ABEND: 0C7          ZT01      2006/10/10  10:58:49

Fault Summary:
Module SAM2, program SAM2, offset X'486': Abend S0C7 (Data Exception).

Select one of the following options to access further fault information:
  1. Synopsis
  2. Event Summary
  3. Open Files
  4. Storage Areas
  5. Messages
  6. Language Environment
  7. Abend Job Informatio
  8. Fault Analyzer Optio

éFault Analyzer maximum s

*** Bottom of data.
```

```
File  View  Services  Help
Synopsis                                                   Line 1 Col 1 80
JOBNAME: ERIC2     SYSTEM ABEND: 0C7          ZT01      2006/10/10  10:58:49

A system abend 0C7 occurred in module SAM2 program SAM2 at offset X'486'.

A program-interruption code 0007 (Data Exception) is associated with this
abend and indicates that:

  A decimal digit or sign was invalid.

The cause of the failure was program SAM2 in module SAM2.  The COBOL source
code that immediately preceded the failure was:

  NOTE: Program SAM2 was compiled on 2006/10/09 at 17:23:55. The program listi
        for SAM2 was created on 2006/10/10 at 11:43:54.

  Source
  Line £
  000055              ADD LOCATION-PREFIX TO ORD-ITEM-CODE GIVING LOOKUP-CODE.

The COBOL source code for data fields involved in the failure:

  Source
  Line £
  000018                                                PIC 9(5).
  000019                                                PIC S9(5)      COMP-3.
  000037                                                  PIC 9(4).

Data field values at time of abend:

  LOCATION-PREFIX  = 9000
  LOOKUP-CODE      = 9103
  ORD-ITEM-CODE    = X'7C507C50'  *** Cause of error ***

*** Bottom of data.
```

Per accedere al Source code

Source Code

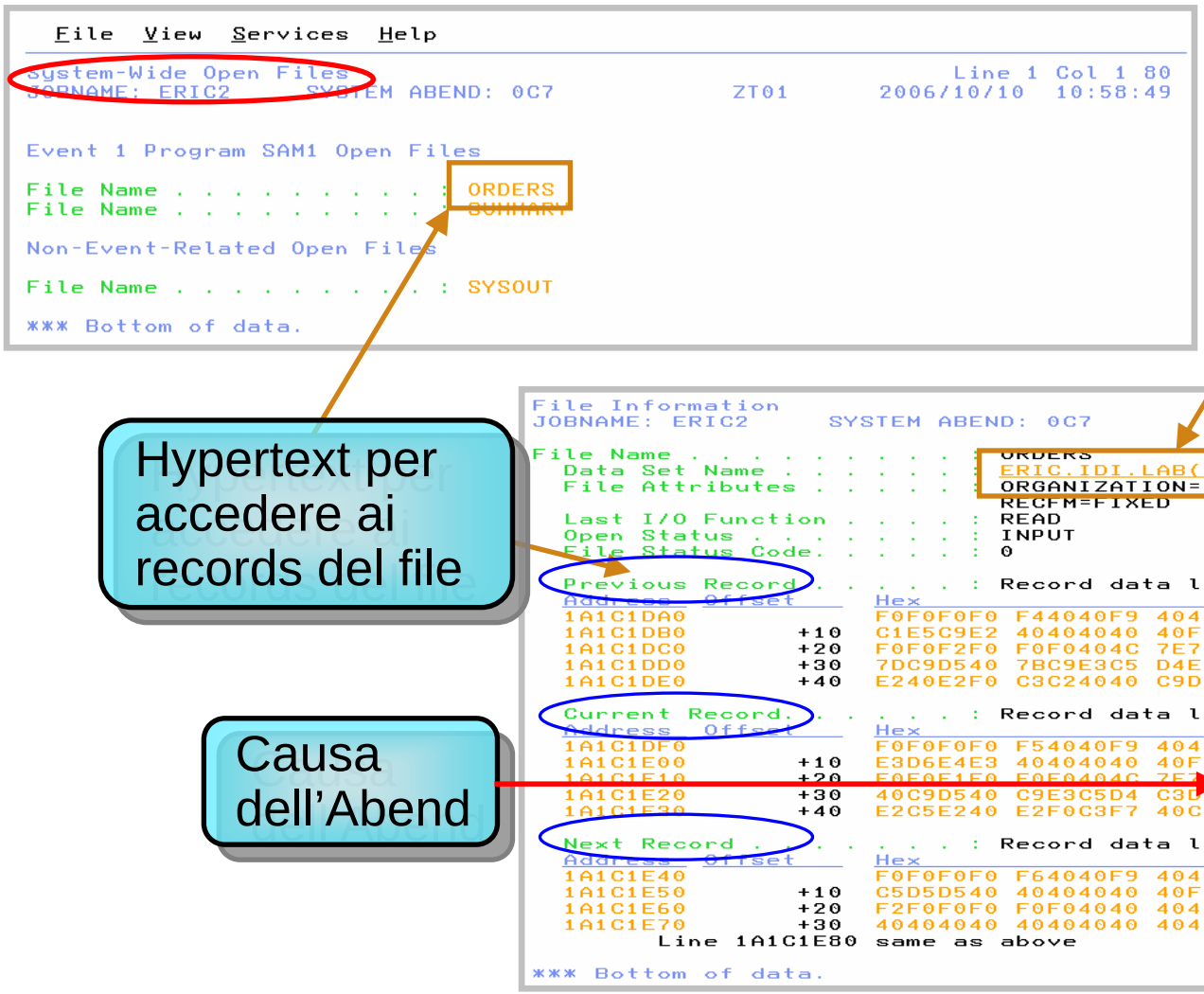
File View Services Help

```
Program SAM2 Compiler Listing                                  Line 21 Col 1 80
JOBNAME: ERIC2      SYSTEM ABEND: 0C7          ZT01      2006/10/10  10:58:49
000017                05  WORK-COUNT          PIC 9(5)              VALUE 999.
000018                05  LOOKUP-CODE         PIC 9(5).
000019                05  LOCATION-PREFIX     PIC S9(5)     COMP-3.
000021           01   ITEM-TABLE.
000022                05  ITEMS               OCCURS 6 TIMES
000023                                        INDEXED BY ITEM-INDEX.
000024                    10  ITEM-CODE                PIC S9(5)  COMP-3.
000025                    10  ITEM-DESCRIP             PIC X(15).
000027           LINKAGE SECTION.
000028           COPY ORDREC.
000029           01  ORDER-RECORD.
000030                05  ORD-NUMBER                  PIC 9(5).
000031                05  FILLER  REDEFINES ORD-NUMBER.
000032                    10  ORDER-REC-COMMENT           PIC X.
000033                    10  FILLER                      PIC X(4).
000034                05  FILLER                  PIC XX.
000035                05  ORD-LOCATION-CODE       PIC 9.
000036                05  FILLER                  PIC XX.
000037                05  ORD-ITEM-CODE           PIC 9(4).
000038                05  FILLER                  PIC X.
000039                05  ORD-CUST-ID             PIC X(10).
000040                05  ORD-NUM-ITEMS           PIC 9(5).
000041                05  FILLER                  PIC X.
000042                05  ORD-SALE-AMOUNT         PIC 9(5)V99.
```

Calling Program: Source Code

```
File  View  Services  Help
Program SAM1 Compiler Listing                                  CHARS 'order-record' fou
JOBNAME: ERIC2     SYSTEM ABEND: 0C7              ZT01        2006/10/10  10:58:49

The listing file used for the following was found via Compiler TEST option in
ERIC.IDI.COBLIST(SAM1).

Source
Line £
000001          * ---------------------------------------------------------
000002          *    PROGRAM    S A M 1 (COBOL)
000003          *
000004          *    SAMPLE PROGRAM
000005          * ---------------------------------------------------------
000006          *
000007           IDENTIFICATION DIVISION.
000008           PROGRAM-ID.   SAM1.
000009          *
000010           ENVIRONMENT DIVISION.
000012           INPUT-OUTPUT SECTION.
000013           FILE-CONTROL.
000014               SELECT ORDERS-FILE
000015                   ASSIGN TO ORDERS
000016                   ACCESS IS SEQUENTIAL.
000017               SELECT REPORT-FILE
000018                   ASSIGN TO SUMMARY
000019                   ACCESS IS SEQUENTIAL.
000020          *
000021           DATA DIVISION.
000023           FILE SECTION.
000024           FD   ORDERS-FILE
000025                RECORD CONTAINS 80 CHARACTERS
000026                RECORDING MODE IS F
000027                LABEL RECORDS OMITTED.
000028           COPY ORDREC.
000029           01   ORDER-RECORD.
000030                05   ORD-NUMBER                    PIC 9(5).
000031                05   FILLER   REDEFINES ORD-NUMBER.
```

Open Files



Hypertext a **File Manager** per la modifica del file.

Hypertext per accedere ai records del file

Causa dell'Abend

Da Fault Analyzer a File Manager

```
 Process    Options    Help
Edit                 ERIC.IDI.LAB(ORDERS2)                        Rec 0 of 9
Command ===> TE_                                                   Scroll CSR
       Col 1          Insert length 80                             Format CHAR
       ----+----1----+----2----+----3----+----4----+----5----+----6----+----7--
000000 ****  Top of data  ****
000001 *ORD   LOC ITEM  CUST        £     SALE
000002 * £    COD CODE  NAME      ITEMS  AMOUNT
000003 *----  === ---- ==========-----  =======
000004 00001   9  0101 ALLEN      00015 0012750
000005 00002   9  0105 WARVEL     00010 0009000
000006 00003   9  0105 JOHNSON    00020 0002000
000007 00004   9  0103 DAVIS      00007 0002000 <=='00000'IN £ITEMS CAUSES S0CB
000008 00005   9  à&à& STOUT      00001 0001000 <=='à&à&' IN ITEMCODE CAUSES S0C7
000009 00006   9  0104 SENN       00250 0200000
000010 ****  End of data  ****
```

Template Edit

```
 Process    Options    Help
File Manager                    Template Workbench

RC Run using copybook                    RT Run using template
CC Create template from copybook         E  Edit field/record in template
CM Create template from model            U  Update template from copybook
MC Map from copybook                     MT Map from template

Copybook:
   Data set name . 'ERIC.FMN.COPYBOOK'
   Member  . . . . ORDERS
Template:
   Data set name .
   Member  . . . .
Model Template:
   Data set name .
   Member  . . . .

Processing Options:
 Enter "/" to select option
 _  Advanced copybook selection
```

Fault Analyzer: Informazioni CICS

- **Synopsis**
  - Disponibile il “Source code” precedente al punto dell’abend
  - Source code relativo ai dati
  - Valori dei “Data field”
- **Event Summary**
  - Event Details
    - “Source code” precedente al failure
    - “Source code” dei dai coinvolti
    - Valori dei “Data field”
    - Registri
    - EXEC Interface Block
    - Messaggi
    - Aree di Memoria
      - Working Storage
      - Linkage Section
      - Commarea
- **Informazioni CICS**
  - ☑ CICS Control Blocks
  - ☑ Memoria relativa alla Transazione CICS
  - ☑ Buffer dell’ultima Mappa CICS 3270 (Hex)
  - ☑ Formattazione della “Trace” CICS
  - ☑ CICS Recovery Manager
- **Area di Memoria**
- **Messaggi**
- **Language Environment Heap Analysis**
- **Ulteriori Informazioni sull’abend:**
  - ✘ Concatenazione DFHRPL
  - ✘ Concatenazione JOBLIB / STEPLIB
- **Opzioni attive al momento dell’abend**

Fault Analyzer: Informazioni CICS

```
File  View  Services  Help

CICS Information
TRANID: TRAD        CICS ABEND: 4038

CICS Release. . . . . . . . . : 0640
Application ID. . . . . . . . : ADTCMONO
CICS Transaction ID . . . . . : TRAD
CICS Task Number. . . . . . . : 00337
CICS Terminal ID. . . . . . . : 0085
CICS Terminal Netname . . . . : TCP00085

Select one of the following:
   1. CICS Control Blocks
   2. CICS Transaction Storage
   3. Last CICS 3270 Screen Buffer
   4. Last CICS 3270 Screen Buffer Hex
   5. Summarized CICS Trace
   6. CICS Trace Formatting
   7. CICS Recovery Manager
   8. CICS Levels, Commareas, and Channels

*** Bottom of data.
```

```
CICS Control Blocks                                          Line 1 Col 1 80
TRANID: TRAD       CICS ABEND: 4038                ZT01      2006/10/12  15:15:34

User EXEC Interface Block (EIB) at Address 001000D0 :
  Task Start Time . . . . . . : 15:15:07                (EIBTIME - HH:MM:SS)
  Task Start Date . . . . . . : 2006/10/12              (EIBDATE - YYYY/MM/DD)
  Transaction ID. . . . . . . : TRAD                    (EIBTRNID)
  Task Number . . . . . . . . : 337                     (EIBTASKN)
  Terminal ID . . . . . . . . : 0085                    (EIBTRMID)
  Cursor Position . . . . . . : 0539                    (EIBCPOSN)
  Communication Area Length . : 168                     (EIBCALEN)
  Attention ID. . . . . . . . : ENTER                   (EIBAID)
  Last CICS Command . . . . . : RETURN                  (EIBFN)
  RESP Condition. . . . . . . : NORMAL                  (EIBRESP)
  RESP Condition Reason . . . : 00000000                (EIBRESP2)
  Data Set ID . . . . . . . . : n/a                     (EIBDS)
  Request ID. . . . . . . . . : n/a                     (EIBREQID)
  Program Name. . . . . . . . : n/a                     (EIBRSRCE)
  Syncpoint Required. . . . . : No                      (EIBSYNC)
  Facility Free Required. . . : No                      (EIBFREE)
  Continue Receiving Data . . : No                      (EIBRECV)
  Attach Header Data in RU. . : No                      (EIBATT)
  RU Indicates End-of-Chain . : No                      (EIBEOC)
  User Data Contains FMH. . . : No                      (EIBFMH)
  Data is Complete. . . . . . : No                      (EIBCOMPL)
  Signal Received . . . . . . : No                      (EIBSIG)
  CONFIRM Request Received. . : No                      (EIBCONF)
  Error Code Received . . . . : No                      (EIBERRCD)
  SYNCPOINT ROLLBACK Req'd. . : No                      (EIBSYNRB)
  No Data Sent. . . . . . . . : No                      (EIBNODAT)
  Rollback. . . . . . . . . . : No                      (EIBRLDBK)

Communication Area (COMMAREA) at Address 1B3037E8 :
Address  Offset  Hex                                              EBCDIC
1B3037E8         00000003 C79381A2 *                    ....Glas*
```

PF8: **CSA, CWA, TCA, TACB, EIS, TCTTE, ...**

```
File  View  Services  Help
                  CICS Trace Selection Parameters
  Specify CICS trace selection parameters and press Enter.

  Format . . . . . . A  (Abbrev/Short/Full)
  Exception Only . . N  (Yes/No)
  Sequence Start . . 000001
           End . . . 000203
  Highlight Interval 0.128          (0-99.9999999999 secs)
  Task IDs . . . . .
  KE Task Numbers
  Terminal IDs . . .                          Caps Y
  Transaction IDs                             Caps Y
  Time Start . . . .        (HHMMSS)
     End . . . . . .        (HHMMSS)
  Domain/Point IDs

00337 QR     AP 0742 ABAB  EXIT  CREATE_ABEND_RECORD/OK 1B562008
00337 QR     AP 0741 ABAB  ENTRY START_ABEND          1B562008,NO,YES
00337 QR     DU 0500 DUDT  ENTRY INQUIRE_TRAN_DUMPCODE 4038
00337 QR     DU 0600 DUTM  ENTRY INQUIRE_TRAN_DUMPCODE 4038
00337 QR     DU 0601 DUTM  EXIT  INQUIRE_TRAN_DUMPCODE/EXCEPTION DUMPCODE_NOT_F
00337 QR     DU 0501 DUDT  EXIT  INQUIRE_TRAN_DUMPCODE/EXCEPTION DUMPCODE_NOT_F
00337 QR     AP 1942 APLI  *EXC* bend-Percolate       START_PROGRAM,MYTRADD,CE
00337 QR     AP 0741 ABAB  ENTRY INQUIRE_ABEND_RECORD  LATEST
00337 QR     AP 0742 ABAB  EXIT  INQUIRE_ABEND_RECORD/OK 0000000000000000,4038,
00337 QR     AP 1941 APLI  EXIT  START_PROGRAM/EXCEPTION TRANSACTION_ABEND,4038
00337 QR     LD 0001 LDLD  ENTRY RELEASE_PROGRAM      1B55F258,9BCE6020
00337 QR     LD 0002 LDLD  EXIT  RELEASE_PROGRAM/OK   1BCE6000,4070,ERDSA
00337 QR     PG 1700 PGCH  ENTRY DELETE_OWNED_CHANNELS
00337 QR     PG 1701 PGCH  EXIT  DELETE_OWNED_CHANNELS/OK
00337 QR     PG 1102 PGLE  EXIT  LINK_EXEC/EXCEPTION  TRANSACTION_ABEND,,,,403
```

```
Last CICS 3270 Screen Buffer                                 Line 1 Col 1 80
TRANID: TRAD       CICS ABEND: 4038                ZT01      2006/10/12  15:15:34

   Column
Row ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----
  1 ..........................  Share Trading Demonstration ..............TRADER
  2 ..........................................................................
  3 ........................Share Trading Manager: Options.....................
  4 ..........................................................................
  5 ..........................................................................
  6 ........................1..New Real-Time Quote ...........................
  7 ..........................................................................
  8 ........................2..Buy Shares                     ...........................
  9 ..........................................................................
 10 ........................3..Sell Shares                    ...........................
 11 ..........................................................................
 12 ..........................................................................
 13 ..........................................................................
 14 ..........................................................................
 15 ..........................................................................
 16 ..........................................................................
 17 ....................Please select an option (1,2 or 3):  1.................
 18 ..........................................................................
 19 ..........................................................................
 20 ..........................................................................
 21 ..........................................................................
 22 .
 23 .---------------------------------------------------------------------------
 24 .PF3=Return.....................................................PF1

*** Bottom of data.
```

Fault Analyzer: Informazioni DB2

- **Synopsis**
- **Event Summary**
  - Event Details
    - SQL Communications Area
    - SQLCODE Explanation
    - SQLSTATE Explanation
- **Informazioni DB2**
  - Subsystem ID
  - Versione
  - Nome del Plan/Package bind e Time-Stamp
  - Ultimo Statement SQL eseguito
  - Host Variables
  - SQL Communications Area
  - Spiegazione di SQLCODE e SQLSTATE
- **Informazioni (Job) sull'Abend**
- **Opzioni attive al momento**

Fault Analyzer: Informazioni DB2

```
DB2 Information                                                  Line 1 Col 1 80
TRANID: TRAD       CICS ABEND: 4038              ZT01       2006/10/12  15:15:34


DB2 Subsystem DB21

DB2 Version . . . . . . . . . : V8R1M5
Plan Name . . . . . . . . . . : MYTRADD (Bound 2005/12/02 17:50:52)
Plan Owner. . . . . . . . . . : DB2ADM
Database Request Module Name: ADTCFG.DB21.DBRMLIB(MYTRADD)
Consistency Token . . . . . : X'17B09AAB015C12DF'
Primary Authorization ID. . : ERIC
Current SQL ID. . . . . . . : ERIC
Precompiler Statement No. . : 477
Last Executed SQL Statement : SELECT NO_SHARES INTO
                              :DCLCUSTOMER-DETAILS.NO-SHARES FROM
                              CUSTOMER_DETAILS WHERE CUSTOMER =
                              :DCLCUSTOMER-DETAILS.CUSTOMER AND COMPANY =
                              :DCLCUSTOMER-DETAILS.COMPANY-CUST

Input Host Variables:
  Name and Data Type. . . . : DCLCUSTOMER-DETAILS.CUSTOMER CHARACTER(25)
    At Address. . . . . . . : 1B312830
    Data Value. . . . . . . : ERIC

  Name and Data Type. . . . : DCLCUSTOMER-DETAILS.COMPANY-CUST CHARACTER(20)
    At Address. . . . . . . : 1B312849
    Data Value. . . . . . . : Glass_and_Luget_plc

Output Host Variables:
  Name and Data Type. . . . : DCLCUSTOMER-DETAILS.NO-SHARES INTEGER
    At Address. . . . . . . : 1B31285D
    Data Value. . . . . . . : 0

DB2 Control Blocks

SQL Communications Area (SQLCA) for Subsystem DB21
Offset      Field       Value
Dec   Hex   Name        Hex                                          EBCDIC
  0     (0) SQLCAID     E2D8D3C3 C1404040                            *SQLCA           *
  8     (8) SQLCABC     00000088                                     *...h            *
 12     (C) SQLCODE     FFFFFC78                                     *....            *
                        SQLCODE -904 Explanation
 16    (10) SQLERRML    003B                                         *..              *
 18    (12) SQLERRMC    F0F0C4F7 F0F0F2F4 FFF0F0F0 F0F0F2F2 *00D70024.0000022*
 34    (22)             F0FFC4C2 F2F0C3C1 E34BC4E2 D5C4C2C3 *0.DB20CAT.DSNDBC*
 50    (32)             4BE3D9C1 C4C5D9C4 C24BE3D9 C1C4C5D9 *.TRADERDB.TRADER*
 66    (42)             4BC9F0F0 F0F14BC1 F0F0F140 40404040 *.I0001.A001      *
 82    (52)             40404040 4040                        *                *
 88    (58) SQLERRP     C4E2D5E7 D9D9C340                            *DSNXRRC         *
 96    (60) SQLERRD     00000066 00C9000A 00000000 FFFFFFFF *.....I...........*
112    (70)             00000000 00C20042                            *.....B..        *
120    (78) SQLWARN     40404040 40404040 404040                     *                *
131    (83) SQLSTATE    F5F7F0F1 F1                                  *57011           *
                        SQLSTATE 57011 Explanation

*** Bottom of data.
```

Sulla nuova Versione anche informazioni WebSphere

```
  File  View  Services  Help
System-Wide Information                                        Line 1 Col 1 80
Command ===> ____________________________________________ Scroll ===> CSR
JOBNAME: BBOS001S  SYSTEM ABEND: 0CB          STLABF1   2004/03/02  13:22:58

Storage Areas

Java Information

WebSphere Information

Language Environment Heap Analysis

*** Bottom of data.
```

Enter

Fault Analyzer: Web Browser Interface

Fault entries for history file 'ADTCFG.IDI.HIST'

Column Configuration

FAULT_ID	JOB/TRAN	USER_ID
F00296	ADTS1012	ADTS101
F00292	DMSRSD	DMSRS
F00290	AJRW	AJRW
F00288	ADTS201B	ADTS201
F00286	ARYSJ002	PIERRE
F00283	LYSTE16	LYSTE1
F00276	AJRWRCV	AJRW
F00275	EQAYSESM	STC
F00274	CEMT	CICSUSER
F00111	NIELR2	NIEL
F00105	NIELR2	NIEL

IBM FAULT ANALYZER SYNOPSIS
IBM FAULT ANALYZER EVENT SUMMARY
IBM FAULT ANALYZER EVENT DETAILS
- EVENT 1 OF 5: CALL (DSA ADDRESS 1A191030)
- EVENT 2 OF 5: CALL (DSA ADDRESS 1A191208)
- EVENT 3 OF 5: ABEND SOC7

SYSTEM-WIDE INFORMATION
- OPEN FILES
- STORAGE AREAS
- LANGUAGE ENVIRONMENT HEAP ANALYSIS

IBM FAULT ANALYZER ABEND JOB INFO
IBM FAULT ANALYZER OPTIONS

```
********************************************************************************
* IBM Fault Analyzer for z/OS V6R1M0 (UK16955 2006/08/11)                      *
*                                                                              *
* (C) Copyright IBM Corp. 2000, 2005.  All rights reserved.                    *
********************************************************************************

JOBNAME: ADTS1012  SYSTEM ABEND: 0C7             ZT01      2006/09/15  14:01:02
```

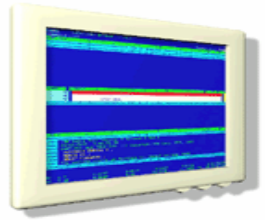
IBM FAULT ANALYZER SYNOPSIS

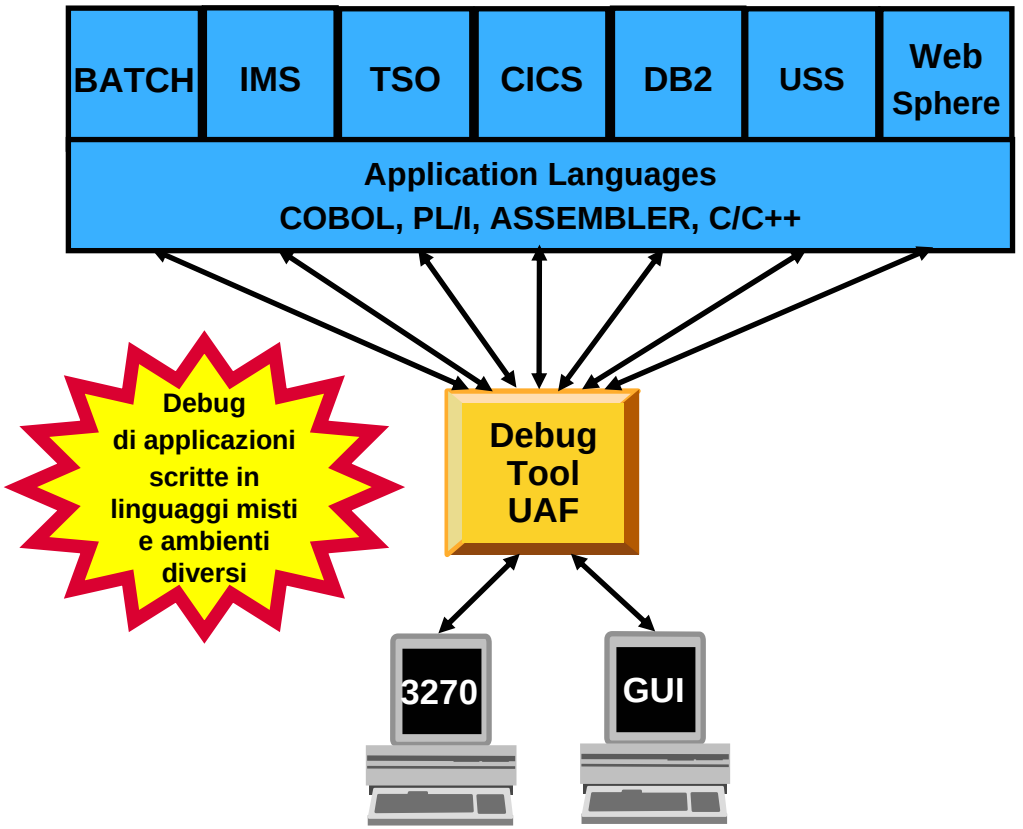
top

```
A system abend 0C7 occurred in module SAM2 program SAM2 at offset X'462'.

A program-interruption code 0007 (Data Exception) is associated with this abend
and indicates that:

  A decimal digit or sign was invalid.


The cause of the failure was program SAM2 in module SAM2.  The COBOL source code
that immediately preceded the failure was:

  Source
  Line #
  ------
  000055            ADD LOCATION-PREFIX TO ORD-ITEM-CODE GIVING LOOKUP-CODE.

The COBOL source code for data fields involved in the failure:

  Source
  Line #
  ------
  000019            05  LOCATION-PREFIX        PIC S9(5)      COMP-3.
  000037            05  ORD-ITEM-CODE              PIC 9(4).
```

Debug Tool U&AF

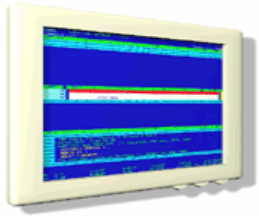
Analisi logica del sorgente di applicazioni enterprise e per individuare problematiche di coding





- **Interfaccia unica e comune per diversi Sistemi e Subsystems**
- **Linguaggi supportati**
  - COBOL (tutte le versioni), C/C++, PL/I, assembler, Java (OS/390)
- **Ambienti Supportati**
  - CICS, TSO, JES/Batch, IMS Incluso IMS/TM, DB2 Incluso Stored Procedures, Unix System Services (USS), MQSeries
- **Debug Tool Utilities and Advanced Functions**

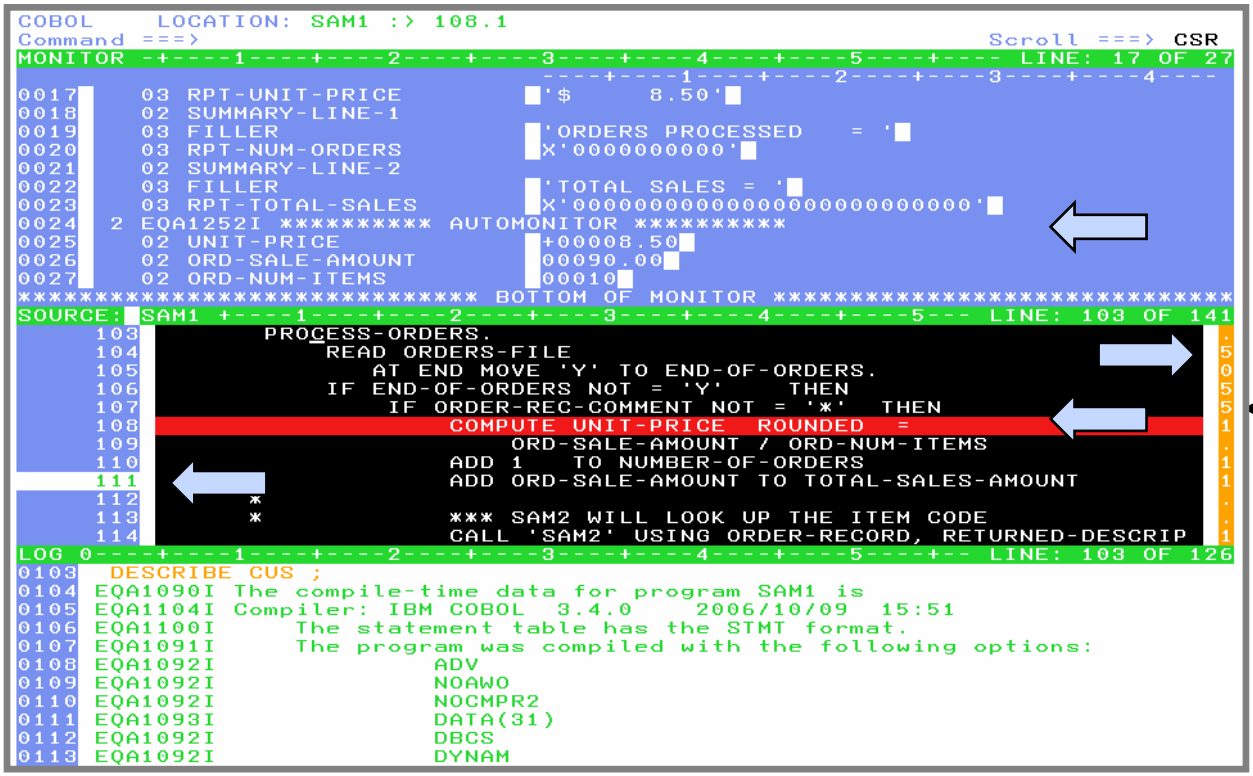
Debug Tool U&AF Features principali

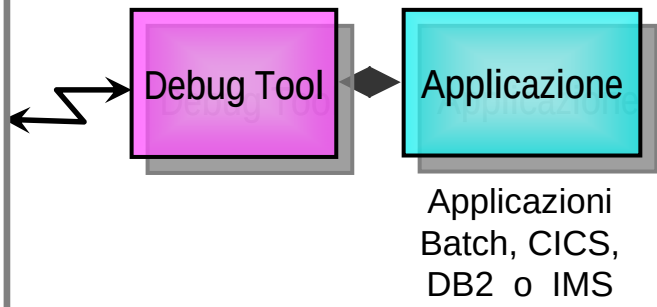


- **Debug Tool Features:**
  - Tool per il Debug a livello “Source”
  - Supporto ai Breakpoints multipli
  - Utilizzo dei servizi del “LE”:
    - Breakpoints a condizioni LE
    - Recovery in fase dell’Abend del programma
  - Debug in modalità “Step”
  - Disponibilità del Log , con relativi Comandi, durante la sessione di Debug
  - Patching dinamico
  - Supporto al comando Frequency

- **Debug Tool U&AF Features:**
  - Supporto Interattivo al “Playback”
  - Supporto all’Automonitor per i programmi COBOL, PL/I e Assembler
  - Interfaccia al Tool Fault Analyzer
  - Supporto il “Code coverage” per il “regression testing”
  - Supporto per il “Sorgente” di programmi OS/VS COBOL
  - Analisi “Reporting” per “Load module”
  - Preparazione automatica per :
    - Compile e link
    - Conversione OS/VS COBOL
  - Supporto interattivo per “Object level disassembly”
  - Comandi per interrogare ed allocare files durante il Debug

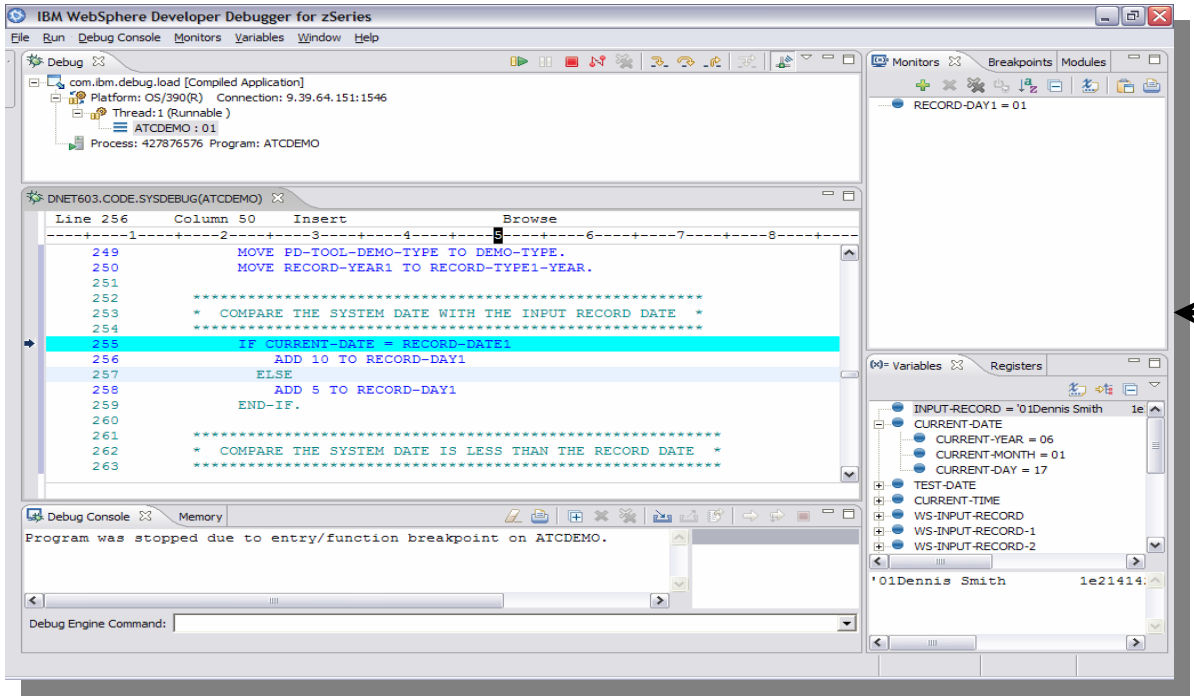
Come si può interfacciare Debug Tool?





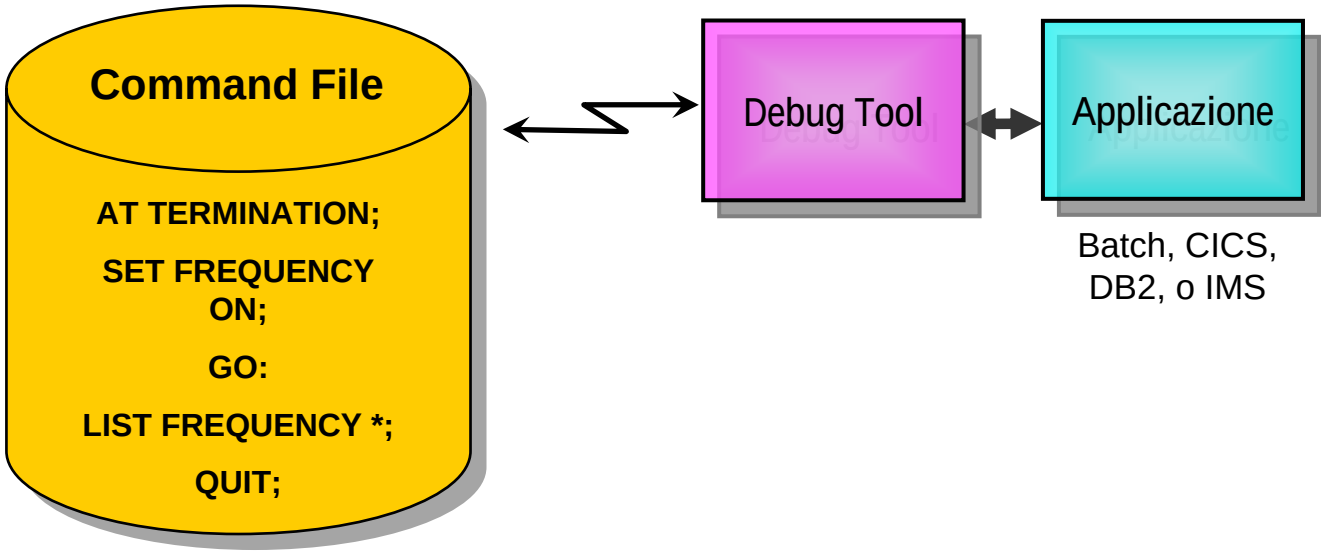
- **Full-screen mode**
  - Interfaccia 3270
  - Lavorare con Debug Tool da un'interfaccia VTAM
  - Interfaccia comune in ambiente runtime z/OS per : CICS, JES, IMS TM, DB2 Stored Procedures, etc.
  - Debug Tool usa il terminale che scegli tu…può essere usato anche il tuo terminale CICS o TSO

Come si può interfacciare Debug Tool?



- ***Websphere Developer Debugger for zSystems (WDDz):***
  - Un'applicazione host attiva Debug Tool, il quale si connette ad un debugger remoto sulla tua workstation
  - "Point and Click" semplice da usare
  - Utilizza l'interfaccia "GUI" definita all'interno di prodotti come:
    - ***Eclipsed based Websphere Developer for zSystems (WDz)***

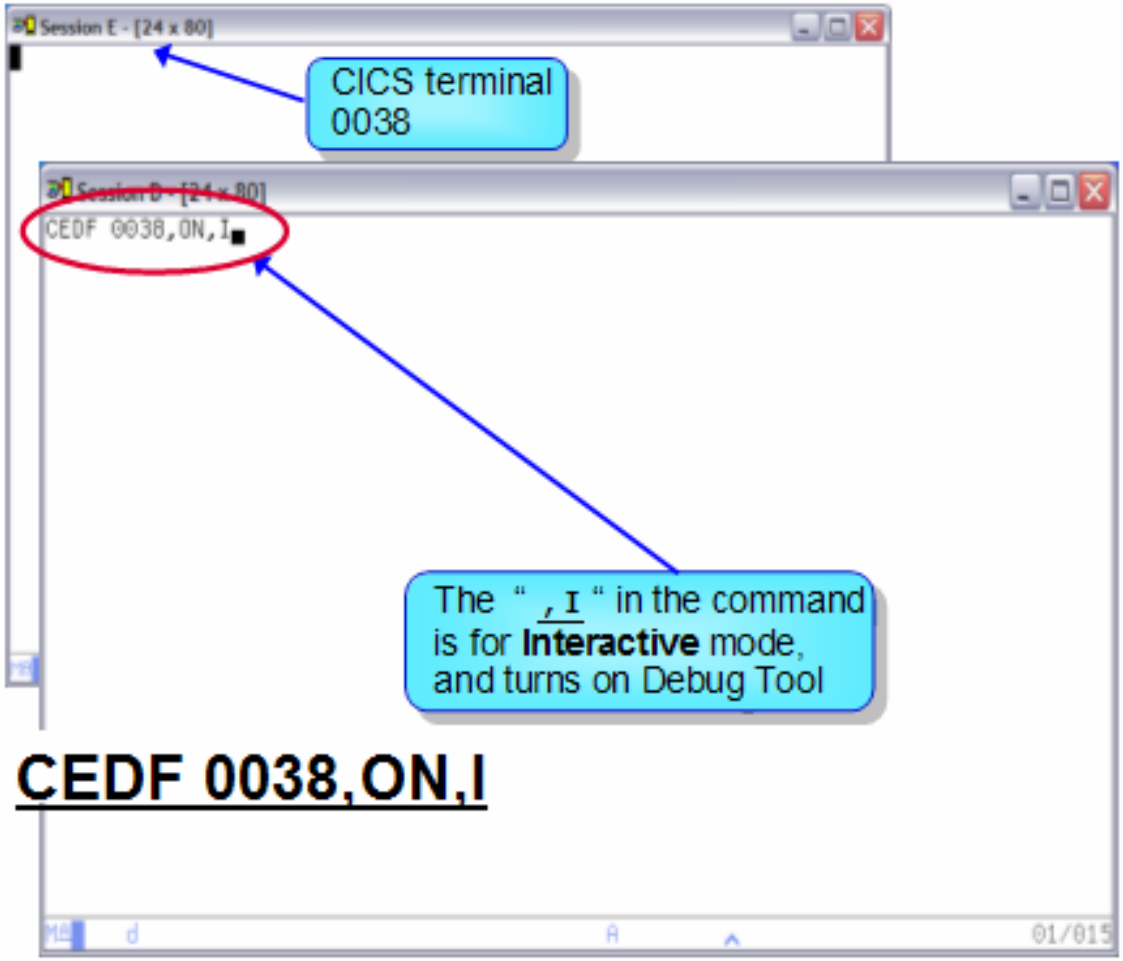
Come si può interfacciare Debug Tool?



- **Modalità “Batch”, utilizzando il “Command File”**
  - L’applicazione viene attivata in modalità **background** sotto il controllo dei comandi del “ Debug Tool “ .
  - Possibilità di guidare il processo e la logica del Programma tramite I comandi presenti sul “Command file” e verificare I risultati sul “Log” per diagnosi successive
  - Per la creazione di:
    - Regression Test cases
    - Diagnosi di problematiche in ambiente di Produzione

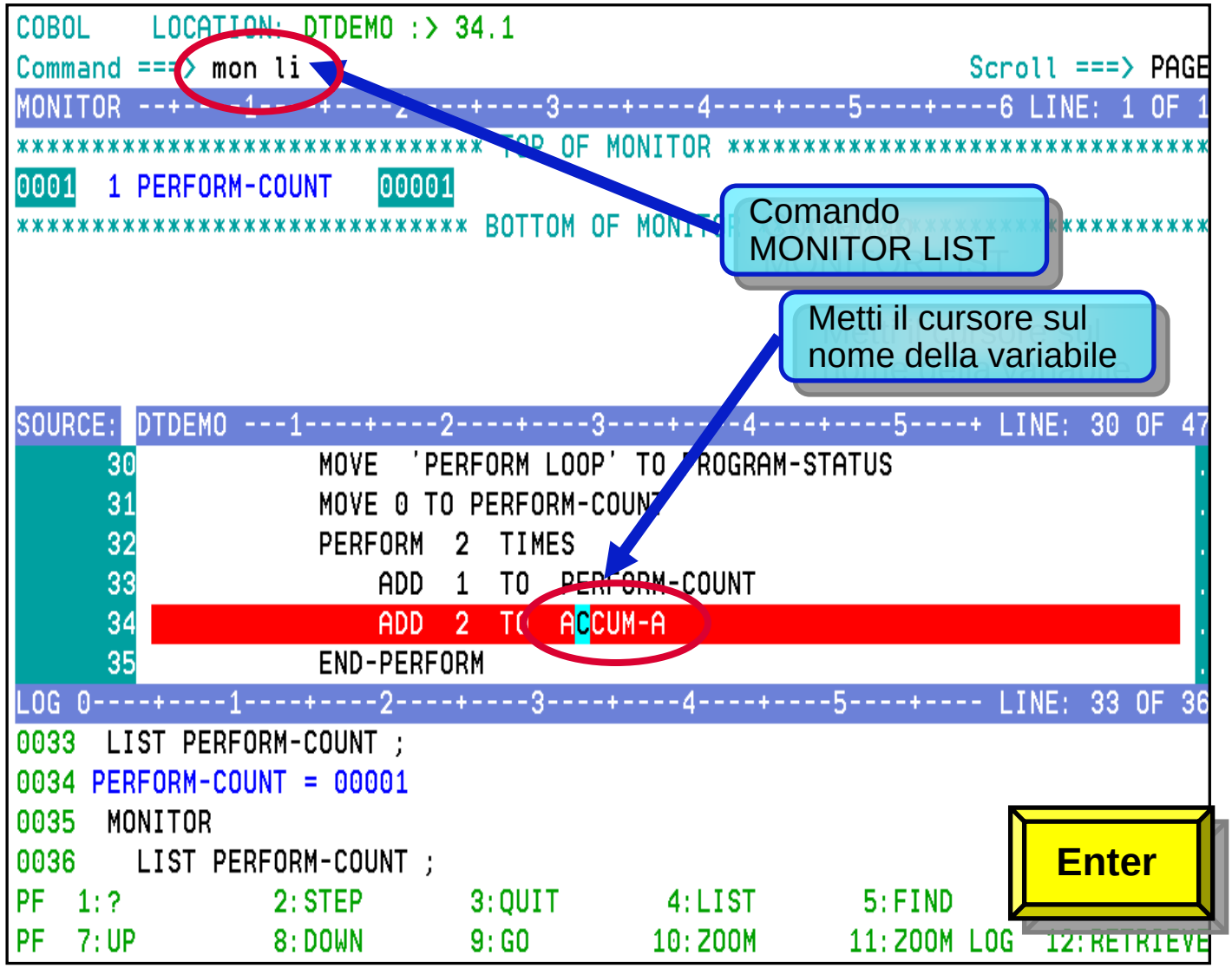
Debug Tool Invoke con CEDF

- **CICS**
  - Debug Tool Invoked via CEDF :
    - **CEDF** è una transazione che è parte del CICS, utilizzata in fase di interactive debugging di una applicazione CICS
    - **CEDF** visualizzerà le sue informazioni tramite I pannelli CICS
    - Debug Tool è stato generato all'interno della transazione CEDF per consentire il debug interattivo del SOURCE, tra le EXEC CICS



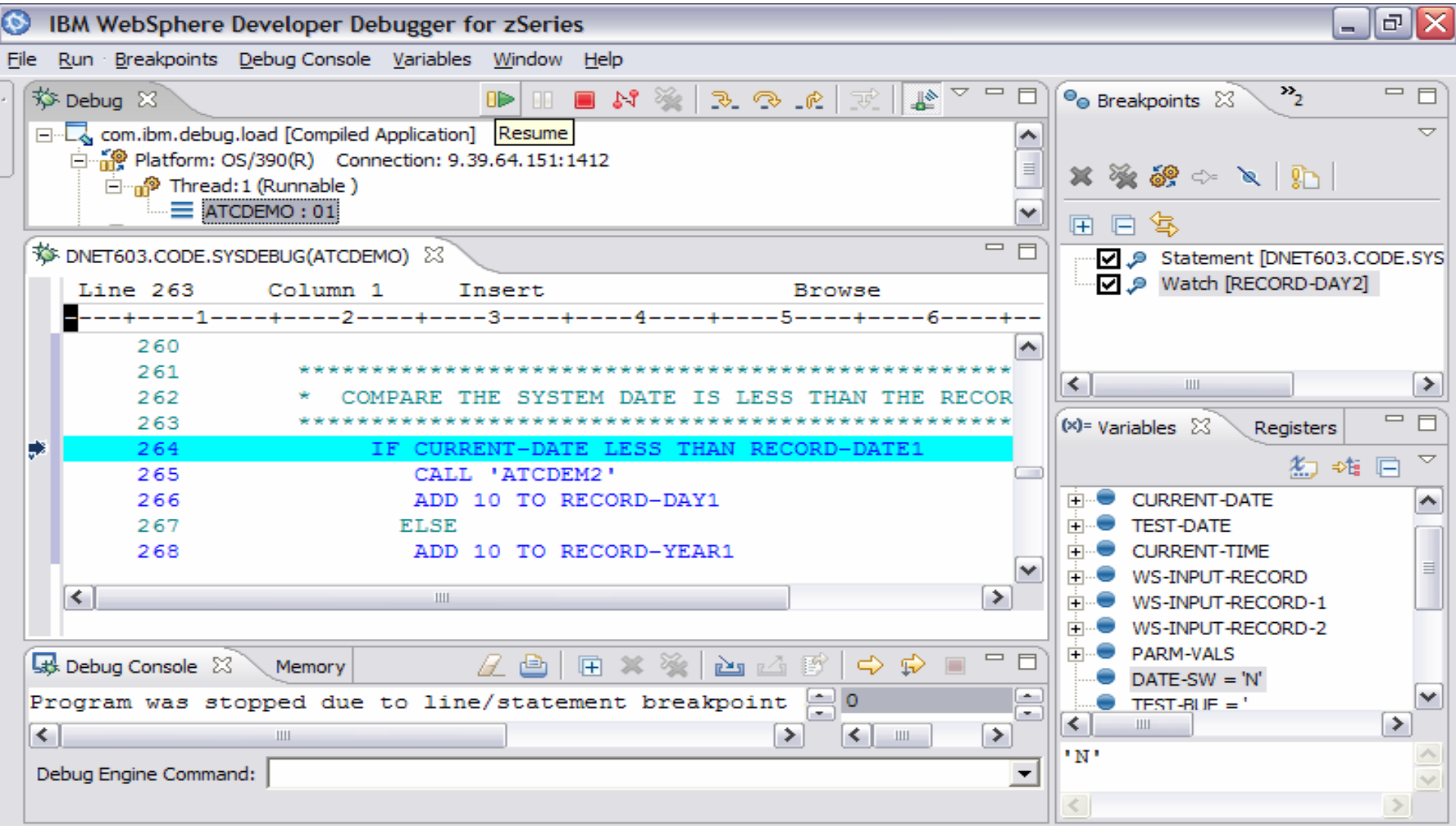
I Comandi base

- *Puoi specificare una variabile per il MONITOR oppure LIST posizionando il cursore sulla variabile stessa e digitare successivamente il “comando” relativo*



Aggiungere la variabile “accum-a” al monitor .

Run

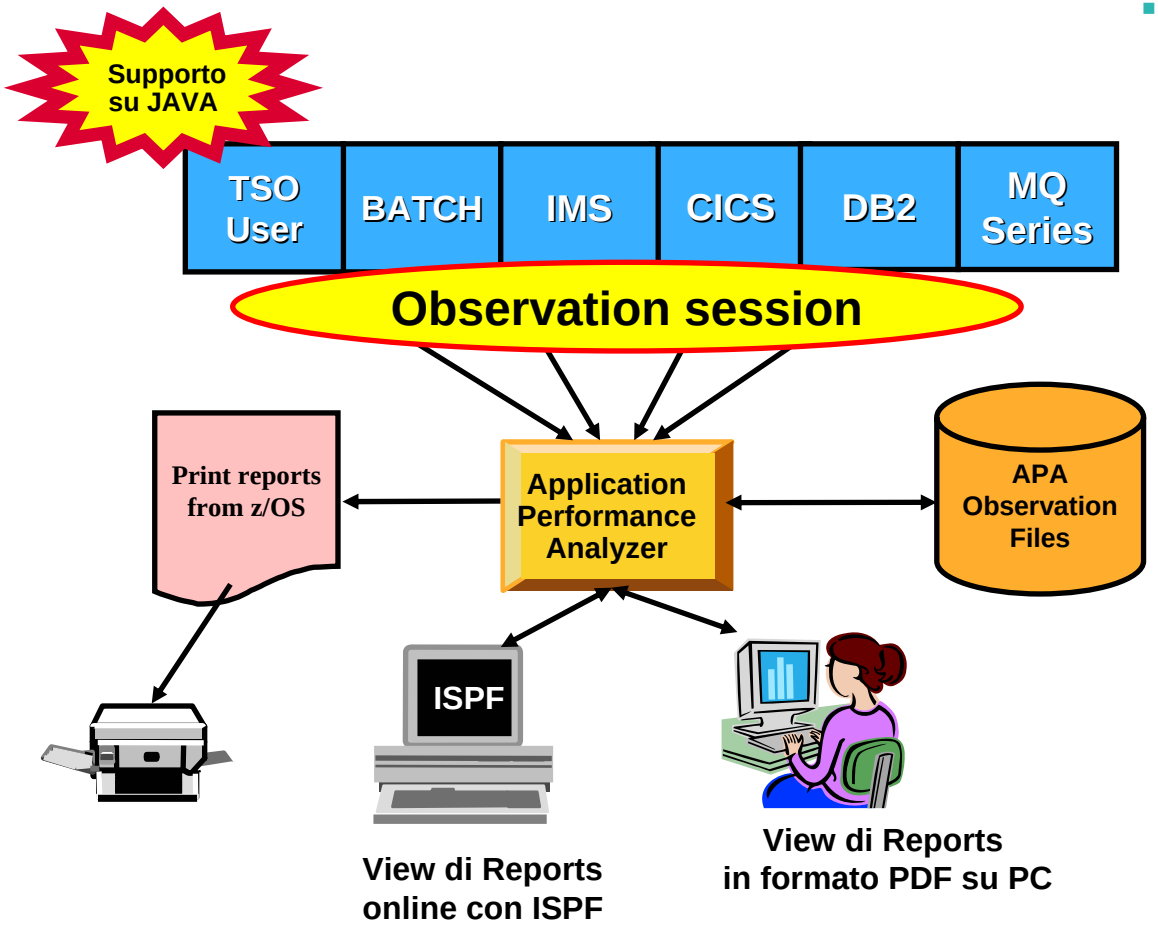


Utilities : COBOL Modernization

- **Identifica su dei reports quali sono i “sorgenti” che riciedono la conversione dal COBOL 68 e 74 al COBOL 85**
- **Conversione da standard 68 e 74 a standard 85**
  - Analizza e converte Sorgenti COBOL (incluso le copybooks)
- **Identifica gli elementi del linguaggio COBOL e I comandi CICS che nel “Source “ del Programma sono:**
  - Non supportati dal linguaggio target
  - Supportati in diversa maniera
- **Converte qualsiasi compilatore COBOL alla versione corrente (identificando le nuove KEYWORDS, etc)**
- **Converte il Sorgente**
  - Converte il sorgente di programmi COBOL
  - Converte le Copy COBOL dei files

Application Performance Analyzer

Tool per l'analisi delle performance per programmatori di Sistema ed Applicativi



- **Features:**
  - Reports a livello di dettaglio consultabili via ISPF o PDF con navigazione orizzontale e verticale "drill down"
  - Analisi su CPU, Load Module e CSECT per tutti I moduli presenti nell'"Address space"
  - Supporto a livello "Statement" per Sorgenti COBOL or PL1 o Istruzioni Assembler in ogni CSECT
  - Supporto ai "SIDEFILE" di Fault Analyzer / Debug Tool
  - Analisi "Wait Time" per "Category", "Task/Module" o "Attribution"
  - Analisi I/O sui DASD a livello Device, DD Name, Dataset e Attributi, EXCP's, VSAM con h Buffer Pool, I/O Wait
  - Analisi DB2 per SQL – Static e Dynamic – Service Times – Dynamic Explain
  - Analisi DB2 per DBRM, Statement e Plan
  - Statistiche sulla sessione CICS, analisi dellla Transazione per utilizzo di CPU, Mean and Total Service Time, e Waits
  - Analisi per CPU e "Service Time" in IMS
  - Analisi per "Queue", "Request", e Transaction in MQ Series
  - Analisi e supporto per " DB2 Stored Procedures" scritte in COBOL o Java

Cos'è un APM (application performance monitor)?

- Gli Obbiettivi sono quelli di fornire informazioni sulle prestazioni del Sistema e dare una possibilità costante alle applicazioni di offrire il massimo in Disponibilità e Performance.
- Che cosa si può fare con APA :
  - Monitorare (*Stored*) Procedure e applicazioni 'batch o *active*' e le loro transazioni associate per vedere ed analizzarne i comportamenti
  - Isolare problematiche di performance
  - Identificare l'eccesiva attività di I/O
  - Identificare l'uso eccessivo di CPU
  - Determinare le Performances del Sistema in caso di carico di lavoro

Overview del Prodotto IBM APA

Prodotto di Analisi Non-intrusivo utilizzato nelle seguenti modalità

- Real-Time Monitor (modalità interattiva ISPF per identificare/monitorare job o Started Task che stanno girando)
- Scheduled (modalità interattiva per schedulare “observation session(s)” di applicazioni che gireranno in futuro)
- Threshold (modalità interattiva per definire thresholds per Jobs in termini di “CPU usage” , “EXCP” o “durata del Job”

Interfacce

- Batch
- ISPF

Reports (1/2)

CPU

- Usage by Category
- Usage by Procedure
- Usage by Module
- Referred Attribution
- Usage by Code Slice
- Usage Timeline
- Usage Task/Category
- Usage Task/Module
- Usage by PSW/ObjCode

Storage & Statistics

- Measurement Profile
- Load Module Attributes
- Load Module Summary
- TCB Summary
- Memory Usage Timeline
- Data Space Usage Timeline
- TCB Execution Summary
- Processor Utilization Summary

Wait

- Time by Task/Category
- Time by Task/Module
- Time Referred Attribution

DASD

- Usage by Device
- Activity Timeline
- Usage by DDNAME
- I/O Wait Time
- Usage by Dataset
- VSAM Buffer Pool Usage
- Dataset Attributes
- Summary
- DASD VSAM Statistics

Coupling Facility

- Summary
- Mean Times
- Facility Total Times

Reports (2/2)

IMS

- Measurement Profile
- DL/I Call Timeline
- Transaction Timeline
- Transaction Activity Timeline
- CPU Usage by DL/I Call
- CPU Usage by Transaction
- CPU Usage by PSB
- Wait Time by DL/I Call
- Wait Time by Transaction
- Wait Time by PSB
- DL/I Activity by PSB
- DL/I Activity by Transaction
- DL/I Activity by DL/I Call
- PSB/PCB Attributes
- DL/I Call Attributes
- Transaction Service Times
- Transaction DL/I Counts
- CPU/Svc Time by DL/I Call
- CPU/Svc Time by PCB
- CPU/Svc Time by Transaction
- CPU/Svc time by PSB

CICS

- Session Statistics
- CPU Usage by Txn
- Mean Service Time by Txn
- Total Service Time by Txn
- Service Time by Task Id
- Wait Time by Txn
- Mean Service Time by Trm
- Total Service Time by Trm

Java

- Java Summary and Attributes
- CPU Usage by Package
- CPU Usage by Class
- CPU Usage by Method
- CPU Usage by Call Path
- Service Time by Package
- Service Time by Class
- Service Time by Method
- Service Time by Call Path
- Wait Time by Package
- Wait Time by Class
- Wait Time by Method
- Wait Time by Call Path

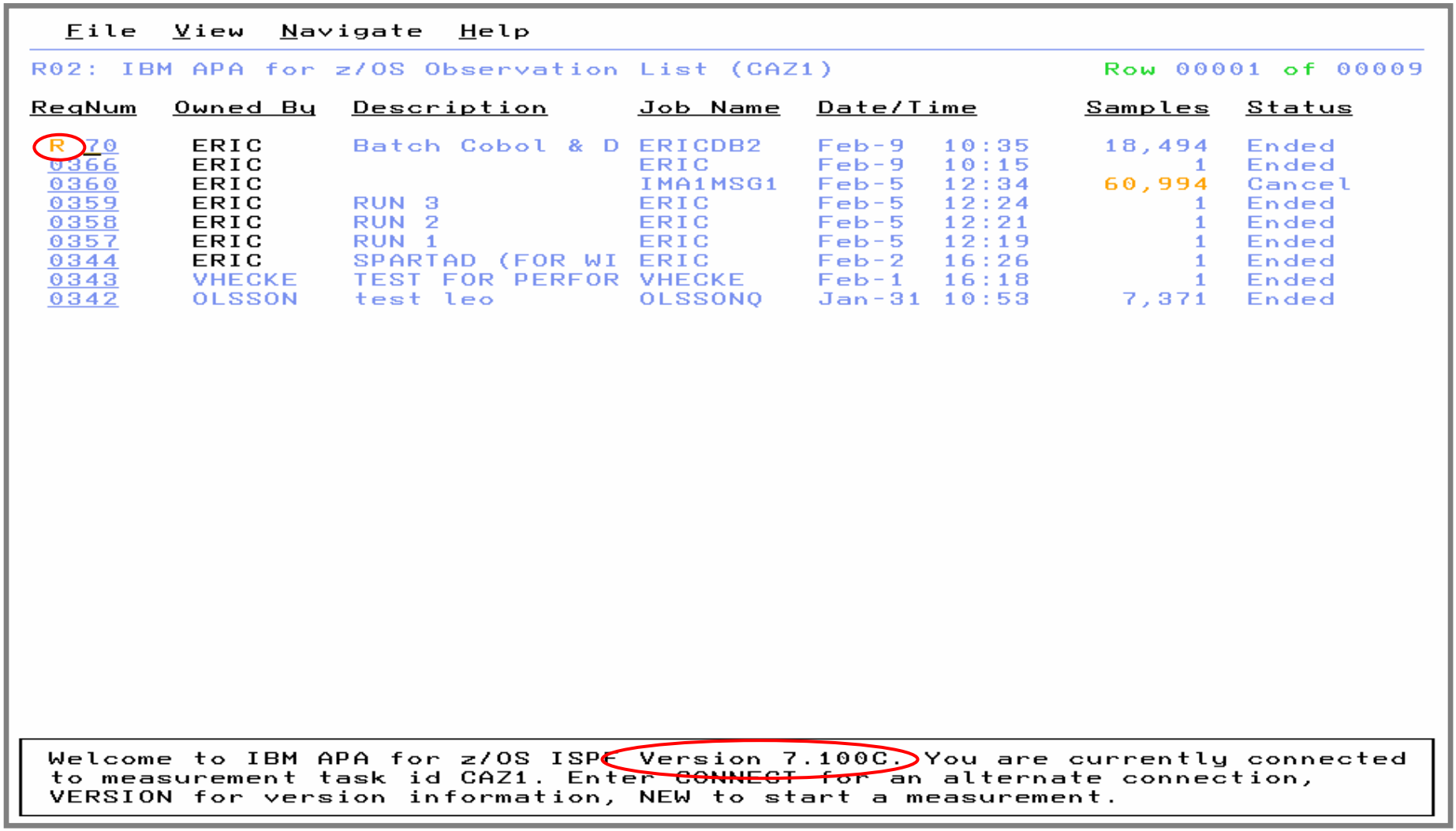
DB2

- Measurement Profile
- SQL Wait Time by Statement
- SQL Activity Timeline
- SQL Wait Time by Plan
- SQL Activity by DBRM
- SQL CPU/Svc Time by DBRM
- SQL Activity by Statement
- SQL CPU/Svc Time by Stmt
- SQL Activity by Plan
- SQL CPU/Svc Time by Plan
- SQL CPU/Svc Time by Loc (DDF)
- SQL Statement Attributes
- SQL Threads Analysis
- SQL Wait Time by DBRM
- CPU by Plan/Stored Proc

MQSeries

- Activity Summary
- CPU Usage by Txn
- CPU Usage by Queue
- CPU Usage by Request
- Wait Time by Txn
- Wait Time by Queue
- Wait Time by Request
- Serv Time by Txn
- Serv Time by Queue
- Serv Time by Request

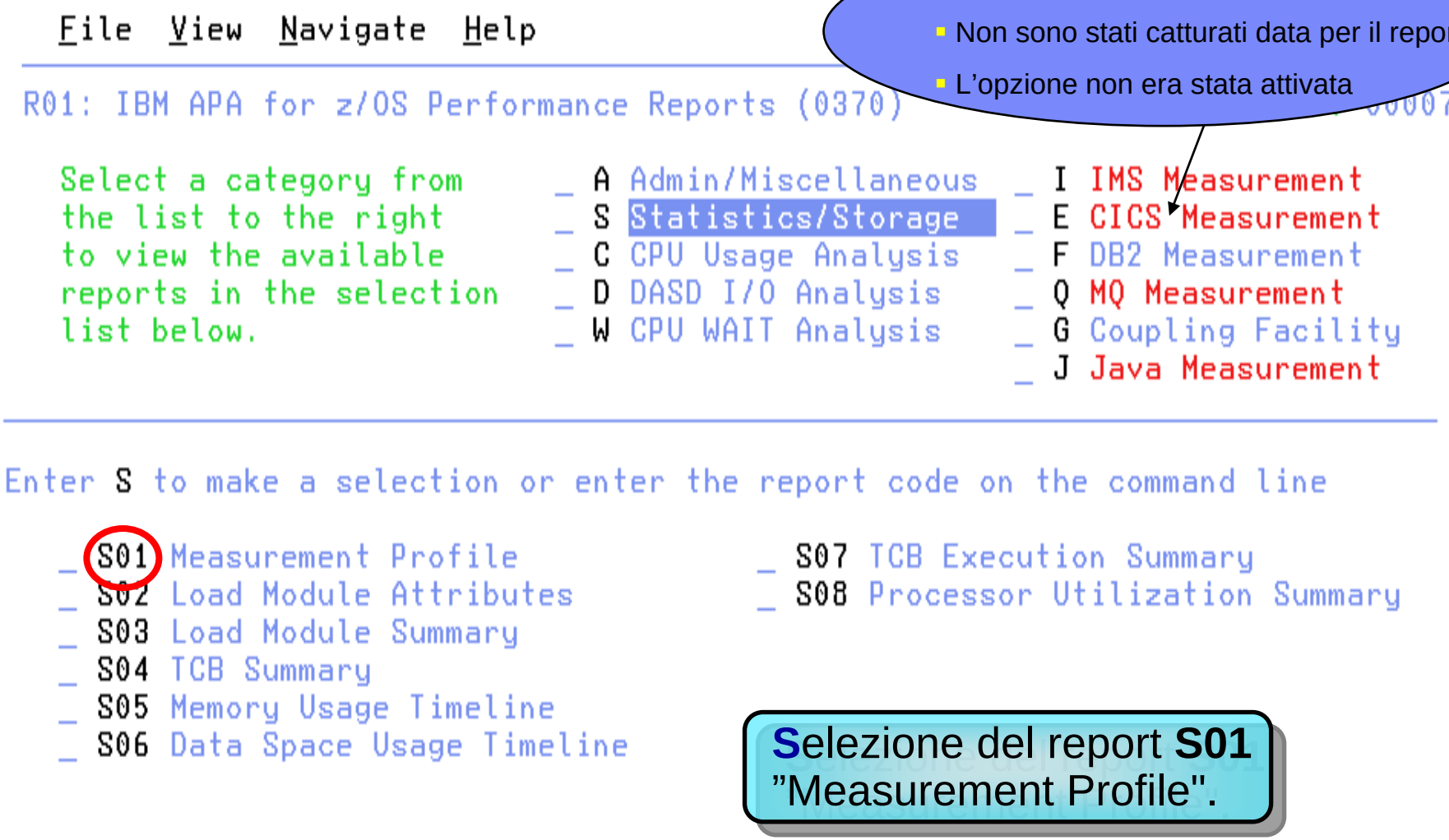
Primary Option Menu



View del Pannello di “Measurement”

Rosso Indica:

- Non sono stati catturati data per il reports
- L’opzione non era stata attivata



Selezione del report **S01** ”Measurement Profile".

Il pannello "CICS Transactions"

```
File  View  Navigate  Help

R03: Schedule New Measurement                          Row 00001 of 00015

● 1. Job Information    3. Multi Steps      5. CICS Options    7. Schedule
● 2. Options            ● 4. Active Jobs    6. Sysplex         8. Sched Options

Panel 5. CICS Transactions and Terminals

Specify up to 16 CICS trancodes for which measurement data is to be recorded.

   01 *___   02 ____   03 ____   04 ____   05 ____   06 ____   07 ____   08 ____
   09 ____   10 ____   11 ____   12 ____   13 ____   14 ____   15 ____   16 ____

Include CICS system transactions in measurement(Y/N): N

Wildcard character '*' can be specified at
'*' by itself specifies all transactions or

Specify up to 8 CICS terminal ids for which

   01 *___   02 ____   03 ____   04 ____   05 ____   06 ____   07 ____   08 ____

Include CICS non-terminal transactions in measurement Y
```

Il pannello viene utilizzato per selezionare la transazione CICS o il terminale.

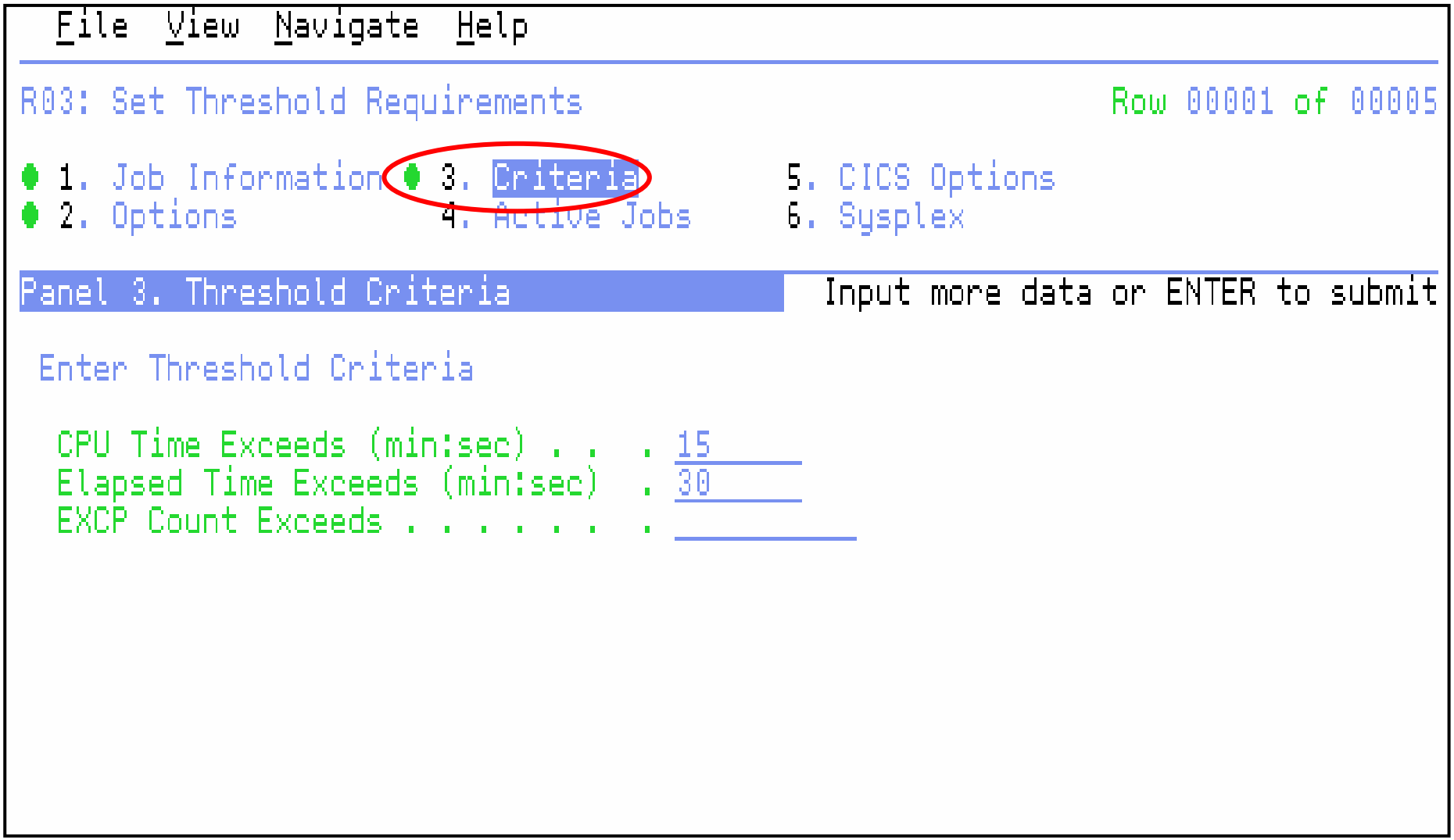
Usare una “wildcard” per specificare il nome di transazioni/ terminali.

Utilizzare Job batch per creare una richiesta

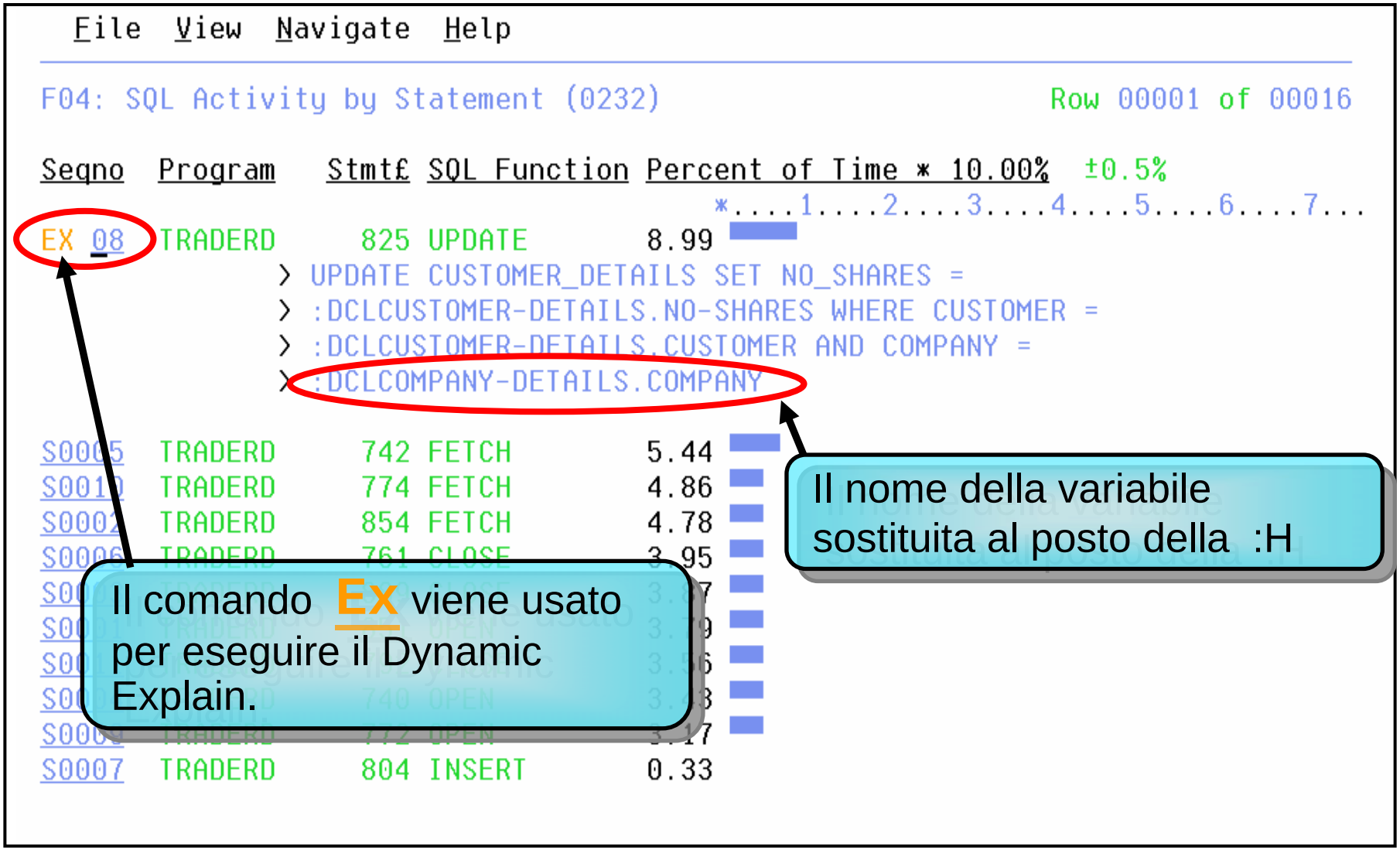
```
File  View  Navigate  Help
R03: Schedule New Measurement                          Row 00001 of 00012
Command ===> JCL                                       Scroll ===> CSR

● 1. Job Information    3. Multi Steps     ● 5. CICS Options    7. Schedule
● 2. Options            4. Active Jobs       6. Sysplex         8. Sched Options

Panel 1. Job Information                  Input more data or ENTER to submit

  Job Name/Pattern . . ADTMONO      System Name . . . ZT01
                       (Active)
  Step Specification
    Step No. . . . . .                Specify
    Program Name . . .                step nam
    Step Name  . . . .                name. Us
    ProcStepName . . .                than one

  Description  . . . .
  Number of Samples  . 1000           Measure
  Duration (min:sec) . 1:00           Delay by
  Notify TSO User  . . ERIC           Retain f
```

```
File  View  Navigate  Help
R03: Schedule New Measurement                          Row 00001 of 00020
Command ===>                                           Scroll ===> CSR

● 1. Job Information    3. Multi Steps     ● 5. CICS Options    7. Schedule
● 2. Options            4. Active Jobs       6. Sysplex         8. Sched Options

JCL and Batch Command Syntax

 The following control statement can be used for CAZBATCH

 //CAZBATCH EXEC PGM=CAZBATCH,PARM='STCID=CAZ1'
 //STEPLIB  DD   DISP=SHR,DSN=SCAZAUTH
 //SYSPRINT DD   SYSOUT=*
 //SYSIN    DD   *
  NEW
   JOBNAME=(ADTMONO)
   DURATION=(1:00)
   SAMPLES=(1000)
   SYSCTRAN=(N)
   NONCTERM=(Y)
   RUNTOEOS=(N)
   NOTIFY=(ERIC)
   ACTIVE=(Y)
   EXPDAYS=(30)
   SYSTEMS=(ZT01)
   FEATURES=(CICS,DB2,DB2+,IMS,IMS+,MQS)
   CTRAN=(ALAD,TDB2)
   CTERM=(TRM*)
  ;
 /*
```

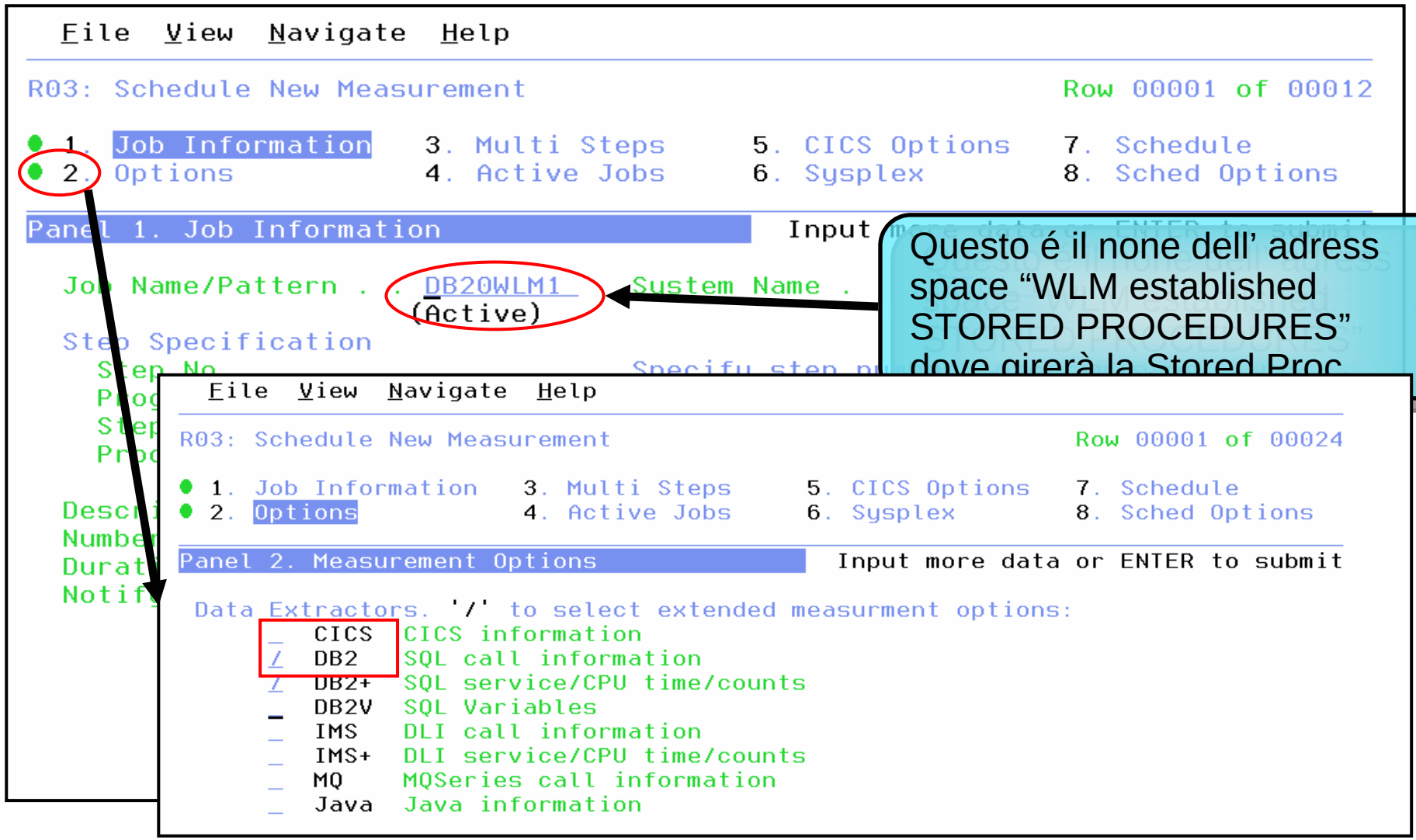
TNEW(Threshold) per attivare automaticamente una richiesta di misurazione



F04 – Report "SQL Activity by Statement"



Stored Procedures : un esempio di analisi



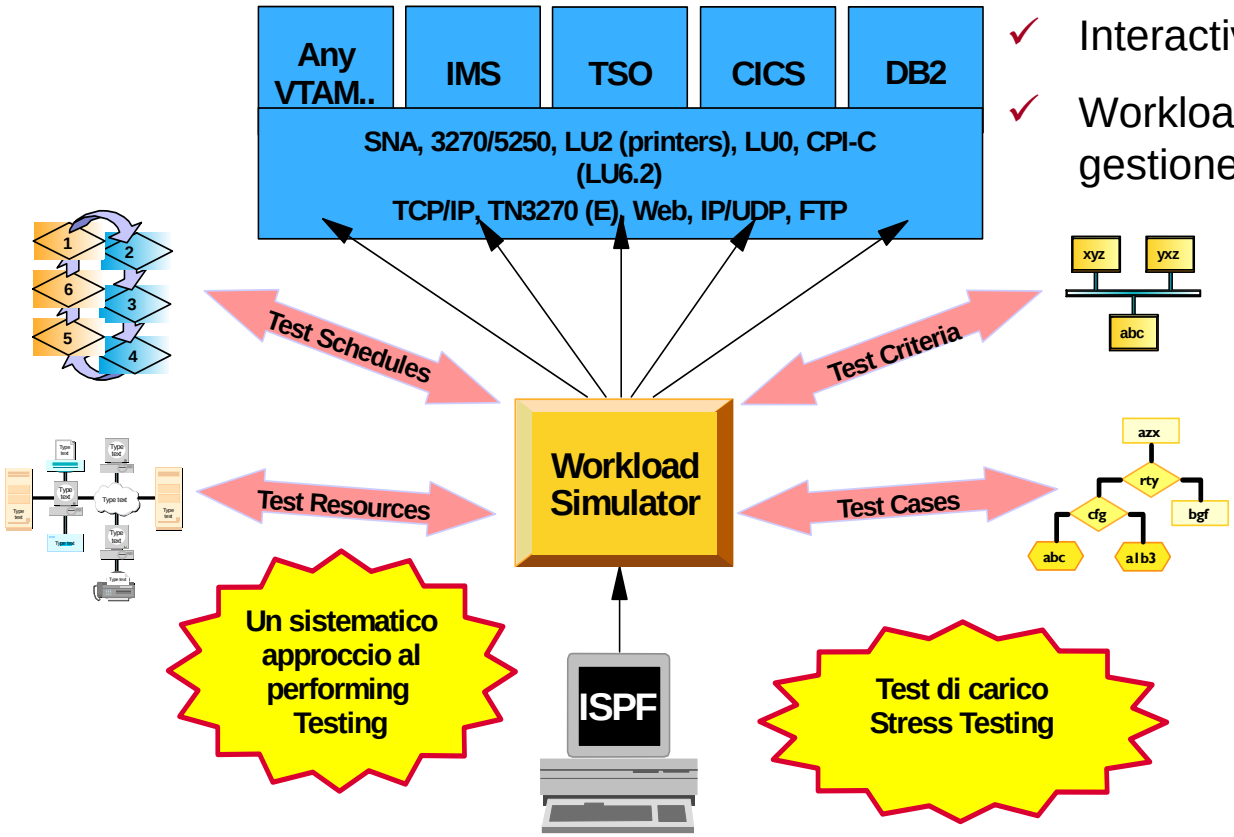
Come monitorare Distributed Data Facility?

```
F15: DB2 SQL CPU/Svc Time by Rq Loc (0416)                    Row 00001 of 00043

                                                Nbr of     --CPU Time--       --Svc Time--
Name     Plan/Pgm   Stmt£ SQL Functn           SQL Calls    Total    Mean       Total    Mean

9.173.153.17                                       254      0.04   0.00018      0.06   0.00023
→ D0004 SYSSH200       0 PREPARE                    64      0.01   0.00020      0.01   0.00021
               > INSERT INTO DB2PM.DB2C_SYSTEM (
               > DB2CS_BLOCKNO, DB2CS_DATA) VALU

→ D0005 SYSSH200       0 Remote SQL                 64                                  0034
               > INSERT INTO DB2PM.DB2C_SYSTEM (
               > DB2CS_BLOCKNO, DB2CS_DATA) VALUES (?,?,?)
               > (PREPARE of SQL was done at Stmt£ 0 Seqno D0004)

→ D0006 SYSSH200       0 PREPARE                    20      0.00   0.00021      0.00   0.00021
→ D0007 SYSSH200       0 Remote SQL                 20      0.00   0.00022      0.00   0.00037
→ D0001 SYSSH200       0 PREPARE                    10      0.00   0.00030      0.00   0.00030
→ D0003 SYSSH200       0 FETCH                      10      0.00   0.00015      0.00   0.00015
```

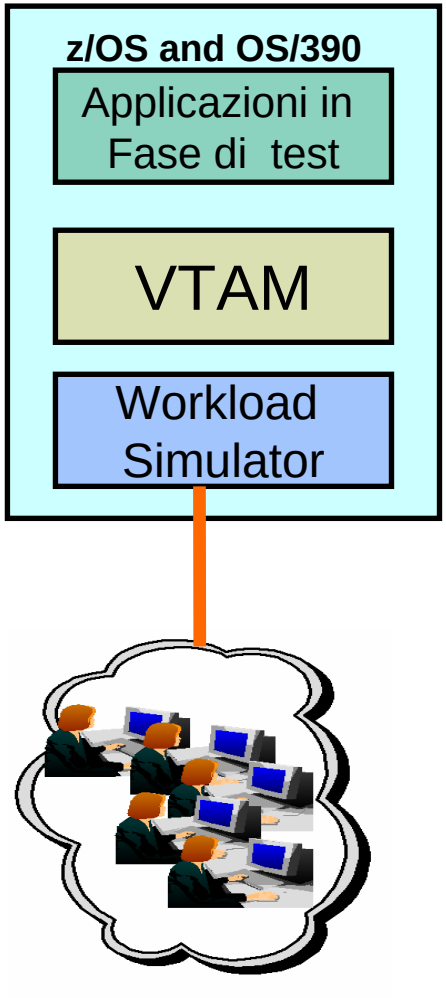
IP Address (**Requester Location**) del Client che effettua la richiesta

PD Tools - Workload Simulator

- ✓ Simula differenti terminali ed azioni di operatori.
- ✓ Supporta SNA, CPI-C (LU6.2) e TCP/IP.
- ✓ Interactive Data Capture
- ✓ Workload Simulator Test Manager per la gestione e la documentazione del test.



Overview delle Funzionalità di Workload Simulator



Features:

- Auto Generazione di Scripts simulazioni in Rete
- Controllo delle Risorse durante il Run
- Simula Differenti tipi di Azioni, Terminali o Programmi.
- Prevede Utility per l'Analisi Post-Test
- Cattura on_line le attività svolte dalle sessioni 3270 e crea automaticamente dei Test Scripts
- Un semplice linguaggio (STL) per modificare e creare scripts 3270 e TCP
- Run dello script per simulare il traffico di rete dal vivo delle applicazioni che girano sotto un Sistema Reale
  - Simulazione di un singolo user per testare la funzionalità applicativa
  - Simulare più users per generare un TEST di Carico
- Display e reports dei risultati del Test
- L'ultima PTF permette al Prodotto Rational TestManager di attivare Workload Simulator

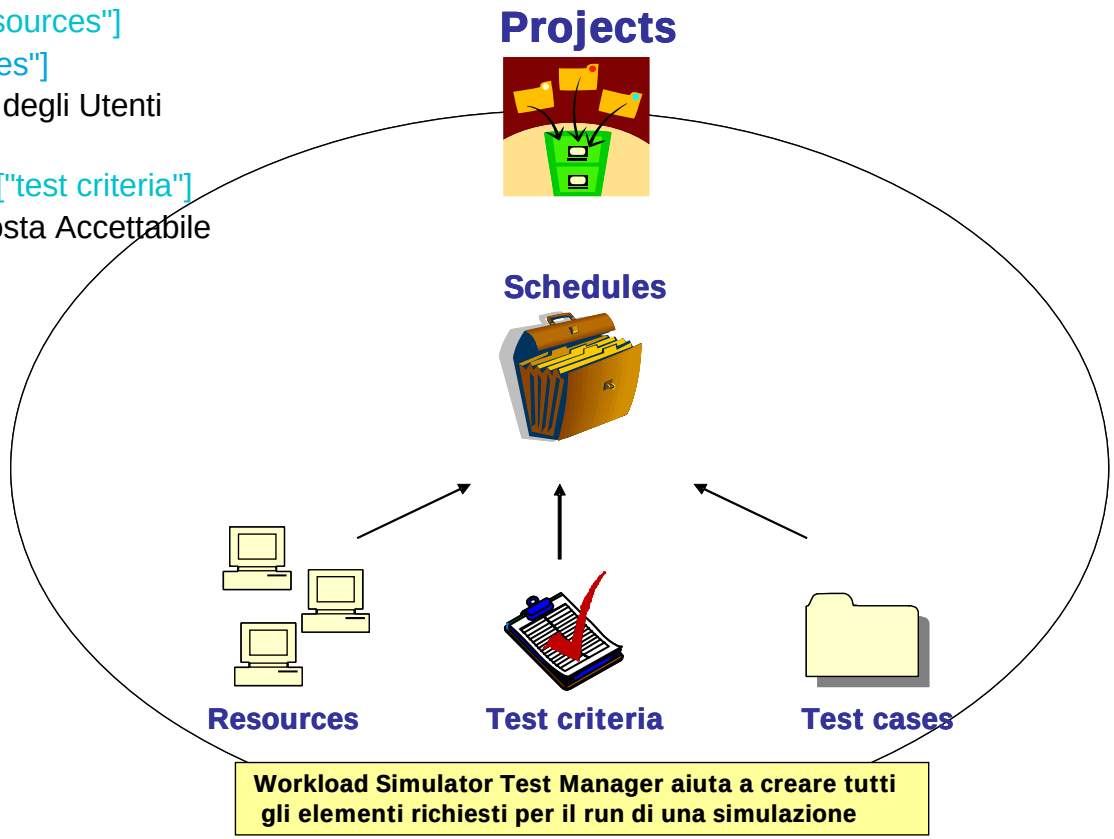
Benefits

- Consente di Analizzare e Realizzare (approccio sistematico) applicazioni di "Performance Testing "
- Simula "schedule multiple" per determinare l'impatto ambientale (nello specifico Sistema Operativo) dell'applicazione
- Utilizzato per Load-testing, Stress-testing, Regression Testing

Workload Simulator Test Manager

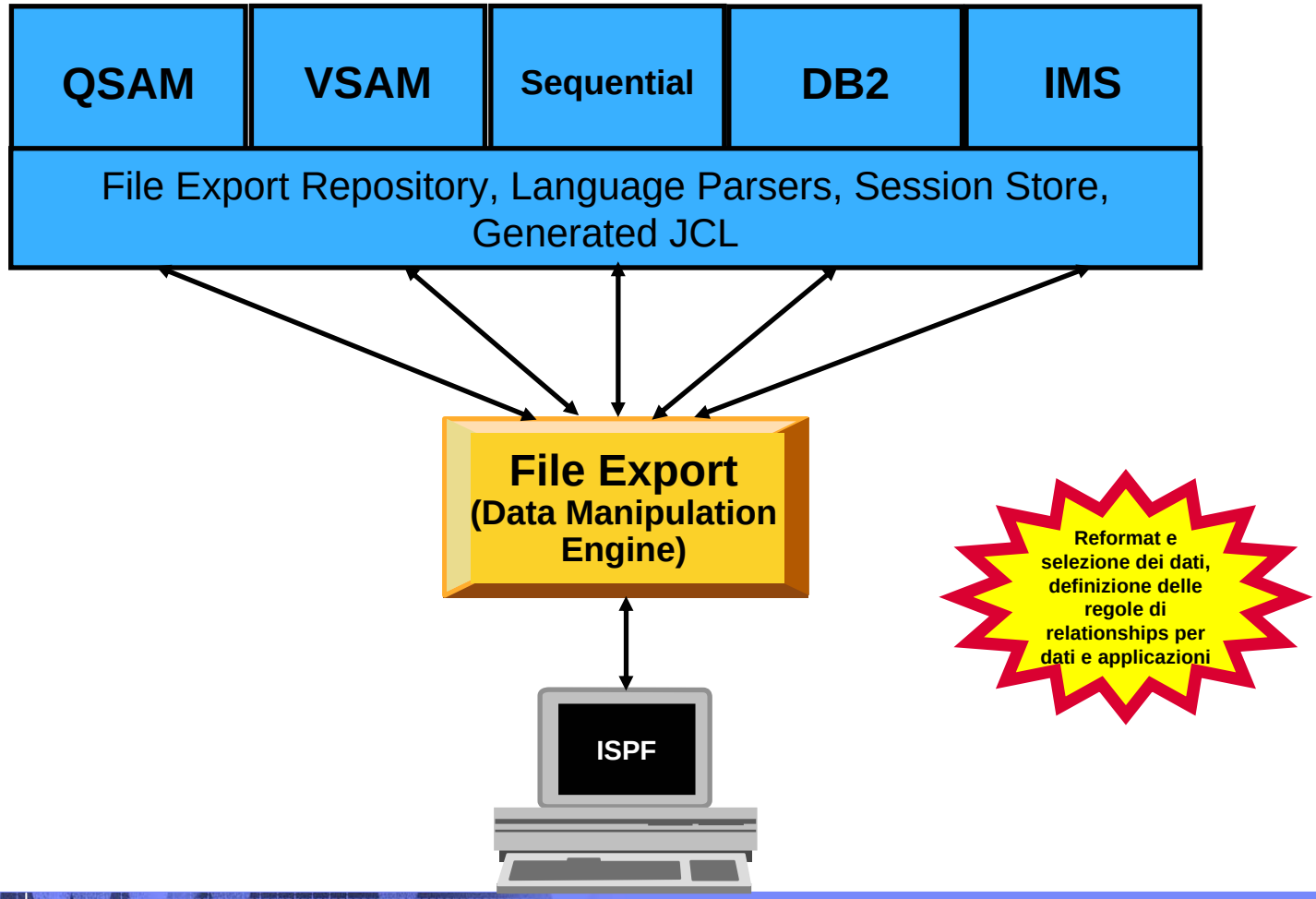
Come funziona?

- Step 1: Definire un "Test Schedule" per la simulazione
  - Quanti "Utenti Virtuali"? ["resources"]
  - Creare il Test case ["test cases"]
    - ripeteranno le azioni reali degli Utenti finali ["test schedules"]
  - Definire i parametri del Test ["test criteria"]
    - Esempio: il tempo di risposta Accettabile Response Time
- Step 2: Avvio del test (Run)
- Step 3: Analisi dei risultati
- Step 4: (optional)
  - Test are run again



File Export

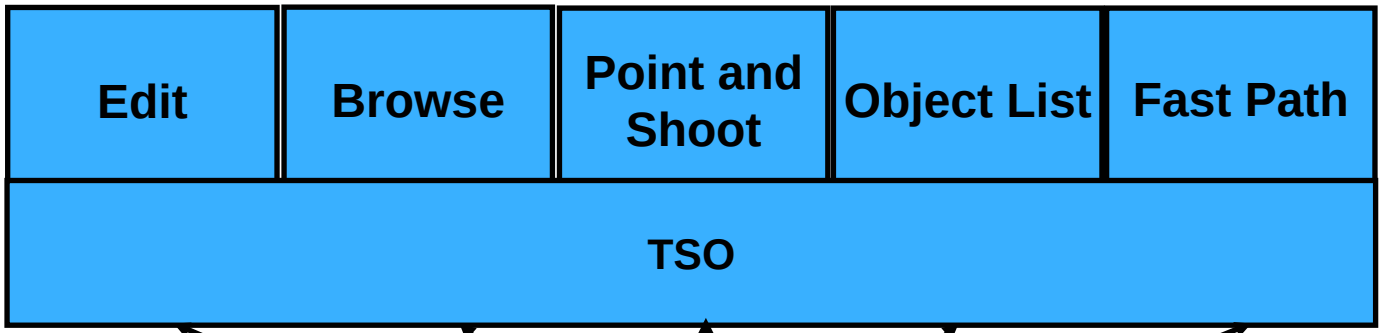
Una soluzione flessibile per esportare ed importare insiemi di dati relazionati

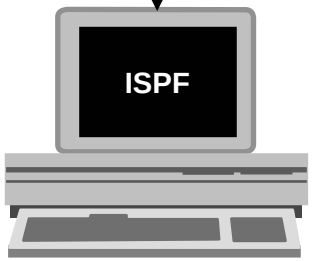


File Export : Utilities principali

- Utilizzato per esportare / importare insiemi di dati enterprise relazionati
- Consente la creazione di strutture dati del tipo “one-to-one”, “one-to-many” e “many-to-one”
- Supporta le regole di relationships già definite nelle applicazioni
- Include regole di trasformazione e “data selection” durante la fase di Import/Export
- Permette di proteggere I dati “sensibili”
- Supporta l’alterazione del contenuto dei dati durante la fase di copying
- Include un repository per la memorizzazione di informazioni persistenti relative ai dati memorizzati
- Offre utilities che aiutano a semplificare le attività di TEST o di migrazione di dati e Applicazioni su nuovi ambienti

ISPF Productivity Tool – *Migliora la produttività* in *TSO ISPF*



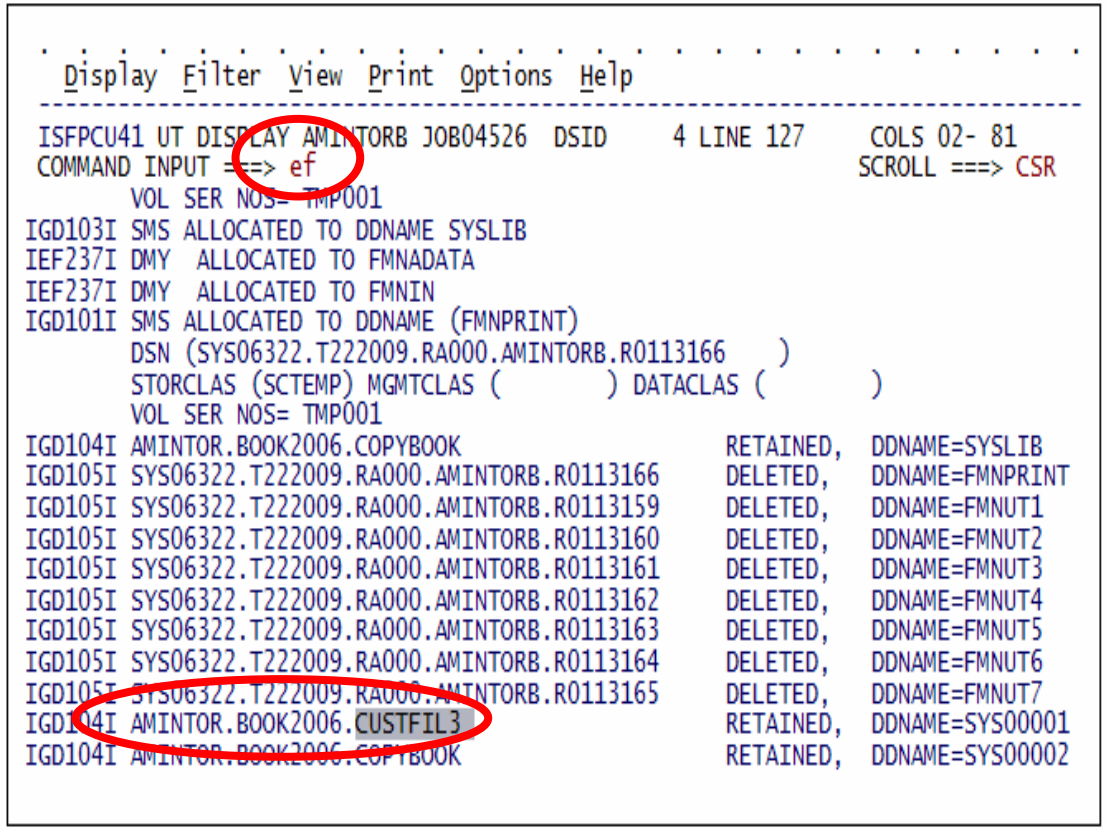


IBM ISPF Productivity Tool (*Spiffy*)

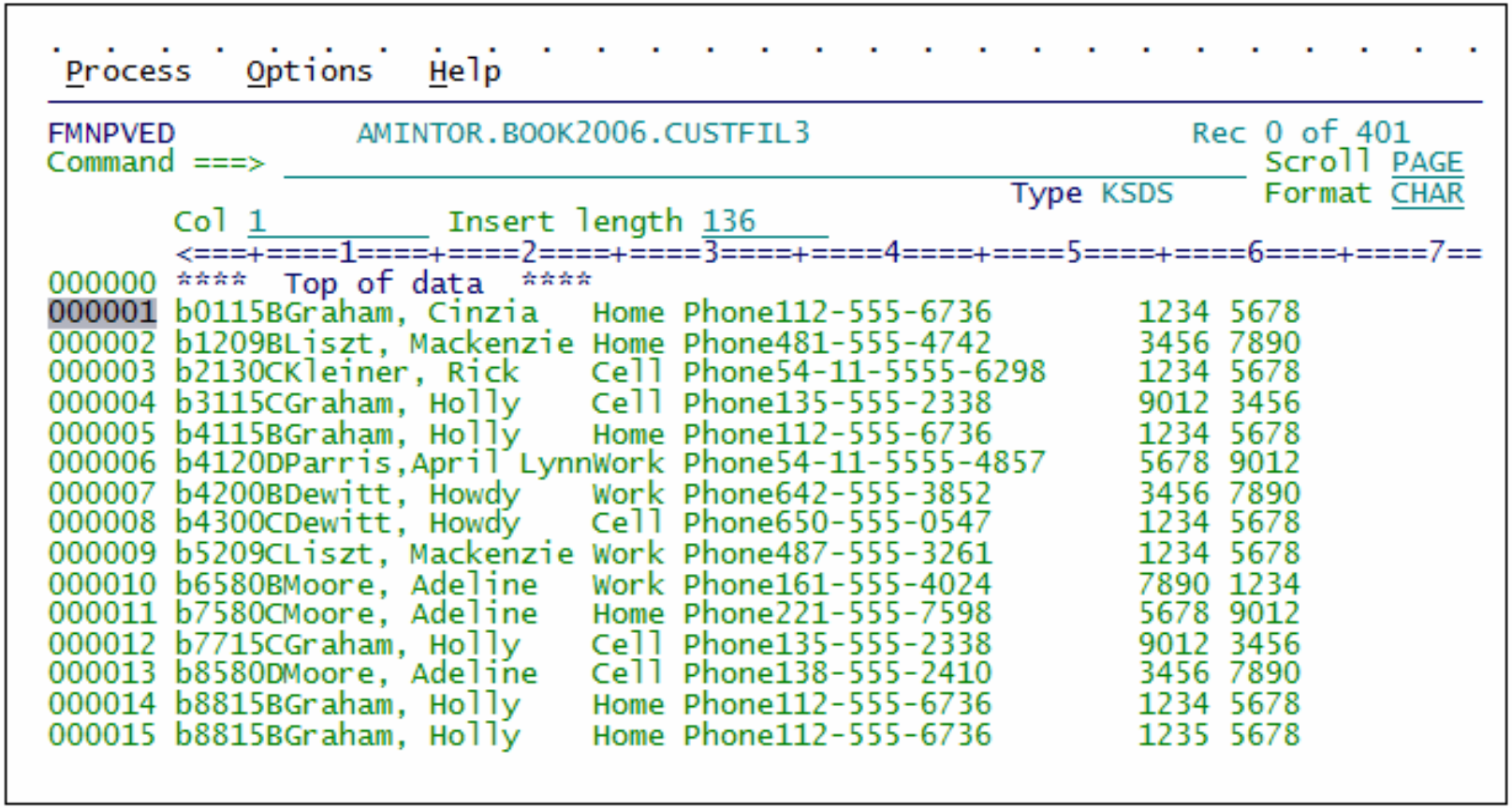
- **Vantaggi su:**
  - ✓ action bar
  - ✓ pop-up windows
  - ✓ point-and-shoot.
- **Perfettamente Integrato con ISPF**
- **I comandi che sono stati aggiunti riducono e semplificano le utility ISPF e la navigazione tra i pannelli**
- **Ulteriori Funzioni TSO/ISPF**
- **OLIST per semplificare i comandi e ridurre la navigazione tra i pannelli nel caso di "Accesso frequente a utility o datasets"**
- **Riduce la CPU usage, EXCP counts, migliora il "response time" e le performance ISPF: Il Browsing, editing, copying, displaying lists ed il finding sui Dati diventano più veloci.**

EDIT – Point and Shoot

- **Il membro XSAM viene visualizzato in Edit mode**
- Sulla Command Line digitare: Edit (senza premere Enter)
- Posizionare il cursore sulle riga con il dataset CUSTFILE DD
  - *Nota: il nome del dataset conterrà il levels TEAM1.ADLAB.CUSTFILE*
  - Press Enter
  - *Una sessione successiva parte automaticamente con il dataset TEAMn.ADLAB.CUSTFILE*



Edit sul File con invoke di File Manager



IBM Problem Determination Tools

File Manager for z/OS

- Tool utilizzato per gestire diverse tipologie di dati (VSAM, DB2, CICS, IMS) con formati e dispositivi di storage differenti

Fault Analyzer ile Manager for z/OS

- per aiutare ad individuare rapidamente la causa dell'abend Applicativo ed analizzare informazioni sul punto di failure

Debug Tool Utilities & Advanced Functions for z/OS

- Debug del Sorgente per migliorare la produttività degli Sviluppatori

Application Performance Analyzer

- Monitor delle performance a livello Applicativo

Workload Simulator for z/OS and OS/390

- Regression e Load testing di Applicazioni in ambiente z/OS

Migration Utility

- Converte I programmi CA-Easytrieve Plus® in standard IBM COBOL

IBM Problem Determination Tools

Rational Function Tester Extension

- a livello Workstation, per il regression testing di Applicazioni z/OS

Rational Performance Tester for z/OS

- Utilizza la potenza del Sistema z/OS per validare la scalabilità delle Applicazioni Web prima del rilascio

File Export for z/OS

- Export ed Import di SET di dati sequenziali DB2, IMS, VSAM correlati e relazionati dall'ambiente di Produzione per il Test delle Applicazioni

Application Time Facility

- Permette di effettuare simulazioni date/time in ambiente mainframe

ISPF Productivity Tool

- Tool integrato con ISPF, migliora e semplifica l'utilizzo delle funzioni esistenti