

Formação COBOL

Professor: Vagner Bellacosa

Disciplina: Linguagem de Programação COBOL

COBOL



1) Vagner Bellacosa seu facilitador

Analista programador desde 1989, onde comecei como auxiliar e tecnólogo em processamento de dados desbravando os primórdios da computação brasileira, um eterno aprendiz em processos Mainframe..

Desde então trabalhei em centenas de projetos, em 4 países e dezenas de instituições financeiras, ora como funcionário, consultor externo e freelancer.

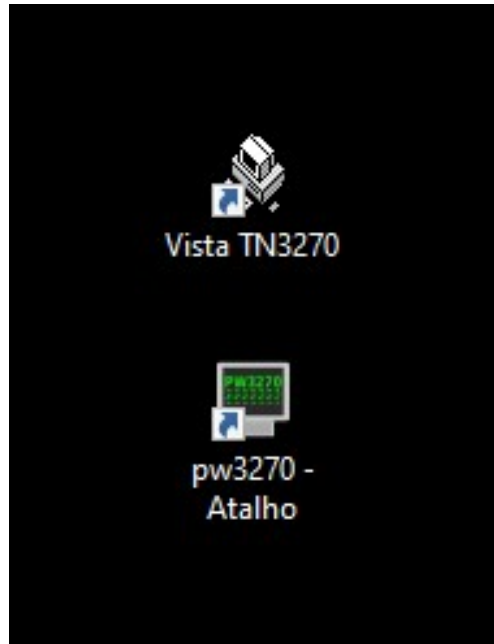
A mais memorável foi o Banco REAL, uma verdadeira escola, onde aprendi muito e tive a oportunidade de participar no aliciante Projeto Y2K, o temível bug do milênio.

Particpei em projetos na CESP, Fundação CESP, Transbrasil, ABSA, Real Seguros, BPN, Skandia, DGITA, BES, CGD, BPI, Barclay, Skandia, IBM Italia, Sistemi Informativi, Unicredit, Zurich Assicurazione, Banco Safra e Banco Itaú.

Atualmente trabalho na Spread no Projeto BRB em Brasília, via remoto.

COBOL

Modulo 05.01 – Configurações de Ambiente



- 1) SDSF
- 2) Codificação
- 3) Massa de Testes
- 4) Restart de programa
- 5) O COBOL em detalhes
- 6) As 4 divisões
- 7) Primeiro Programa
- 8) Compilação
- 9) Dúvidas

SDSF

Ferramenta de Monitoramento do Sistema.

```

Menu  Utilities  Compilers  Options  Status  Help
-----
ISPF Primary Option Menu

Option ==> SD

0  Settings      Terminal and user parameters      User ID . . : KC02746
1  View          Display source data or listings    Time. . . . : 09:40
2  Edit          Create or change source data      Terminal. . : 3278A
3  Utilities     Perform utility functions         Screen. . . : 1
4  Foreground    Interactive language processing   Language. . : ENGLISH
5  Batch         Submit job for language processing  Appl ID . . : ISR
6  Command       Enter TSO or Workstation commands   TSO logon : DBPROCCG
7  Dialog_Test   Perform dialog testing             TSO prefix:
8  LM Facility   Library administrator functions    System ID : S0W1
9  IBM Products  IBM program development products    MVS acct. : ACCT#
10 SCLM          SW Configuration Library Manager   Release . . : ISPF 7.4
11 Workplace     ISPF Object/Action Workplace

----- Other Install Products -----

SD SDSF          System Display and Search Facility
IP IPCS          Inter Problem Control Facility

*DB2@PRI DSLIST  DB2@PRIM DB2@PRIM -VIEWFIL WORK
MA 0.3 05/24/23.144 10:39AM zos.kctr.marist.edu A 13,11

```

Aplicativo: SDSF

System Display and Search Facility

Monitor de JOBs, recursos do sistema e log.

```

Option ==> SD

0  Settings      Terminal

```

SDSF

Outros comandos disponíveis

```

Display Filter View Print Options Search Help
-----
SDSF MENU V2R4M0 SVSCPLEX S0W1 LINE 1-18 (64)
COMMAND INPUT ==> SCROLL ==> CSR
PREFIX=*MSTR DEST=(ALL) OWNER=* SORT=NAME/A SYSNAME=
NP NAME Description Group Status
  APF APF data sets System
  AS Address space memory Jobs
  BPX0 OMVS options OMVS
  CFC CF Connections Sysplex
  CFS CF Structures Sysplex
  CK Health checker System
  CSR Common storage remaining Memory
  DA Active users Jobs
  DEV Device activity Devices
  DYNX Dynamic exits System
  EMCS Extended consoles Sysplex
  ENC Enclaves WLM
  ENQ Enqueues System
  ENQC Enqueue contention System
  ENQD Enqueued datasets Sysplex
  FS File systems OMVS
  GT Generic tracker System
*SDSF DSLIST DB2@PRIM DB2@PRIM -VIEWFIL WORK
M 0.2 05/24/23.144 10:42AM zos.kctr.marist.edu a 4,21

```

```

Display Filter View Print Options Search Help
-----
SDSF MENU V2R4M0 SVSCPLEX S0W1 LINE 18-34 (64)
COMMAND INPUT ==> SCROLL ==> CSR
PREFIX=*MSTR DEST=(ALL) OWNER=* SORT=NAME/A SYSNAME=
NP NAME Description Group Status
  H Held output Queue Output
  I Input Queue Jobs
  INIT Initiators JES
  JC Job classes JES
  JES Job entry subsystems JES
  JG Job groups JES
  JRI JES resource information JES
  JRJ JES resource by job JES
  LINE Lines Network
  LNK Link list data sets System
  LOG System log Log
  LPA Link pack data sets System
  LPD Link pack directory System
  MAS Members in the MAS JES
  NA Network activity Network
  NC Network connections Network
  NODE Nodes Network
*SDSF DSLIST DB2@PRIM DB2@PRIM -VIEWFIL WORK
M 0.1 05/24/23.144 10:43AM zos.kctr.marist.edu a 4,21

```

SDSF

Outros comandos disponíveis

```

Display Filter View Print Options Search Help
-----
SDSF MENU V2R4M0 SVSCPLEX S0W1 LINE 30-46 (64)
COMMAND INPUT ==> SCROLL ==> CSR
PREFIX=*MSTR DEST=(ALL) OWNER=* SORT=NAME/A SYSNAME=
NP NAME Description Group Status
LPD Link pack directory System
MAS Members in the MAS JES
NA Network activity Network
NC Network connections Network
NODE Nodes Network
NS Network servers Network
O Output Queue Output
PAG Page data sets System
PARM Parmlib data sets System
PR Printers JES
PROC Proclib data sets JES
PS Processes OMVS
PUN Punches JES
RDR Readers JES
REPC WLM report classes WLM
RES WLM resources WLM
RGRP WLM resource groups WLM
*SDSF DSLIST DB2@PRIM DB2@PRIM -VIEWFIL WORK
M0 0.2 05/24/23.144 10:44AM zos.kctr.marist.edu a 4,21

```

```

Display Filter View Print Options Search Help
-----
SDSF MENU V2R4M0 SVSCPLEX S0W1 LINE 40-56 (64)
COMMAND INPUT ==> SCROLL ==> CSR
PREFIX=*MSTR DEST=(ALL) OWNER=* SORT=NAME/A SYSNAME=
NP NAME Description Group Status
PROC Proclib data sets JES
PS Processes OMVS
PUN Punches JES
RDR Readers JES
REPC WLM report classes WLM
RES WLM resources WLM
RGRP WLM resource groups WLM
RM Resource monitor JES
RMA Resource monitor alerts JES
SE Scheduling environments WLM
SMSC SMS storage groups Devices
SMSV SMS volumes Devices
SO Spool offload JES
SP Spool volumes JES
SR System requests Log
SRVC Service classes WLM
SSI Subsystem information System
*SDSF DSLIST DB2@PRIM DB2@PRIM -VIEWFIL WORK
M0 0.4 05/24/23.144 10:44AM zos.kctr.marist.edu a 4,21

```

SDSF

Outros comandos disponíveis

```

Display Filter View Print Options Search Help
-----
SDSF MENU V2R4M0 SVSCPLEX S0W1 LINE 30-46 (64)
COMMAND INPUT ==> SCROLL ==> CSR
PREFIX=*MSTR DEST=(ALL) OWNER=* SORT=NAME/A SYSNAME=
NP NAME Description Group Status
LPD Link pack directory System
MAS Members in the MAS JES
NA Network activity Network
NC Network connections Network
NODE Nodes Network
NS Network servers Network
O Output Queue Output
PAG Page data sets System
PARM Parmlib data sets System
PR Printers JES
PROC Proclib data sets JES
PS Processes OMVS
PUN Punches JES
RDR Readers JES
REPC WLM report classes WLM
RES WLM resources WLM
RGRP WLM resource groups WLM
*SDSF DSLIST DB2@PRIM DB2@PRIM -VIEWFIL WORK
M0 0.2 05/24/23.144 10:44AM zos.kctr.marist.edu a 4,21

```

```

Display Filter View Print Options Search Help
-----
SDSF MENU V2R4M0 SVSCPLEX S0W1 LINE 40-56 (64)
COMMAND INPUT ==> SCROLL ==> CSR
PREFIX=*MSTR DEST=(ALL) OWNER=* SORT=NAME/A SYSNAME=
NP NAME Description Group Status
PROC Proclib data sets JES
PS Processes OMVS
PUN Punches JES
RDR Readers JES
REPC WLM report classes WLM
RES WLM resources WLM
RGRP WLM resource groups WLM
RM Resource monitor JES
RMA Resource monitor alerts JES
SE Scheduling environments WLM
SMSC SMS storage groups Devices
SMSV SMS volumes Devices
SO Spool offload JES
SP Spool volumes JES
SR System requests Log
SRVC Service classes WLM
SSI Subsystem information System
*SDSF DSLIST DB2@PRIM DB2@PRIM -VIEWFIL WORK
M0 0.4 05/24/23.144 10:44AM zos.kctr.marist.edu a 4,21

```

SDSF

Outros comandos disponíveis

```

Display Filter View Print Options Search Help
-----
SDSF MENU V2R4M0 SVSCPLEX SOW1 LINE 53-64 (64)
COMMAND INPUT ==> SCROLL ==> CSR
PREFIX=*MSTR DEST=(ALL) OWNER=* SORT=NAME/A SYSNAME=
NP NAME Description Group Status
SP Spool volumes JES
SR System requests Log
SRVC Service classes WLM
SSI Subsystem information System
ST Status of jobs Jobs
SYM System symbols System
SYS System information System
ULOG User session log Log
VMAP Virtual storage map Memory
WKLD WLM workloads WLM
WLM WLM policy data WLM
XCFM XCF groups and members Sysplex

*SDSF DLIST DB2@PRIM DB2@PRIM -VIEWFIL WORK
M 0.1 05/24/23.144 10:44AM zos.kctr.marist.edu a 4,21

```

Aplicativo: SDSF

Não é escopo de nossa aula explicar cada comando do SDSF, existindo formação específica para monitorar o Sistema, Performance e Otimização

SDSF

Visualizando a execução dos JCLS

```

Display Filter View Print Options Search Help
-----
SDSF MENU V2R4M0 SVSCPLEX SOW1 LINE 53-64 (64)
COMMAND INPUT ==> ST SCROLL ==> CSR
PREFIX=*MSTR DEST=(ALL) OWNER=* SORT=NAME/A SYSNAME=
NP NAME Description Group Status
SP Spool volumes JES
SR System requests Log
SRVC Service classes WLM
SSI Subsystem information System
ST Status of jobs Jobs
SYM System symbols System
SYS System information System
ULOG User session log Log
VMAP Virtual storage map Memory
WKLD WLM workloads WLM
WLM WLM policy data WLM
XCFM XCF groups and members Sysplex

*SDSF DLIST DB2@PRIM DB2@PRIM -VIEWFIL WORK
MA 0.1 05/24/23.144 10:48AM zos.kctr.marist.edu a 9,67

```

Comando ST

Status of JOBs

Painel de controle, onde acessamos a execução dos JCLS, verificando o Return Code, ABEND e arquivos gerados.

```

SDSF MENU V2R4M0 SVSCPLEX SOW1
COMMAND INPUT ==> ST
PREFIX=*MSTR DEST=(ALL) OWNER=* SOR
NP NAME Description

```

SDSF

Outros comandos disponíveis

```

Display Filter View Print Options Search Help
-----
SDSF MENU V2R4M0 SVSCPLEX SOW1 LINE 53-64 (64)
COMMAND INPUT ==> ST SCROLL ==> CSR
PREFIX=*MSTR DEST=(ALL) OWNER=* SORT=NAME/A SYSNAME=
NP NAME Description Group Status
SP Spool volumes JES
SR System requests Log
SRVC Service classes WLM
SSI Subsystem information System
ST Status of jobs Jobs
SYM System symbols System
SYS System information System
ULOG User session log Log
VMAP Virtual storage map Memory
WKLD WLM workloads WLM
WLM WLM policy data WLM
XCFM XCF groups and members Sysplex

*SDSF DLIST DB2@PRIM DB2@PRIM -VIEWFIL WORK
M 0.1 05/24/23.144 10:48AM zos.kctr.marist.edu a 9,67

```

Comando ST

Status of JOBS

Painel de controle, onde acessamos a execução dos JCLS, verificando o Return Code, ABEND e arquivos gerados.

```

SDSF MENU V2R4M0 SVSCPLEX SOW1
COMMAND INPUT ==> ST
PREFIX=*MSTR DEST=(ALL) OWNER=* SORT=NAME/A
NP NAME Description

```

SDSF

Selecionando um grupo de JCLS

```

Display Filter View Print Options Search Help
-----
SDSF MENU V2R4M0      SVSCPLEX  SOW1      LINE 53-64 (64)
COMMAND INPUT ==> ST      SCROLL ==> CSR
PREFIX=*MSTR  DEST=(ALL)  OWNER=*  SORT=NAME/A  SYSNAME=
NP  NAME      Description      Group  Status
SP      Spool volumes      JES
SR      System requests      Log
SRVC     Service classes      WLM
SSI      Subsystem information  System
ST      Status of jobs      Jobs
SYM      System symbols      System
SYS      System information  System
ULOG     User session log      Log
VMAP     Virtual storage map    Memory
WKLD     WLM workloads      WLM
WLM      WLM policy data      WLM
XCFM     XCF groups and members Sysplex

*SDSF  DSLIST  DB2@PRIM DB2@PRIM -VIEWFIL WORK
MA 0.1 05/24/23.144 10:48AM zos.kctr.marist.edu a 9,67

```

Comando PRE

Predefine um grupo de Jobs,
pode usar um nome ou
mascara de pesquisa.

```

SDSF MENU V2R4M0      SVSCPLEX  SOW1
COMMAND INPUT ==> ST
PREFIX=*MSTR  DEST=(ALL)  OWNER=*  SORT=NAME/A
NP  NAME      Description

```

SDSF

Menu Suspenso

Display

```

Display Filter View Print Options Search Help
-----
- 1. Panels... ALL CLASSES LIN
  2. Logs...
  3. Exit SDSF LL) OWNER=* SORT=Pos/D SYSNAME=
                Owner Prty Queue C Pos SA
CATCOB00 JOB06094 KC02746 1 PRINT A 132
  
```

Filter

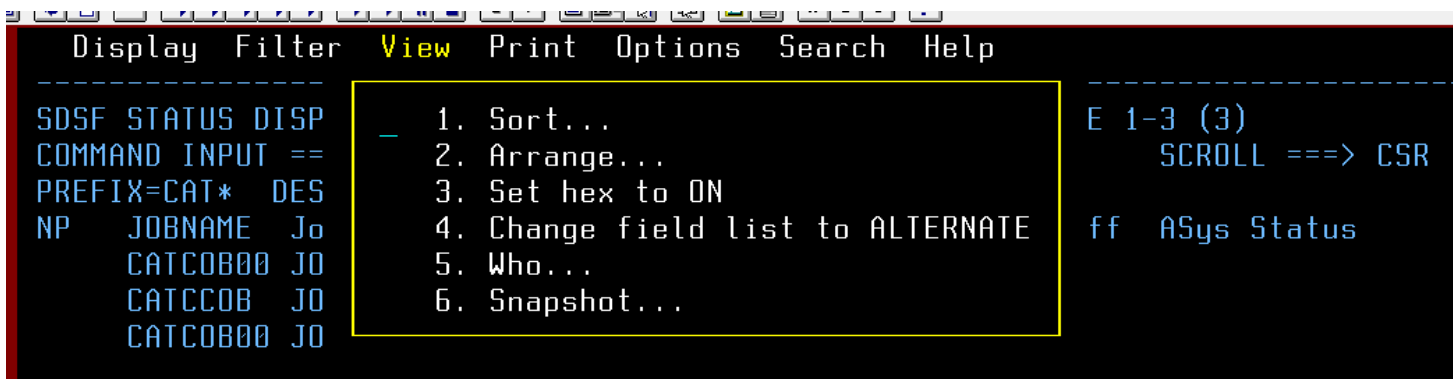
```

Display Filter View Print Options Search Help
-----
SDSF STA - 1. Filter... LINE 1-3 (3)
COMMAND 2. Prefix of jobname... SCROLL ==> CSR
PREFIX=C 3. Owner... s/D SYSNAME=
NP JOB 4. Destination... e C Pos SAff ASys Status
CAT 5. System name... T A 132
CAT 6. Change APPC to OFF T A 125
CAT 7. Replies on the Log... T A 124
  
```

SDSFF

Menu Suspenso

VIEW



Display Filter **View** Print Options Search Help

```

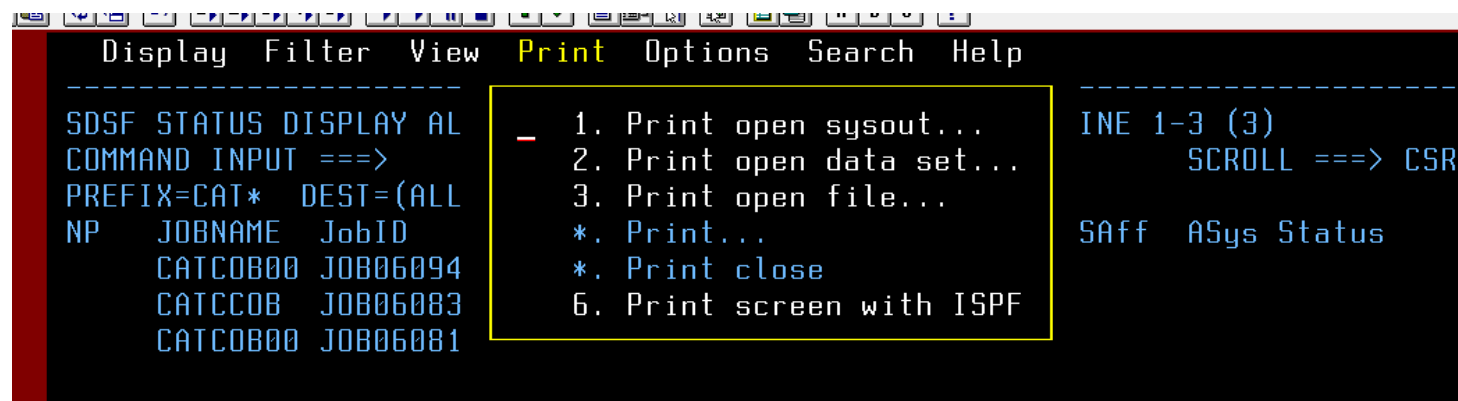
-----
SDSF STATUS DISP
COMMAND INPUT ==
PREFIX=CAT* DES
NP  JOBNAME  Jo
    CATCOB00 JO
    CATCCOB  JO
    CATCOB00 JO
  
```

- 1. Sort...
- 2. Arrange...
- 3. Set hex to ON
- 4. Change field list to ALTERNATE
- 5. Who...
- 6. Snapshot...

```

-----
E 1-3 (3)
      SCROLL ==> CSR
ff  ASys Status
  
```

PRINT



Display Filter View **Print** Options Search Help

```

-----
SDSF STATUS DISPLAY AL
COMMAND INPUT ==>
PREFIX=CAT* DEST=(ALL
NP  JOBNAME  JobID
    CATCOB00 JOB06094
    CATCCOB  JOB06083
    CATCOB00 JOB06081
  
```

- 1. Print open sysout...
- 2. Print open data set...
- 3. Print open file...
- *. Print...
- *. Print close
- 6. Print screen with ISPF

```

-----
INE 1-3 (3)
      SCROLL ==> CSR
SAff  ASys Status
  
```

SDSFF

Menu Suspenso

OPTION

```

Display Filter View Print Options Search Help
-----
SDSF STATUS DISPLAY ALL CLASS
COMMAND INPUT ==>
PREFIX=CAT* DEST=(ALL) OWNE
NP  JOBNAME  JobID   Owner
    CATCOB00 JOB06094 KC0274
    CATCCOB  JOB06083 KC02746  1 PRINT    A   125
    CATCOB00 JOB06081 KC02746  1 PRINT    A   124
    
```

- 1. General...
 2. Browse and Print...
 3. Screen...
 4. Console and Response...

(3)
 ROLL ==> CSR
 ys Status

SEARCH

```

Display Filter View Print Options Search Help
-----
SDSF STATUS DISPLAY ALL CLASSES
COMMAND INPUT ==>
PREFIX=CAT* DEST=(ALL) OWNER=* SORT=Pos/D SYSNAME=
NP  JOBNAME  JobID   Owner   Prty Queue    C   Pos SAff  ASys Status
    
```

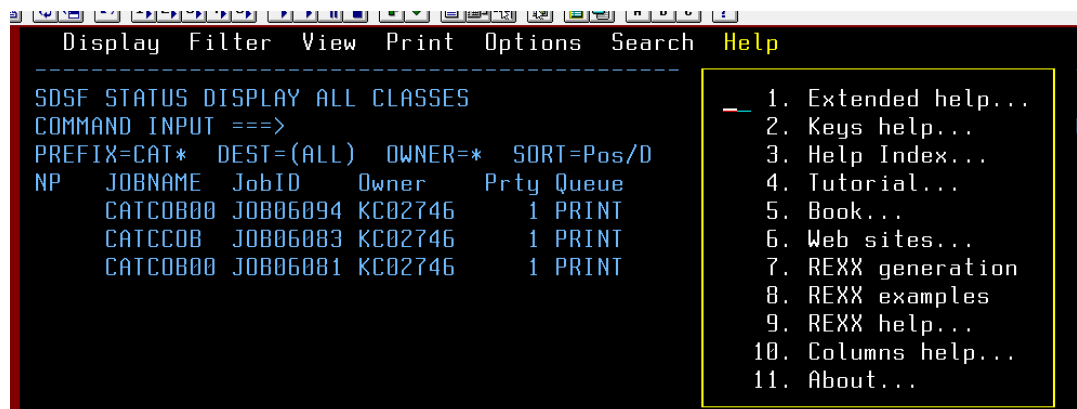
- 1. Search help...

(3)
 ROLL ==> CSR

SDSF

Menu Suspenso

HELP



The screenshot shows the SDSF HELP menu. The menu is displayed in a window with a title bar and a menu bar. The menu bar includes 'Display', 'Filter', 'View', 'Print', 'Options', 'Search', and 'Help'. The 'Help' menu is open, showing a list of 11 options. The first option, '1. Extended help...', is highlighted with a yellow box. The main window displays the following text:

```
SDSF STATUS DISPLAY ALL CLASSES
COMMAND INPUT ==>
PREFIX=CAT*  DEST=(ALL)  OWNER=*  SORT=Pos/D
NP  JOBNAME  JobID    Owner    Prty Queue
   CATCOB00  JOB06094  KC02746    1  PRINT
   CATCC00   JOB06083  KC02746    1  PRINT
   CATCOB00  JOB06081  KC02746    1  PRINT
```

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SDSF

SDSF.ST – Status do JOB

```

Display Filter View Print Options Search Help
-----
SDSF STATUS DISPLAY ALL CLASSES                               LINE 1-3 (3)
COMMAND INPUT ==>                                           SCROLL ==> CSR
PREFIX=CAT*  DEST=(ALL)  OWNER=*  SORT=Pos/D  SYSNAME=
NP  JOBNAME  JobID   Owner   Prty Queue   C   Pos  SAff  ASys Status
?  CATCOB00 JOB06094 KC02746   1 PRINT   A   132
-  CATCCOB  JOB06083 KC02746   1 PRINT   A   125
   CATCOB00 JOB06081 KC02746   1 PRINT   A   124

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*SDSF  DSLIST  DB20PRIM DB20PRIM -VIEWFIL WORK
M01 0.1 05/24/23.144 02:38PM zos.kctr.marist.edu 1 a 7,2

```

Comando ?

Ver todos os cartões
STEP e seus detalhes
de processamento

SDSF

SDSF.ST – Status do JOB

```

Display Filter View Print Options Search Help
-----
SDSF STATUS DISPLAY ALL CLASSES                               LINE 1-3 (3)
COMMAND INPUT ==>                                           SCROLL ==> CSR
PREFIX=CAT*  DEST=(ALL)  OWNER=*  SORT=Pos/D  SYSNAME=
NP  JOBNAME  JobID  Owner  Prty Queue  C  Pos  SAff  ASys Status
?  CATCOB00  JOB06094  KC02746  1 PRINT  A  132
   CATCCOB  JOB06083  KC02746  1 PRINT  A  125
   CATCOB00  JOB06081  KC02746  1 PRINT  A  124

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*SDSF  DSLIST  DB20PRIM DB20PRIM -VIEWFIL WORK
MA 0.1 05/24/23.144 02:38PM zos.kctr.marist.edu 1 a 7,2

```

Comando ?

Ver todos os cartões
STEP e seus detalhes
de processamento

```

COMMAND INPUT
PREFIX=CAT*  DEST=(ALL)
NP  DDNAME  StepName
   JESMSGLG  JES2
   JESJCL    JES2
   JESYSMSG  JES2
   SYSPRINT  CATCOB
   SYSPRINT  CATCOB

```

SDSF

SDSF.ST – Status do JOB

```

Display Filter View Print Options Search Help
-----
SDSF JOB DATA SET DISPLAY - JOB CATCOB00 (JOB06094)   LINE 1-5 (5)
COMMAND INPUT ==>                                     SCROLL ==> CSR
PREFIX=CAT* DEST=(ALL) OWNER=* SYSNAME=
NP  DDNAME  StepName ProcStep DSID Owner      C Dest              Rec-Cnt Page
   JESMSG LG JES2          2 KC02746 T LOCAL              19
   JESJCL   JES2          3 KC02746 T LOCAL              75
   JESYSMSG JES2          4 KC02746 T LOCAL              95
   SYSPRINT CATCOB      COB    101 KC02746 T LOCAL             637
   SYSPRINT CATCOB      LKED   102 KC02746 A LOCAL             186

*SDSF
M0 0.1 05/24/23.144 03:11PM zos.kctr.marist.edu a 4,21

```

Navegando

[PF7] Page Up

[PF8] Page Down

[PF10] CSR a Direita

[PF11] CSR a Esquerda

DDNAME	C	SegID	DSName	Chars
JESMSG LG	5		KC02746.CATCOB00.JOB06094.D0000002.JESMSG LG	****,*
JESJCL	5		KC02746.CATCOB00.JOB06094.D0000003.JESJCL	****,*
JESYSMSG	5		KC02746.CATCOB00.JOB06094.D0000004.JESYSMSG	****,*
SYSPRINT	5		KC02746.CATCOB00.JOB06094.D0000101.?	****,*
SYSPRINT	5		KC02746.CATCOB00.JOB06094.D0000102.?	****,*

TSO

Teclas de Função

```

F1=HELP      F2=SPLIT      F3=END      F4=RETURN      F5=IFIND      F6=BOOK
F7=UP        F8=DOWN      F9=SWAP lis F10=LEFT      F11=RIGHT      F12=RETRIEVE
*SDSF

MA | Display Filter View Print Options Search Help | edu a 4,21
-----
SDSF JOB DATA SET DISPLAY - JOB CATC0800 (JOB06094) LINE 1-5 (5)
COMMAND INPUT ==> SCROLL ==> CSR
PREFIX=CAT* DEST=(ALL) OWNER=* SYSNAME=
NP DDNAME C SegID DSName Chars
JESMSG LG 5 KC02746.CATC0800.JOB06094.D0000002.JESMSG LG ****,****,**
JESJCL 5 KC02746.CATC0800.JOB06094.D0000003.JESJCL ****,****,**
JESYSMSG 5 KC02746.CATC0800.JOB06094.D0000004.JESYSMSG ****,****,**
SYSPRINT 5 KC02746.CATC0800.JOB06094.D0000101.? ****,****,**
SYSPRINT 5 KC02746.CATC0800.JOB06094.D0000102.? ****,****,**

F1=HELP      F2=SPLIT      F3=END      F4=RETURN      F5=IFIND      F6=BOOK
F7=UP        F8=DOWN      F9=SWAP lis F10=LEFT      F11=RIGHT      F12=RETRIEVE
*SDSF

MA | 0.2 05/24/23.144 03:16PM zos.kctr.marist.edu a 4,21

```

Comando : PFSHOW

Habilita a exibição das teclas de função nas linhas 22 e 23.

SDSF

SDSF.ST – View - Arrange

```

Filter View Print Options Search Help

                                Arrange                                Row 1 to 8 of 79

Command ==> _____

To move a column, select with / (// for a block), then type A
(after) or B (before). Special function keys:
F5/17=Refresh list  F11/23=Clear input  F6/18=Default order

      NP width      _____  Current width: 4

      Column        Width  Description
      -----
      StepName      8
      ProcStep      8
      DSID           4
      Owner         8
      C              1
      Dest          18
      Rec-Cnt       7
      Page-Cnt      8
      F1=Help      F2=Split  F3=Cancel  F5=Refresh  F6=Default
      F7=Bkwd      F8=Fwd   F9=Swap   F11=Clear  F12=Cancel
  
```

Na execução retornam 79 informações sobre o JOB, que podem ser reordenada de acordo com sua necessidade.

SDSF

SDSF.ST – Consulta : JES2

```

Display Filter View Print Options Search Help
-----
SDSF JOB DATA SET DISPLAY - JOB CATCOB00 (JOB06094)   LINE 1-5 (5)
COMMAND INPUT ==>                                     SCROLL ==> CSR
PREFIX=CAT*  DEST=(ALL)  OWNER=*  SYSNAME=
NP  DDNAME  C SegID DSNName                               Chars
s  JESMSG LG 5      KC02746.CATCOB00.JOB06094.D0000002.JESMSG LG ****,****,**
   JESJCL  5      KC02746.CATCOB00.JOB06094.D0000003.JESJCL  ****,****,**
   JESYSMSG 5      KC02746.CATCOB00.JOB06094.D0000004.JESYSMSG ****,****,**
   SYSPRINT 5      KC02746.CATCOB00.JOB06094.D0000101.?      ****,****,**
   SYSPRINT 5      KC02746.CATCOB00.JOB06094.D0000102.?      ****,****,**

F1=HELP      F2=SPLIT    F3=END      F4=RETURN   F5=IFIND     F6=BOOK
F7=UP        F8=DOWN     F9=SWAP lis F10=LEFT   F11=RIGHT    F12=RETRIEVE
*SDSF

M01 0.1 05/24/23.144 03:22PM zos.kctr.marist.edu a 7,3

```

Para visualizar um
STEP, na coluna NP,
marque com S

NP	DDNAME	C	S
s	JESMSG LG	5	
	JESJCL	5	

SDSF

SDSF.ST – Consulta : JESMSGGLG

```

Display Filter View Print Options Search Help
-----
SDSF OUTPUT DISPLAY CATCOB00 JOB06094 DSID      2 LINE 0      COLUMNS 02- 81
COMMAND INPUT ==> _      SCROLL ==> CSR
***** TOP OF DATA *****
      JES2 JOB LOG -- SYSTEM 8561 -- NODE

16.22.58 JOB06094 ---- TUESDAY,  23 MAY 2023 ----
16.22.58 JOB06094 IRR010I USERID KC02746 IS ASSIGNED TO THIS JOB.
16.22.59 JOB06094 ICH70001I KC02746 LAST ACCESS AT 16:18:31 ON TUESDAY, MAY 23
16.23.00 JOB06094 $HASP373 CATCOB00 STARTED - INIT 1      - CLASS A      - SYS
16.23.01 JOB06094 -                      -----TIMINGS (MINS.)-----
16.23.01 JOB06094 -STEPNAME PROCSTEP      RC  EXCP  CONN      TCB      SRB  C
16.23.01 JOB06094 -CATCOB  COB           00   503   163      .00      .00
16.23.02 JOB06094 -CATCOB  LKED           00   170    36      .00      .00
16.23.02 JOB06094 -CATCOB00 ENDED.  NAME-TSO.KC02746      TOTAL TCB CPU TIM
16.23.02 JOB06094 $HASP395 CATCOB00 ENDED - RC=0000
----- JES2 JOB STATISTICS -----
      23 MAY 2023 JOB EXECUTION DATE
      39 CARDS READ
      1,018 SYSOUT PRINT RECORDS
      F1=HELP      F2=SPLIT      F3=END      F4=RETURN      F5=IFIND      F6=BOOK
      F7=UP        F8=DOWN      F9=SWAP  lis F10=LEFT      F11=RIGHT      F12=RETRIEVE
      *SDSF
  
```

JES2 JOB LOG -- SYSTEM 8561

Nesta pagina podemos ver as estatísticas do processamento, com o consumo de tempo, cpu, uso de recursos e STEPs executados.

```

16.23.02 JOB06094 $HASP395 CATCOB00 ENDED - RC=0000
----- JES2 JOB STATISTICS -----
  
```

SDSF

SDSF.ST – Consulta : JESJCL

```

Display Filter View Print Options Search Help
-----
SDSF OUTPUT DISPLAY CATCOB00 JOB06094 DSID      3 LINE 0      COLUMNS 02- 81
COMMAND INPUT ==>      SCROLL ==> CSR
***** TOP OF DATA *****
1 //CATCOB00 JOB ('00'),TSO.&SYSUID,NOTIFY=&SYSUID,
  //      MSGCLASS=T,MSGLEVEL=1,CLASS=A
  //*-----*
  //* COMPILA E LINKEDITA PROGRAMA COBOL BATCH
  //*-----*
  IEFC653I SUBSTITUTION JCL - ('00'),TSO.KC02746,NOTIFY=KC02746,MSGCLASS
2 //COMPCOB PROC MOD=EXER1BBC,
  //      DSN='KC02746.LIB.COBOL.EXERC01',
  //      LIB='KC02746.LIB.USERLOAD'
  //COB    EXEC PGM=IGYCRCTL,REGION=2M,
  //  PARM='BUFSIZE(32760),LIB,,NOOPT,FLAG(I,W),RENT,LIST,ARITH(EXTEND)'
  //STEPLIB DD DISP=SHR,DSN=IGY420.SIGYCOMP
  //SYSLIB  DD DSN=&DSN,DISP=SHR
  //        DD DSN=CEE.SCEESAMP,DISP=SHR
  //SYSPRINT DD SYSOUT=*
  //SYSIN   DD DSN=&DSN(&MOD),DISP=SHR
F1=HELP      F2=SPLIT      F3=END      F4=RETURN      F5=IFIND      F6=BOOK
F7=UP        F8=DOWN      F9=SWAP lis F10=LEFT      F11=RIGHT      F12=RETRIEVE
*SDSF
M01 0.1 05/24/23.144 03:31PM zos.kctr.marist.edu a 4,21

```

```

1 //CATCOB00
  //
  //*-----*
  //* COMPILA E LINKEDITA PROGRAMA COBOL BATCH
  //*-----*
  IEFC653I SUBSTITUTION JCL - ('00'),TSO.KC02746,NOTIFY=KC02746,MSGCLASS
2 //COMPCOB PROC MOD=EXER1BBC,
  //      DSN='KC02746.LIB.COBOL.EXERC01',
  //      LIB='KC02746.LIB.USERLOAD'
  //COB    EXEC PGM=IGYCRCTL,REGION=2M,
  //  PARM='BUFSIZE(32760),LIB,,NOOPT,FLAG(I,W),RENT,LIST,ARITH(EXTEND)'
  //STEPLIB DD DISP=SHR,DSN=IGY420.SIGYCOMP
  //SYSLIB  DD DSN=&DSN,DISP=SHR
  //        DD DSN=CEE.SCEESAMP,DISP=SHR
  //SYSPRINT DD SYSOUT=*
  //SYSIN   DD DSN=&DSN(&MOD),DISP=SHR

```

Expansão do JCL

O Job Control Language no momento da sua execução, tem seus comandos expandidos, onde detalhes são exibidos, bem como o número do Statement, com esta informação podemos corrigir erros e saber os nomes de cada entidade.

SDSF

SDSF.ST – Consulta : JESYSMSG

```

Display Filter View Print Options Search Help
-----
SDSF OUTPUT DISPLAY CATC0800 JOB06094 DSID      4 LINE 80      COLUMNS 02- 81
COMMAND INPUT ==> _      SCROLL ==> CSR
IEF285I  SYS1.LINKLIB      KEPT
IEF285I  VOL SER NOS= VIMVSB.
IGD104I  KC02746.LIB.USERLOAD      RETAINED, DDNAME=
IGD104I  KC02746.LIB.USERLOAD      RETAINED, DDNAME=SYSLMOD
IGD105I  SYS23143.T162259.RA000.CATC0800.R0127376      DELETED, DDNAME=SYSUT1
IEF285I  KC02746.CATC0800.JOB06094.D00000102.?      SYSOUT
IGD105I  SYS23143.T162259.RA000.CATC0800.LOADSET.H01      DELETED, DDNAME=SYSLIN
IEF373I  STEP/LKED      /START 2023143.1623
IEF032I  STEP/LKED      /STOP 2023143.1623
      CPU:      0 HR  00 MIN  00.00 SEC      SRB:      0 HR  00 MIN  00.00 SEC
      VIRT:  104K  SYS:  256K  EXT:  1768K  SYS:  11268K
      ATB- REAL:      1092K  SLOTS:      0K
      VIRT- ALLOC:      19M SHRD:      0M
IEF375I  JOB/CATC0800/START 2023143.1623
IEF033I  JOB/CATC0800/STOP 2023143.1623
      CPU:      0 HR  00 MIN  00.01 SEC      SRB:      0 HR  00 MIN  00.00 SEC
***** BOTTOM OF DATA *****
F1=HELP      F2=SPLIT      F3=END      F4=RETURN      F5=IFIND      F6=BOOK
F7=UP      F8=DOWN      F9=SWAP lis F10=LEFT      F11=RIGHT      F12=RETRIEVE
*SDSF
MA 0.1 05/24/23.144 03:34PM zos.kctr.marist.edu a 4,21

```

Mensagens do Sistema

Neste bloco recebemos informações detalhadas sobre o processamento, descobrindo consumo de CPU, Tempo, Origem e Destino das Informações, Step e conclusão do trabalho.

SDSF

SDSF.ST – Consulta : SYSPRINT

```

Display Filter View Print Options Search Help
-----
SDSF OUTPUT DISPLAY CATCOB00 JOB06094 DSID 101 LINE 0 COLUMNS 02- 81
COMMAND INPUT ==> _ SCROLL ==> CSR
***** TOP OF DATA *****
PP 5655-S71 IBM Enterprise COBOL for z/OS 4.2.0 Date 05
Invocation parameters:
  BUFSIZE(32760),LIB,,NOOPT,FLAG(I,W),RENT,LIST,ARITH(EXTEND)
Options in effect:
  NOADATA
  ADV
  QUOTE
  ARITH(EXTEND)
  NOAWO
  NOBLOCK0
  BUFSIZE(32760)
  NOCICS
  CODEPAGE(1140)
  NOCOMPILE(S)
  NOCURRENCY
  DATA(31)
F1=HELP F2=SPLIT F3=END F4=RETURN F5=IFIND F6=BOOK
F7=UP F8=DOWN F9=SWAP lis F10=LEFT F11=RIGHT F12=REVIEW
*SDSF
M01 0.1 05/24/23.144 03:36PM zos.kctr.marist.edu

```

Mensagens do STEP

Para cada STEP do JCL, onde o comando Sysprint *, for declarado será gerado um relatório com todo os acontecimentos no processamento.

```

000013 // DD DSN=CEE.SCEESAMP, DISP=SHR
000014 //SYSPRINT DD SYSOUT=*
000015 //SYSIN DD DSN=&DSN(&MOD), DISP=SHR

```

SDSF

SDSF.ST – Compilação Consulta SYSIN

```

Display Filter View Print Options Search Help
-----
SDSF OUTPUT DISPLAY CATCOB00 JOB06094 DSID 101 LINE 622 COLUMNS 02- 81
COMMAND INPUT ==> SCROLL ==> CSR
00000138 VARIABLE NAME (VN) CELLS FOR PERFORM
0000014C PERFORM SAVE CELLS
00000160 TEMPORARY STORAGE-2

TGT WILL BE ALLOCATED FOR 0000014C BYTES
SPEC-REG WILL BE ALLOCATED FOR 00000084 BYTES
WRK-STOR WILL BE ALLOCATED FOR 00000027 BYTES
DSA WILL BE ALLOCATED FOR 000001A0 BYTES
CONSTANT GLOBAL TABLE FOR DYNAMIC STORAGE INITIALIZATION AT LOCATION 0007C0
INITD CODE FOR DYNAMIC STORAGE INITIALIZATION BEGINS AT LOCATION 0008FC FOR LENG
* Statistics for COBOL program PFCBHBC1:
* Source records = 63
* Data Division statements = 5
* Procedure Division statements = 20
End of compilation 1, program PFCBHBC1, no statements flagged.
Return code 0
***** BOTTOM OF DATA *****
F1=HELP F2=SPLIT F3=END F4=RETURN F5=IFIND F6=BOOK
F7=UP F8=DOWN F9=SWAP lis F10=LEFT F11=RIGHT F12=RETRIEVE
*SDSF

M 0.1 05/24/23.144 03:42PM zos.kctr.marist.edu a 4,21

```

Expansão

Nesta SYSIN temos acesso a expansão e pré-compilação do programa COBOL.

Navegando nela recebemos informações sobre o processo e obtemos informações sobre erros.

SDSF

SDSF.ST – Compilação Consulta SYSIN

```

Display Filter View Print Options Search Help
-----
SDSF OUTPUT DISPLAY CATCOB00 JOB06094 DSID 102 LINE 167 COLUMNS 02- 81
COMMAND INPUT ==>
MESSAGE SUMMARY REPORT
-----
TERMINAL MESSAGES (SEVERITY = 16)
NONE

SEVERE MESSAGES (SEVERITY = 12)
NONE

ERROR MESSAGES (SEVERITY = 08)
NONE

WARNING MESSAGES (SEVERITY = 04)
NONE

INFORMATIONAL MESSAGES (SEVERITY = 00)
2008 2278

F1=HELP F2=SPLIT F3=END F4=RETURN F5=IFIND F6=BOOK
F7=UP F8=DOWN F9=SWAP lis F10=LEFT F11=RIGHT F12=RETRIEVE
*SDSF
M0 0.1 05/24/23.144 03:38PM zos.kctr

```

Validação

No decorrer do JOB de compilação, é executada uma análise sintática dos comandos e referência cruzada das variáveis utilizadas. Gerando Erros e Avisos, ERRORS e Warnings, que bloqueiam a conclusão do processo.

Nesta SYSPRINT pesquisamos e validamos os erros.

```

BATCH EMULATOR JOB(CATCOB00) STEP(CATCOB ) PGM= IEWL
IEW2008I 0F03 PROCESSING COMPLETED. RETURN CODE = 0.

```

COBOL

Estrutura da Linguagem de Programação COBOL

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT      KC02746.WORKBOOK.COBOL(COBOL001) - 01.00      Columns 00001 00072
Command ==> Scroll ==> CSR
***** ***** Top of Data *****
000001      *****
000002      * DATA      : 24/05/2023
000003      * AUTOR      : VAGNER RENATO BELLACOSA
000004      * OBJETIVO   : ESTRUTURA DO COBOL AS 4 DIVISOES
000005      * CPD        : INEFE
000006      *****
000007      IDENTIFICATION DIVISION.
000008      ENVIRONMENT DIVISION.
000009      DATA DIVISION.
000010      PROCEDURE DIVISION.
***** ***** Bottom of Data *****

F1=Help    F2=Split    F3=Exit    F4=Expand    F5=Rfind    F6=Rchange
F7=Up      F8=Down    F9=Swap    F10=Left    F11=Right   F12=Cancel
SDSF      -DSLST    *DSLST

M01 0.1 05/24/23.144 03:53PM zos.kctr.marist.edu A 14/51

```

ESQUELETO

O COBOL é composto por 4 divisões, servindo para estruturar o programa, documentar, associar arquivos e receber os codigos que processaram as informações.

IDENTIFICATION DIVISION.
ENVIRONMENT DIVISION.
DATA DIVISION.
PROCEDURE DIVISION.

COBOL

Estrutura da Linguagem de Programação COBOL

IDENTIFICATION DIVISION

PROGRAM-ID. [nome do programa].
 AUTHOR. [Autor].
 DATE-WRITTEN. [Data e Hora escrita]
 DATE-COMPILED. [Data e Hora
 Compilação].

```

EDIT      KC02746.WORKBOOK.COBOLO002) - 01.01      Columns 00001 00072
Command ==> Scroll ==> CSR
***** ***** Top of Data *****
000001      *****
000002      * DATA      : 24/05/2023
000003      * AUTOR      : VAGNER RENATO BELLACOSA
000004      * OBJETIVO   : IDENTIFICATION DIVISION E COMANDOS
000005      * CPD        : INEFE
000006      *****
000007      IDENTIFICATION DIVISION.
000008      *
000009      PROGRAM-ID. COBOLO002.
000010      AUTHOR. VAGNER BELLACOSA.
000011      DATE-WRITTEN. 23/05/24 @ 14:02:54.
000012      DATE-COMPILED. 2023-05-24.
000013      *
000014      ENVIRONMENT DIVISION.
000015      DATA DIVISION.
000016      PROCEDURE DIVISION.
F1=Help  F2=Split  F3=Exit  F4=Expand  F5=Rfind  F6=Rchange
F7=Up    F8=Down  F9=Swap  F10=Left   F11=Right  F12=Cancel
SDSF    -DSLST  *DSLST
10      0.1 05/24/23.144 04:05PM zos.kctr.marist.edu a 10/7
  
```

COBOL

IDENTIFICATION DIVISION

Responsável pela identificação do programa para o Sistema Operacional, é utilizada para informar o nome do programa, o nome do autor, as datas de codificação e de compilação.

A IDENTIFICATION DIVISION deve ser a primeira linha do programa e deve ser seguida do parágrafo PROGRAM-ID. O nome do programa que será informado neste parágrafo é posicional e será utilizado para criar o código objeto, portanto sua informação é obrigatória.

Os demais parágrafos são opcionais.

COBOL

Estrutura da Linguagem de Programação COBOL

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT      KC02746.WORKBOOK.COBO(COBOL003) - 01.01      Member COBOL003 saved
Command ==> _____ Scroll ==> CSR
000012      DATE-COMPILED. 2023-05-24.
000013      ***
000014      ENVIRONMENT DIVISION.
000015      *
000016      CONFIGURATION SECTION.
000017      *
000018      SPECIAL-NAMES.
000019      *
000020          DECIMAL-POINT IS COMMA.
000021      *
000022      INPUT-OUTPUT SECTION.
000023      *
000024      FILE-CONTROL.
000025          SELECT CATET001          ASSIGN TO CATET001.
000026      *
000027          COPY "CATB0001" FROM 100000 THRU 199000.
000028      ***
F1=Help    F2=Split    F3=Exit    F4=Expand    F5=Rfind    F6=Rchange
F7=Up      F8=Down     F9=Swap    F10=Left    F11=Right   F12=Cancel
SDSF      -DSL1ST  *DSL1ST
MA 0.1 05/24/23.144 04:49PM zos.kctr.marist.edu A 4,15

```

ENVIRONMENT DIVISION

ENVIRONMENT DIVISION.

[CONFIGURATION SECTION.

SPECIAL-NAMES.

DECIMAL-POINT IS COMMA.]

[INPUT-OUTPUT SECTION.

FILE-CONTROL.

SELECT CATET001

ASSIGN TO CATET001.

COPY "CATB0001" FROM 100000 THRU
199000.]

COBOL

ENVIRONMENT DIVISION

Esta divisão é utilizada para indicar o ambiente e a configuração usada para compilação e execução do programa. É composta de duas seções: CONFIGURATION SECTION e INPUT-OUTPUT SECTION.

CONFIGURATION SECTION: Permite configurar o ambiente no qual o programa será executado.

Nesta seção define-se o parágrafo SPECIAL-NAMES. A função mais utilizada neste parágrafo é a DECIMAL-POINT IS COMMA, que substitui o ponto decimal por vírgula.

COBOL

ENVIRONMENT DIVISION

INPUT-OUTPUT SECTION: Nesta seção relacionam-se os arquivos utilizados pelo programa e algumas de suas características de utilização. O único parágrafo nesta seção é o FILE-CONTROL, no qual é feita a associação do nome interno com o nome externo do arquivo. Caso o programa não tenha arquivos, esta seção deverá ser omitida.

O FILE-CONTROL é constituído pelas cláusulas SELECT / ASSIGN TO, que efetua a ligação entre o nome-arq-interno (nome que é referenciado no código do programa) e o nome-do-arq-externo (nome pelo qual o arquivo é conhecido no ambiente de execução).

```
000023      *
000024      FILE-CONTROL.
000025          SELECT CATET001          ASSIGN TO CATET001.
000026      *
```

COBOL

JCL

```
000066  //*  ARQUIVO DE ENTRADA:
000067  //CATET001 DD  DSN=CAT.ENT0010.D220705,
000068  //                               DISP=SHR
```

COBOL

Estrutura da Linguagem de Programação COBOL

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT      KC02746.WORKBOOK.COBOL(COBOL004) - 01.04      Columns 00001 00072
Command ==>                                         Scroll ==> CSR
000029      ***
000030      DATA DIVISION.
000031      *
000032      FILE SECTION.
000033      *
000034      COPY "CATB001" FROM 200000 THRU 299900.
000035      *
000036      WORKING-STORAGE SECTION.
000037      *
000038      EXEC SQL
000039      INCLUDE SQLCA
000040      END-EXEC.
000041      *
000042      COPY "CATBL01".
000043      *
000044      01  SXP-PI0                                PIC X(08).
000045      COPY "CATDADOS".
000046      *
000047      77  OPEN-CATB001                            PIC X(01) VALUE SPACES.
SDSF      -DSLIST *DSLIST
M01      0.2 05/24/23.144 05:57PM zos.kctr.marist.edu a 5,2

```

DATA DIVISION

DATA DIVISION.

[FILE SECTION.

FD nome-arq-interno

RECORDING formato-do-registro

RECORD tamanho-do-registro

BLOCK blocagem.

01 nome-do-registro descrição-do-registro.]

[WORKING-STORAGE SECTION.]

[LOCAL-STORAGE SECTION.]

[LINKAGE SECTION.]

COBOL

Estrutura da Linguagem de Programação COBOL

```
File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT      KC02746.WORKBOOK.COBOL(COBOL004) - 01.04      Columns 00001 00072
Command ==>                                     Scroll ==> CSR
000047    - 77 OPEN-CAT001                          PIC X(01) VALUE SPACES.
000048      *
000049      LINKAGE SECTION.
000050      *
000051      01 LKS-PARAM-IBM.
000052          03 LKS-PARAM-TAM                      PIC S9(4) COMP.
000053
```

DATA DIVISION

Esta divisão é utilizada para definir nome, natureza e as características das áreas de dados que serão utilizadas pelo programa, tais como: arquivos, registros e campos.

É composta de quatro seções opcionais e devem obedecer à seguinte ordem:

FILE SECTION, WORKING-STORAGE SECTION, LOCAL-STORAGE SECTION e LINKAGE SECTION.

FILE SECTION: Essa seção é usada para informar os nomes e características dos arquivos de entrada e saída e descrever os seus registros.

COBOL

DATA DIVISION

WORKING-STORAGE SECTION:

Essa seção permite descrever as áreas-de-dados (campos, áreas auxiliares, contadores e tabelas), que contenham valor constante ou que tenham necessidade de preservar o seu conteúdo em situações especiais como ao se comunicar com outros programas.

LOCAL-STORAGE SECTION:

Essa seção permite descrever as áreas-de-dados (campos, áreas auxiliares, contadores e tabelas), cujos conteúdos devem ser inicializados em situações como chamada do programa.

LINKAGE SECTION:

Essa seção permite descrever as áreas-de-dados que receberão informações de um meio externo ou de outro programa.

COBOL

Estrutura da Linguagem de Programação COBOL

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT      KC02746.WORKBOOK.COBOL(COBOL005) - 01.02      Columns 00001 00072
Command ==> Scroll ==> CSR
000055      * PROCEDURE DIVISION USING LKS-PARAM-IBM.
000056      *
000057          ACCEPT WSS-DATAN8 FROM DATE YYYYMMDD.
000058          ACCEPT WSS-DATAINV8 FROM DATE YYYYMMDD.
000059          ACCEPT WSS-HORAS FROM TIME.
000060      *
000061          DISPLAY " SUBROTINA --> CCTSG1 <--      ".
000062      *
000063          STOP RUN.
000064      *
000065      ***** FIM DO PROGRAMA *****
***** ***** Bottom of Data *****

SDSF      -DSLST *DSLST
M01      0.1 05/24/23.144 06:09PM zos.kctr.marist.edu      A      4,15

```

PROCEDURE DIVISION

Aqui colocaremos todos os comandos de nossa logica de programação.

Na próxima sessão entraremos em detalhes.

COBOL

DUVIDAS

Vamos conversar e tirar duvidas...

