

```
Wine Window
Vista TN3270 Session C
File Edit Font Transfer Macro Options Window Help
AB2217:REXX\CPS L 80 W 1 72 Rec 1/138
> ==== *Top of file
==== /load rexx
==== /* rexx */
==== /* Take a measure of REXX clauses-per-second (CPS) */
==== /* Mike Cowlshaw (mfc@vnet.ibm.com). Multi-platform. */
==== /* 1.0 17 Jan 89 Original version */
==== /* 2.0 3 Jun 89 Remove attempt to simulate commands */
==== /* 2.1 7 Oct 89 Remove use of not symbols, and correct commentary */
==== rexxcps=2.1 /* REXXCPS version; quotable only if code unchanged */
====
==== /* This measure of REXX execution speed is based on an analysis of */
==== /* the dynamic mix of clauses found in a (subjectively chosen) */
==== /* collection of REXX programs (including commands, macros, and */
==== /* personal programs). Approximately 2,500,000 lines of trace */
==== /* output were analysed, and the program below recreates the */
==== /* dynamic mix of constructs found in that analysis. */
==== /* In view of the dramatic differences between systems in their */
==== /* efficiency of issuing commands, the timed loop does not issue */
==== /* commands (an 'RC=expression; PARSE' sequence is used instead). */
==== /* This program therefore measures the performance of a REXX */
==== /* implementation, exclusive of command execution overhead. */
==== /* Elapsed (user-perceived) time is used, rather than any form of */
==== /* virtual time. */
====
==== count=3 /* Repetition count */
==== averaging=5 /* Averaging-over count */
====
==== tracevar='Off' /* Trace setting (for development use) */
==== signal on novalue
==== parse source source 1 system .
==== parse version version
====
==== say '----- REXXCPS' rexxcps '--- Measuring REXX clauses/second -----'
==== say ' REXX version is:' version
==== say ' REXX system is:' system
==== say ' REXX averaging:' averaging 'measure of' count 'iteration'
+-----+-----+-----+-----+-----+-----+-----+-----+
Command: 4
** File has lower case characters or is new - assuming TEXT LC Reading
Default PFs: 1:Help 2:Split 3:Quit 4:Mark 5:Center 6:Del line
*EDIT* 7:Up page 8:Down page 9:Locate 10:Ins line 11:Input 12:Command
MR 0.2 03/24/18.083 03:29PM localhost a 40,11
```

```
Wine Window
Vista TN3270 Session C
File Edit Font Transfer Macro Options Window Help
MM MM UU UU SSSSSS IIIIII CCCCCC / SSSSSS PPPPPP
MMM MMM UU UU SSSSSSSS IIIIII CCCCCCCC / SSSSSSSS PPPPPPPP
MMMM MMM UU UU SSS SSS II CC / SSS PP PP
MM MMM MM UU UU SSSSSS II CC / SSSSSS PPPPPPPP
MM MM MM UU UU SSS II CC / SSS PPPPPP
MM MM UUUUUUUU SSSSSSSS IIIIII CCCCCCCC / SSSSSSSS PP
MM MM UUUUUUU SSSSSS IIIIII CCCCCC / SSSSSS PP

Multi-User System for Interactive Computing / System Product

Press the ENTER key to view next page when you see this message ---> More...
```

Classic REXX on MUSIC/SP

René Vincent Jansen, 29th International Rexx Language Symposium
Aruba, Dutch West Indies

```
MM      MM      UU      UU      SSSSSSSS      IIIIII      CCCCCCCC
MMM     MMM     UU      UU      SSSSSSSSSS     IIIIII     CCCCCCCCCC
MMMM    MMMM    UU      UU      SSS           II      CC
MM  MMMM  MM    UU      UU      SSSSSSSS      II      CC
MM  MM    MM    UU      UU           SSS       II      CC
MM      MM    UUUUUUUUUU  SSSSSSSSSS     IIIIII     CCCCCCCCCC
MM      MM      UUUUUUUU  SSSSSSSS      IIIIII      CCCCCCCC
```

Multi-User System for Interactive Computing /

MUSIC/SP

Run Classic Rexx at
home

Press the ENTER key to view next page when you see this message ---> More...

Agenda

- What is MUSIC/SP
- How you can run Classic Rexx Programs
- Batchjobs

Music/SP

RAX

Early timesharing, IBM 1966

Remote Access Computing System

First: RACS / RACF

McGill

McGill University System for
Interactive Computing

Developed 1970 from RAX Mods

IBM

Multi-User System for
Interactive Computing/
System Product

VSAM

REXX (ca 1984)

User Interface Rewrite in REXX 1986

Also referred to as RACF

And attributed to Lockheed and IBM in this rather amusing article

System 360, RACF, and “DURA Go Home”

April 7, 1964 IBM announced the System 360. It was a new system which was built with new technology (chip transistors, # 30 wire wrapped panels), all new I/O units with something called the Corporate Standard Interface, all new software because the instruction set was different and something called OS (Operating System). Lockheed ordered a model 40 to be replaced as soon as available with a model 50. IBM and Lockheed signed a joint agreement to develop a remote access Fortran system called RACF. We called it the RAX system. Kirk Douglass, a Lockheed system programmer, Tom McDurmont and Jim Strickland, IBM SEs, were assigned to the project to write the code. The first model 40 had been built in Hersley, England and shipped to Poughkeepsie, NY where the model 50 was under design. The 360 was a tremendous gamble for IBM and it almost killed me.

Jim Moss and I left with our families in the fall to get some early training on the two systems. Jim went to work in the product test lab on the model 40 test. IBM had sold the FAA a new air traffic control system called the 9020. It was basically 6 model 50 360 systems coupled together. Three of them were locked in CPU mode to do the processing and three in I/O mode to act as channels. Connected to the channels were control units called PAMs (Peripheral Adapter Modules). The PAMs connected to all the RADAR inputs and Controller Display Units. They had hopes of selling about 40 of these systems.

Runs on an IBM Mainframe

- Has a 3270 terminal interface
- Multiuser
- Has an SPF-like editor
- Compatible with MVS
 - Emulates MVS Supervisor Calls so that major MVS software components run with very few changes - and generally faster than on MVS
 - Runs ASMH, Fortran, PL/I, APL, ALGOL
 - Rexx and VSAM were added

Admin Main Menu

Perform administrative tasks

Maintain file system

Monitor Batch Jobs

```
----- Support Tasks: ADMIN Main Menu -----  
  
SELECT OPTION ====> _  
  
1 Information and statistical functions  
2 Working with userids  
3 Working with the file system  
4 System tailoring tasks  
5 Service MUSIC & optional products  
6 Display file names < pattern >  
7 Change password - system administrator  
8 Display BATCH job information  
9 Full Screen Interface (FSI)  
10 Display OUTPUT from Batch execution  
11 System HELP Facility < topic >  
12 MUSIC operator console  
13 What's NEW with MUSIC/SP  
H Description and function usage  
X Exit  
  
=====
```

Time:	12		
2018	MAR		
S	M	T	W
4	5	6	7
11	12	13	14
18	19	20	21
25	26	27	28
Day of ye			

```
F1:Help on Menu F2:Today's Reminders F3:Exit F6:Mail Waiting F1
```

User Main Menu

Perform development tasks

Maintain files

Perform office tasks

```
-----Full Screen Interface for MUSIC----- Page 1/1
Command ==>
* NO NEW MAIL *
Place the cursor on an item and press ENTER or RETURN.

MUSIC tools:
  Mail      Electronic mail facility
  Programming (This item is not available on this system)
  CI        (This item is not available on this system)
  Internet  Internet access, news reader, gopher, etc
  More      Other general MUSIC tools
MUSIC files:
  FLIB *    Full Library Screen for current directory
  FLIB      Filespec=> * < pattern
  FUTIL     Other file related utilities
MUSIC environment:
  Help      General help and online documentation
  New Password Change your password
  Defaults  FSI customization
  Profile   Profile utility and options
  \Off      Terminate your session and disconnect from MUSIC
  \Suggest  Make a suggestion or send a comment to support staff
F1=Help    F2=Suggest    F3=End        F9=Find       F12=Retrieve
```

Run Classic Rexx at home

- This might be the only legal way to run Classic Rexx without an IBM license
 - The public domain MVS 3.8J is pre-Rexx
- MUSIC/SP runs on two hardware simulators: SIM390 and Hercules
 - SIM390 is Windows-only but has TCP/IP networking support
 - Hercules runs on Windows/Linux/macOS
- I run it in Hercules because I don't have Windows

Steps

- Download and install Hercules or SIM390
- Download the MUSIC/SP demo system from <http://www.canpub.com/teammpg/de/sim390/download.htm>
 - For Hercules:
 - Check the music.cfg file
 - Start Hercules:
 - Hercules -f music.cfg
 - Attach a telnet session to localhost 3278
 - IPL the music sp DASD volume
 - Press [ENTER] in the telnet session

canpub.com

Sim390 Emulator - Download

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>> Download
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[Known problems](#)
[Technical info](#)
[Discussion groups](#)
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[Other software](#)

Sim390 downloads

[Copyright, license info, conditions of use](#)

Sim390 version 1.7 for Windows (except Win 95), as .zip file (122 KB).
To install it, see the instructions in the readme file in the .zip file. For usage details, see the HTML help file.
File info: 25feb2008, 124696 bytes (.zip), 212992 bytes (.exe).
MD5 digest of .zip: 730AA67A B0855021 375E3884 0600A0FF
SHA1 digest of .zip: AF41719A 25378DAA FDDDDF00 F779D43E A1D59E8D
MD5 digest of .exe: C839E59A 29016790 C25B60A9 C962902C
SHA1 digest of .exe: 1C84DB67 52032180 3C93BE97 012806EB 85104DBA

Sim390 version 1.6 executable for Windows 95 only, as .zip file (102 KB).
To install it, just copy file sim390_16_w95.exe to a directory in your execution search PATH, renaming it to **sim390.exe**. If you need a more recent version for Win 95, contact the author.
File info: 28sep2006, 103426 bytes (.zip), 208896 bytes (.exe).
MD5 digest of .zip: 392687BD 14A323EA 807BC362 6A0D2991
SHA1 digest of .zip: 3A49065B 74CEB7BD 0A6B3C87 CAA49E99 1C6367D5
MD5 digest of .exe: B4DC9396 A778297B F7521F94 F44385CB
SHA1 digest of .exe: FD45FFF6 08DB037F 9CD281ED 53842FB5 1C3870B9

MUSIC/SP Demo system, manuals, and updates:
Go to <http://canpub.com/teammpg/de/mcgweb/> and click on the **Downloads** link.
You can also get the Demo system (file **musdemo_b.zip**) from the Yahoo discussion group [musicspdemo](#) - join the group (it's free, all you need is a Yahoo id) and go to the Files section.

winprogs.zip (215 KB) - Various Windows command-line programs that are useful for Sim390 and MUSIC/SP. Includes md5pw, md5file, sha1file, encpw, httpput, wipezero, and others.
File info: 09oct2006, 219266 bytes.
MD5 digest: 284EE4A4 12863EB9 266FAFFD 669A443F
SHA1 digest: E6BEB067 39FF87D8 A04C20A4 30204A5F B81AAC8A

linuxprogs.zip (35 KB) - Various Linux programs that are useful for Sim390 and MUSIC/SP. Includes some source.
File info: 09oct2006, 35099 bytes.
MD5 digest: 53A19EC1 B05A041D BEEC57D0 0F2799A1
SHA1 digest: 30006DDD 3FE526C8 29AF1647 2D6CD52F 240E2D23

qws3270.zip (72 KB) - qws3270 tn3270 (Telnet 3270 client) terminal emulator, version 3.2f of June/1995, by Jim Rymerson, Queen's University, Kingston, Ont.
File info: 31oct2004, 73632 bytes.
MD5 digest: D1C2BC2C 35B647AB 101F41BA CFA31131
SHA1 digest: B26A923A C0C965FC 36846B38 B6E3D144 7745B03F

The music.cfg file

```
ARCHMODE ESA/390
CPUSERIAL 000611
CPUMODEL 3090
CPUVERID FD
MAINSIZE 16
XPNDSIZE 0
NUMCPU 1
NUMVEC 0
SYSEPOCH 2000
TZOFFSET -0500
CNSLPORT 3278
00C 3505
00F 3215
0F0-0F7 3270
```

* FBA-512 disk (copied exactly from Sim390 FBA volume file):
201 3370 /Users/rvjansen/musicsp/musicxd.vol

```
1. ssh rvjansen.com (ssh)
HHC00150I Crypto module loaded (c) Copyright 2003-2011 by Bernard van der Helm
HHC00151I Activated facility: Message Security Assist
HHC00151I Activated facility: Message Security Assist Extension 1, 2, 3 and 4
HHC00100I Thread id 700000307000, prio 15, name Processor CP00 started
HHC00100I Thread id 70000040a000, prio 0, name Timer started
HHC00811I Processor CP00: architecture mode z/Arch
HHC01603I * Hercules sample config file for 1-vol demo MUSIC/SP system.
HHC01603I * First, start the Hercules emulator, specifying this config file.
HHC01603I * Then: (1) Connect telnet client as console, port 3270 - see notes below.
HHC01603I *          (2) ipl 201 (as a Hercules command).
HHC01603I *          (3) Press Enter on telnet console, to complete MUSIC/SP IPL.
HHC01603I *          (4) Connect tn3270 client (for MUSIC/SP sign-on), port 3270.
HHC01603I * To exit Hercules: exit (as a Hercules command)
HHC00811I Processor CP00: architecture mode ESA/390
HHC01457E Valid years for sysePOCH are 1900|1960; other values no longer supported
HHC01441E Config file[16] music.cfg: error processing statement: SYSEPOCH 2000
HHC01603I * Time zone: use -0400 for EDT, -0500 for EST, etc.
HHC01603I * Card reader:
HHC01603I * Operator console, Telnet client connection (connect before IPL):
HHC01603I *   For Hummingbird HostExplorer: VT220; Keybd Opt: Send Enter as CR-LF;
HHC01603I *   Preferences: Local Echo; VT model options: VT 220, 8-bit.
HHC01603I * You can also use the Windows telnet client (telnet.exe).
HHC01603I * User terminals, tn3270 client connection:
HHC01603I *   For Hummingbird HostExplorer: e.g. 3279 model 4 ExtAttr.
HHC00100I Thread id 70000050d000, prio 4, name Console connection started
HHC01603I * You can also use other tn3270 clients such as QWS3270.
HHC01024I Waiting for console connections on port 3278
HHC01603I * FBA-512 disk (copied exactly from Sim390 FBA volume file):
HHC00507I 0:0201 FBA file /Volumes/Elizabeth/rvjansen/Mainframe/musicsp/musicxd.vol: origin 0, blks 3072
HHC00100I Thread id 7fff7b02c000, prio 0, name Control panel started
HHC01018I 0:000F COMM: client 127.0.0.1 devtype 3215: connected
HHC01603I ipl 0201
HHC01022I 0:000F COMM: client 127.0.0.1 devtype 3215: connection closed by client
HHC01018I 0:00F0 COMM: client 10.0.0.15 devtype 3270: connected
HHC01018I 0:00F1 COMM: client 10.0.0.15 devtype 3270: connected
HHC01018I 0:00F2 COMM: client 10.0.0.15 devtype 3270: connected
HHC01018I 0:00F3 COMM: client 10.0.0.15 devtype 3270: connected
herc =====>
CP00 PSW=070E000000FFFFFF 24..W..... instcnt 42,105,003; mips 0.000; I/O 0
```

```

src — ssh rvjansen.com — rvjansen.com — ssh rvjansen.co
Hercules CPU: 0% ESA/390
070E0000 00FFFFFF 24..W..... U Addr Modl Type Assignme
PSW A 000C 3505 RDR * intrq
B 000F 3215 CON IO[51]
00000000 0071F400 008009B4 FFFFFFFF C 00F0 3270 DSP 10.0.0.1
0 1 2 3 D 00F1 3270 DSP * IO[34]
00000000 00000000 0086DA00 00000004 E 00F2 3270 DSP * IO[88]
4 5 6 7 F 00F3 3270 DSP * IO[47]
00000000 031DFC50 D413A043 D10AC000 G 00F4 3270 DSP * IO[2]
8 9 10 11 H 00F5 3270 DSP * IO[2]
00800000 00000000 508003BA 00801888 I 00F6 3270 DSP * IO[2]
12 13 14 15 J 00F7 3270 DSP * IO[2]
GPR CR AR FPR K 0201 3370 DASD /Volumes

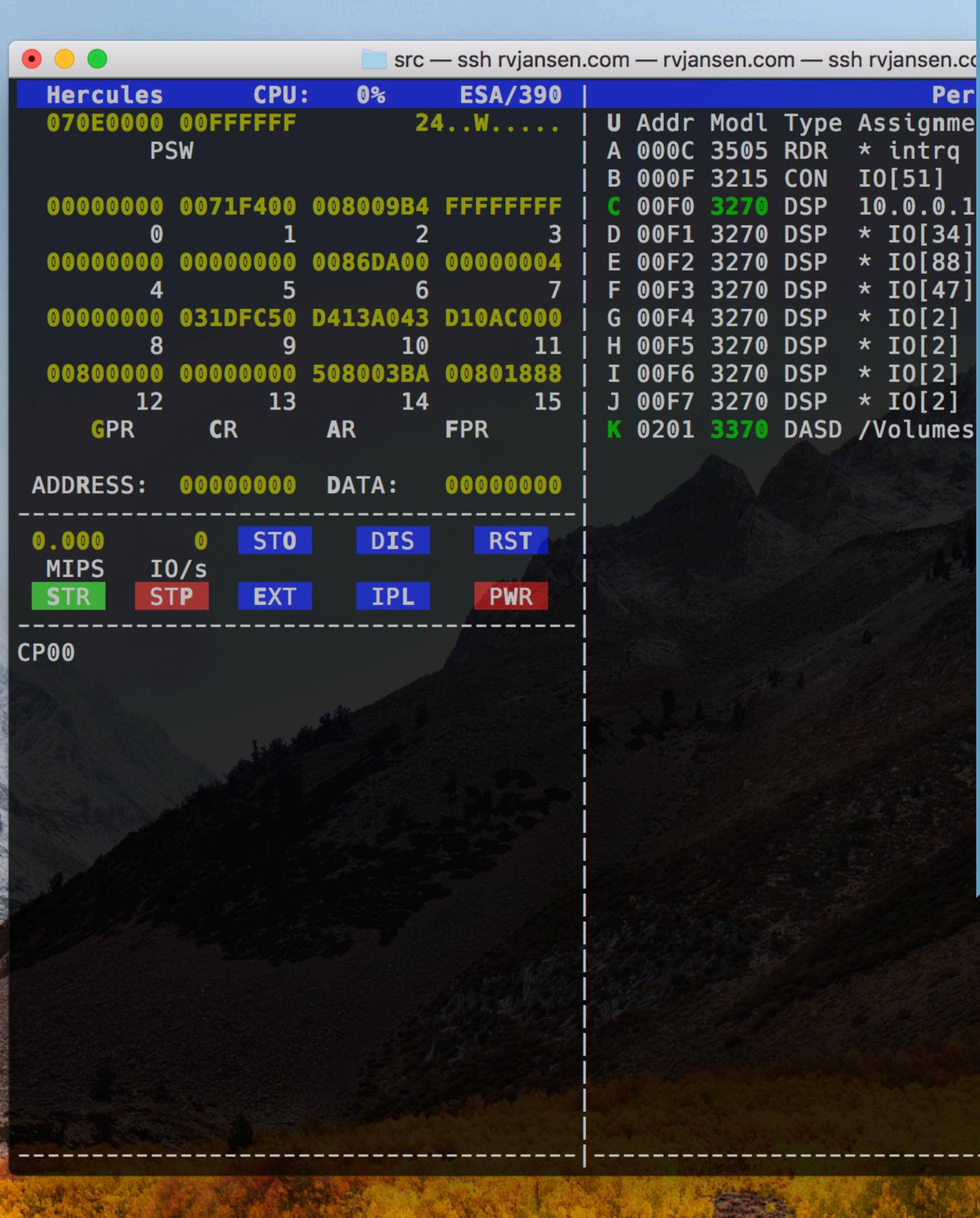
ADDRESS: 00000000 DATA: 00000000
-----
0.000 0 STO DIS RST
MIPS IO/s
STR STP EXT IPL PWR
-----
CP00

```



IPL Music

By pressing L - K



The Telnet Console shell session

M066 MUSIC/SP, Level=ESA-FBA 22JUN06

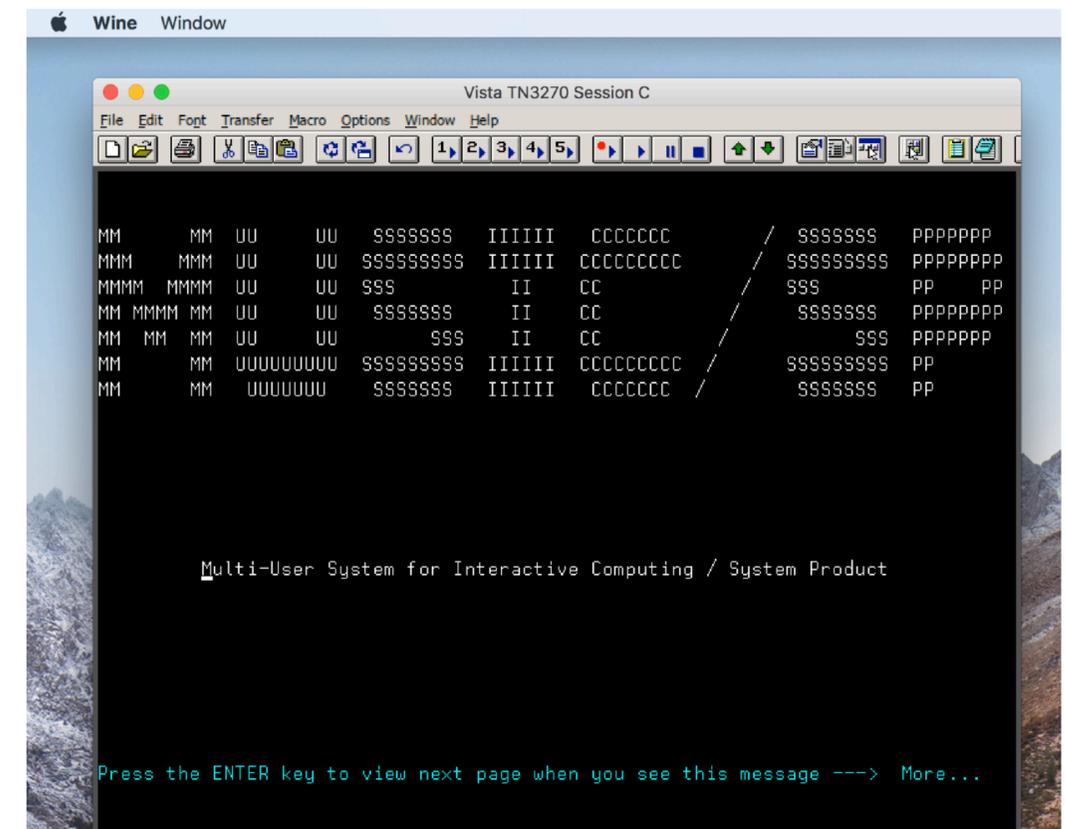
M076 (c) Copyright 1989-2000, McGill University, Montreal, Canada

M077 Enter operator id or special options or HELP

HHCTE006A Enter input for console device 000F

Note: 3270 terminal requirements

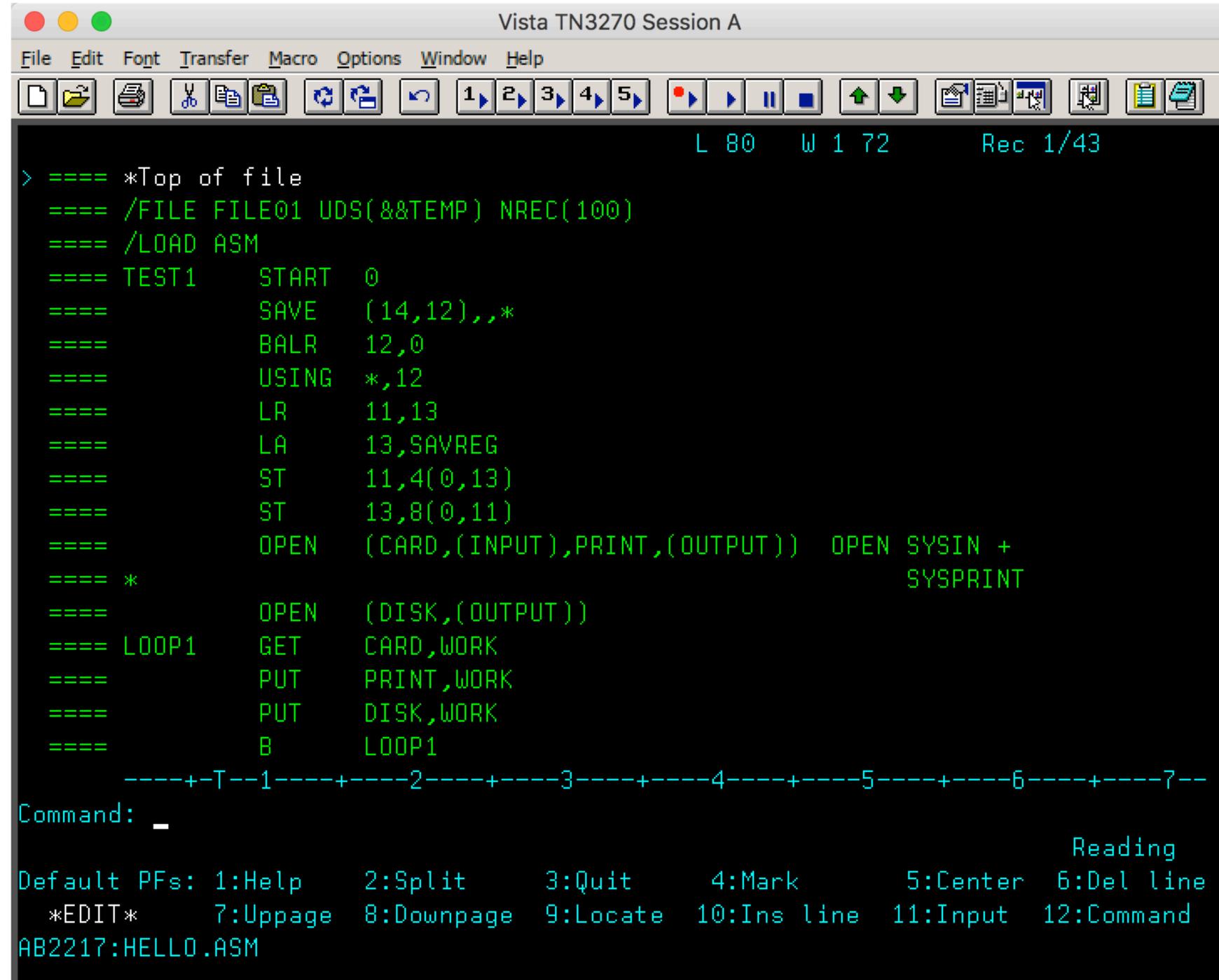
- It has to be a 3270 model 4
 - Let me repeat that: it won't work on other models
 - It will appear to work, but you'll get password errors
 - This has cost me a long time when restarting activity on it
- I use VISTA by Tom Brennan under WINE on macOS High Sierra
- Also works with X3270 and C3270
- Remember to define the terminal as a type 4



Batch Jobs

- No JCL, but almost- you can specify parameters to a jobstream
- For example, which program language processor to use
- How much storage to assign
- Input files and parameters

Example: Assembler



```
Vista TN3270 Session A
File Edit Font Transfer Macro Options Window Help
L 80 W 1 72 Rec 1/43
> ==== *Top of file
==== /FILE FILE01 UDS(&&TEMP) NREC(100)
==== /LOAD ASM
==== TEST1 START 0
==== SAVE (14,12),,*
==== BALR 12,0
==== USING *,12
==== LR 11,13
==== LA 13,SAVREG
==== ST 11,4(0,13)
==== ST 13,8(0,11)
==== OPEN (CARD,(INPUT),PRINT,(OUTPUT)) OPEN SYSIN +
==== * SYSPRINT
==== OPEN (DISK,(OUTPUT))
==== LOOP1 GET CARD,WORK
==== PUT PRINT,WORK
==== PUT DISK,WORK
==== B LOOP1
-----+T--1-----+----2-----+----3-----+----4-----+----5-----+----6-----+----7--
Command: _
Reading
Default PFs: 1:Help 2:Split 3:Quit 4:Mark 5:Center 6:Del line
*EDIT* 7:Uppage 8:Downpage 9:Locate 10:Ins line 11:Input 12:Command
AB2217:HELLO.ASM
```

Example: Assembler (continued)

```
Vista TN3270 Session A
File Edit Font Transfer Macro Options Window Help
[Icons] [A] [B] [C]
L 80 W 1 72 Rec 18/43
> ===== CDEND CLOSE (CARD,,DISK,REREAD) CLOSE SYSIN,CLOSE AND
===== * REWIND DISK FILE
===== WTO 'RECORDS FROM DISK FILE' SEND MESSAGE
===== OPEN (DISKIN,(INPUT)) RE-OPEN DISK FILE FOR INPUT
===== LOOP2 GET DISKIN,WORK READ RECORD FROM DISK
===== PUT PRINT,WORK LIST RECORD
===== B LOOP2 DO IT AGAIN
===== DSKEND CLOSE (PRINT,,DISKIN) CLOSE FILES
===== L 13,4(0,13)
===== RETURN (14,12),T
===== SAVREG DC 18F'0'
===== WORK DS 80C
===== CARD DCB DDNAME=SYSIN,MACRF=(GM),DSORG=PS, *
===== LRECL=80,BLKSIZE=80,RECFM=F,EODAD=CDEND
===== PRINT DCB DDNAME=SYSPRINT,MACRF=(PM),DSORG=PS, *
===== LRECL=80,BLKSIZE=80,RECFM=F
===== DISK DCB DDNAME=FILE01,MACRF=(PM),DSORG=PS, *
===== LRECL=80,BLKSIZE=480,RECFM=FB
-----+---T---1-----+---2-----+---3-----+---4-----+---5-----+---6-----+---7---
Command:
Reading
Default PFs: 1:Help 2:Split 3:Quit 4:Mark 5:Center 6:Del line
*EDIT* 7:Uppage 8:Downpage 9:Locate 10:Ins line 11:Input 12:Command
AB2217:HELLO.ASM
```

Example: Assembler (continued - last)

```
Vista TN3270 Session A
File Edit Font Transfer Macro Options Window Help
[Icons] [A] [B] [C]
L 80 W 172 Rec 43/43
==== DISKIN DCB DDNAME=FILE01,MACRF=(GM),DSORG=PS, *
==== LRECL=80,BLKSIZE=480,RECFM=FB,EODAD=DSKEND
==== END
==== /DATA
==== DIT IS DE EERSTE DATA KAART
==== DIT IS DE TWEEDE DATA KAART
==== DIT IS DE DERDE DATA KAART
>==== /*
==== *End of file

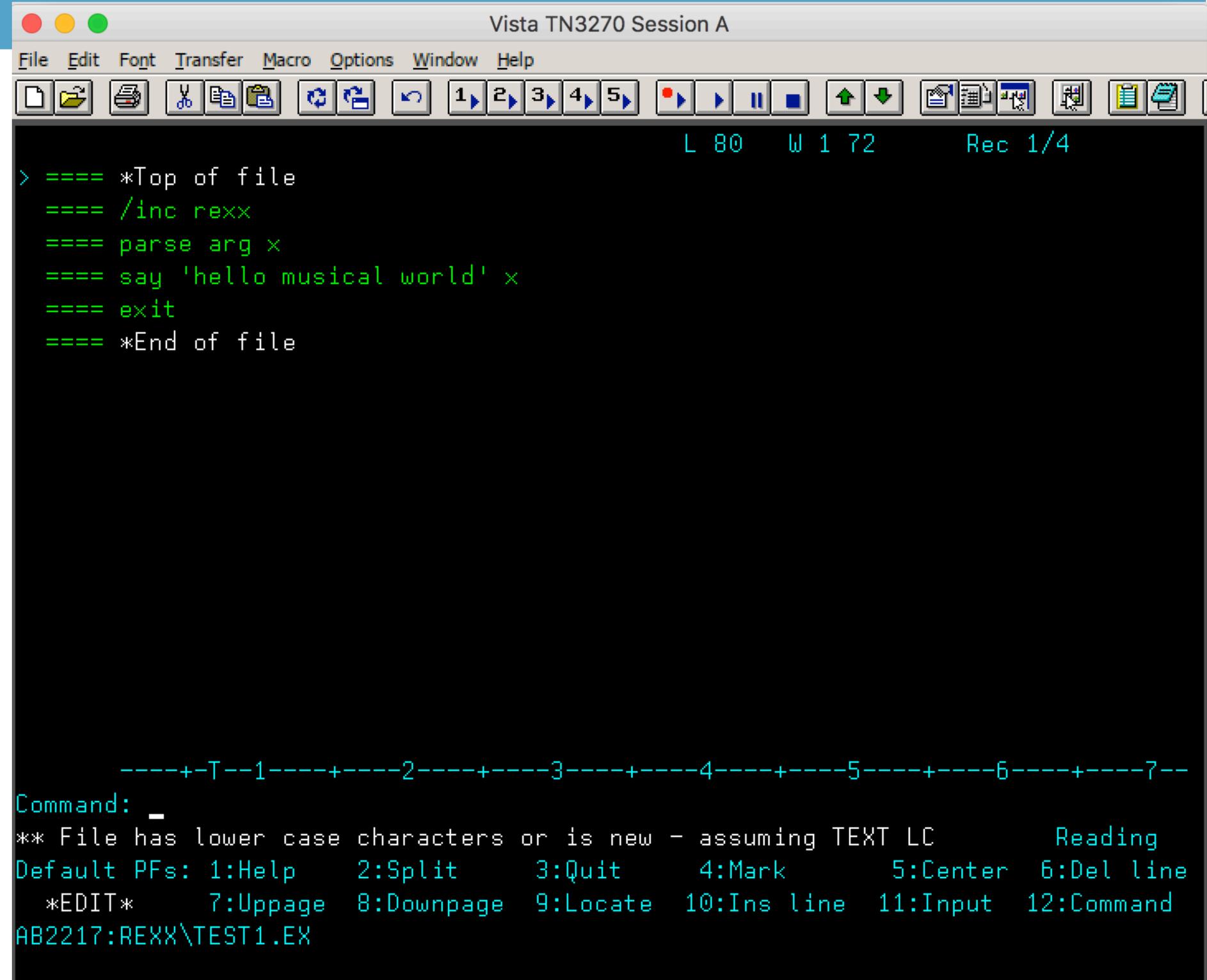
-----+T--1-----+----2-----+----3-----+----4-----+----5-----+----6-----+----7--
Command:
Default PFs: 1:Help 2:Split 3:Quit 4:Mark 5:Center 6:Del line Reading
*EDIT* 7:Uppage 8:Downpage 9:Locate 10:Ins line 11:Input 12:Command
AB2217:HELLO.ASM
```

Example: Assembler results

```
Vista TN3270 Session A
File Edit Font Transfer Macro Options Window Help
ASSEMBLER (XF) DONE
NO STATEMENTS FLAGGED IN THIS ASSEMBLY
000340 BYTES USED
EXECUTION BEGINS
DIT IS DE EERSTE DATA KAART
  ú{          æ    »f &  ò    °
DIT IS DE TWEEDE DATA KAART
  ú{          æ    »f &  ò    °
DIT IS DE DERDE DATA KAART
  ú{          æ    »f &  ò    °
/*
  ú{          æ    »f &  ò    °
ERROR - END OF FILE AND NO EOF EXIT ROUTINE SPECIFIED IN DCB
ERROR IN PROCESSING
GET M ON UNIT SYSIN    AT 004846 DCB AT 004978
GPRS  00004928 00004978 00004B3F 80000ED4 900040EE 00040000 00004B3F 00004800
GPRS  00001120 000046E0 B089F886 00004260 40004810 000048E0 60004848 12001544
*JOB TERMINATED BY MVS SIMULATOR

-----T-----T
Press ENTER to resume FLIB                                     More...
MA 4.5 03/27/18.086 11:36AM localhost                            a 23,1
```

Example: Rexx



```
Vista TN3270 Session A
File Edit Font Transfer Macro Options Window Help
L 80 W 1 72 Rec 1/4
> ==== *Top of file
==== /inc rexx
==== parse arg x
==== say 'hello musical world' x
==== exit
==== *End of file

-----+T--1-----+----2-----+----3-----+----4-----+----5-----+----6-----+----7--
Command: _
** File has lower case characters or is new - assuming TEXT LC          Reading
Default PFs: 1:Help    2:Split    3:Quit    4:Mark    5:Center  6:Del line
*EDIT*      7:Uppage  8:Downpage  9:Locate 10:Ins line 11:Input 12:Command
AB2217:REXX\TEST1.EX
```

Example: /load REXX

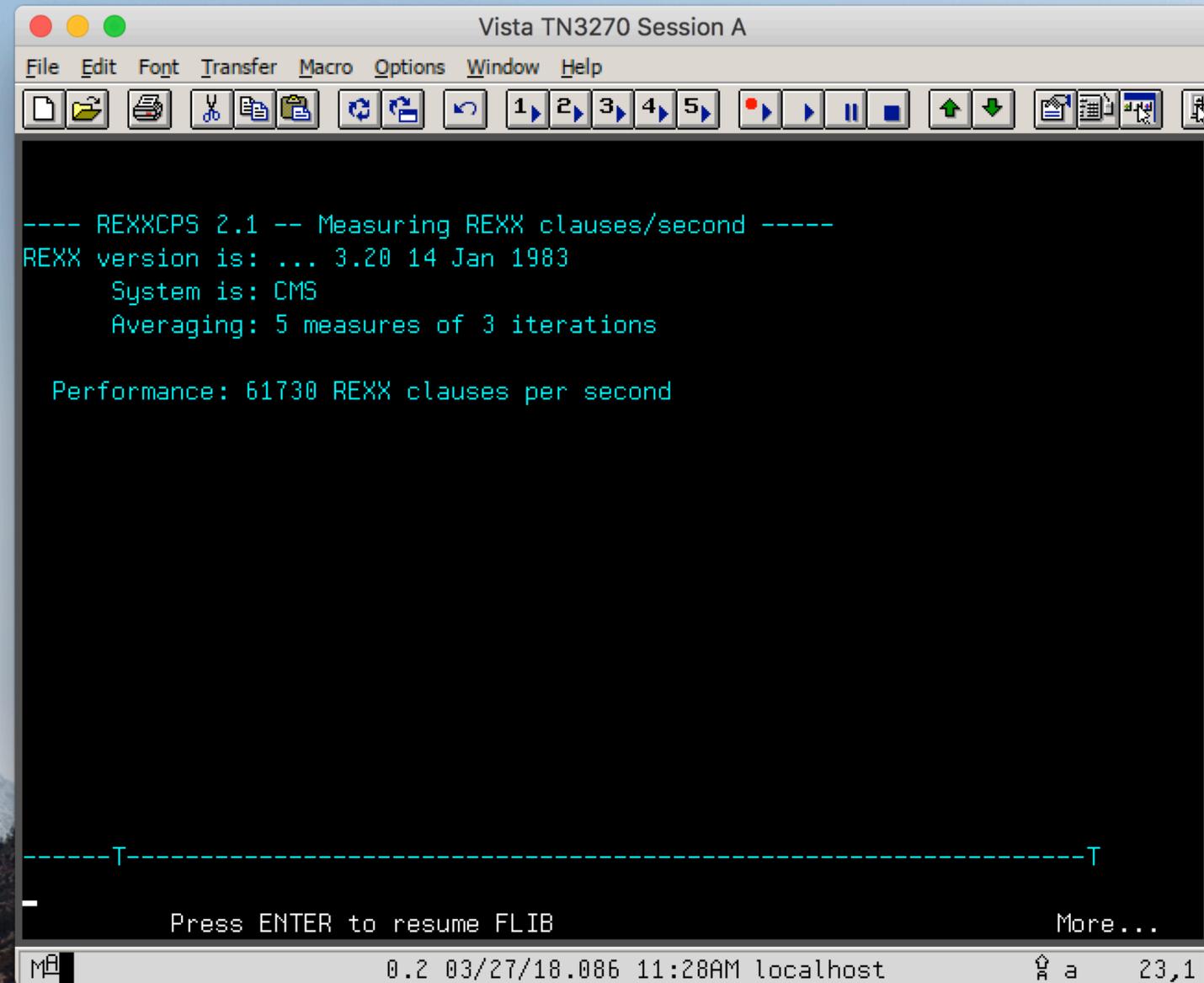
```
Vista TN3270 Session A
File Edit Font Transfer Macro Options Window Help
L 80 W 1 72 Rec 1/138
> == /load rex
== /* rex */
== /* Take a measure of REXX clauses-per-second (CPS) */
== /* Mike Cowlishaw (mfc@vnet.ibm.com). Multi-platform. */
== /* 1.0 17 Jan 89 Original version */
== /* 2.0 3 Jun 89 Remove attempt to simulate commands */
== /* 2.1 7 Oct 89 Remove use of not symbols, and correct commentary */
== rexxcps=2.1 /* REXXCPS version; quotable only if code unchanged */
==
== /* This measure of REXX execution speed is based on an analysis of */
== /* the dynamic mix of clauses found in a (subjectively chosen) */
== /* collection of REXX programs (including commands, macros, and */
== /* personal programs). Approximately 2,500,000 lines of trace */
== /* output were analysed, and the program below recreates the */
== /* dynamic mix of constructs found in that analysis. */
== /* In view of the dramatic differences between systems in their */
== /* efficiency of issuing commands, the timed loop does not issue
-----+T--1-----+----2-----+----3-----+----4-----+----5-----+----6-----+----7--
Command:
** File has lower case characters or is new - assuming TEXT LC Reading
Default PFs: 1:Help 2:Split 3:Quit 4:Mark 5:Center 6:Del line
*EDIT* 7:Uppage 8:Downpage 9:Locate 10:Ins line 11:Input 12:Command
AB2217:REXX\CPS
```

Example: eXecute from Library Management Screen

```
Vista TN3270 Session A
File Edit Font Transfer Macro Options Window Help
----- LIBRARY MANAGEMENT SCREEN -----
Command ==>
Files: 4
Current Directory ==> \REXX
Cmd/Opt  Filename
-----
x_      CPS
      JUT
      TEST.EX
      TEST1.EX
-----
----- 10:24:43
Options: E:Edit  B:Browse  X:Execute  C:Copy  R:Rename  D>Delete  11:File Info
PF-Keys: 1:Help  3:Exit   4:Col Flip  7:Up    8:Down   9:Locate  10:Refresh
```

Example: results of executing CPS

That is a fairly decent
61K CPS



The screenshot shows a terminal window titled "Vista TN3270 Session A" with a menu bar (File, Edit, Font, Transfer, Macro, Options, Window, Help) and a toolbar. The terminal output is as follows:

```
---- REXXCPS 2.1 -- Measuring REXX clauses/second ----  
REXX version is: ... 3.20 14 Jan 1983  
System is: CMS  
Averaging: 5 measures of 3 iterations  
  
Performance: 61730 REXX clauses per second
```

At the bottom of the terminal, there is a dashed line with 'T' markers at both ends, and the text "Press ENTER to resume FLIB" and "More...". The system status bar at the bottom of the window shows "0.2 03/27/18.086 11:28AM localhost" and "a 23,1".