

S Y S T E M 2 0 0 0[®] S o f t w a r e

**SYSTEM 2000[®] CGI Web Interface
Administrator's Guide
Version 1**

August 2003



The Power to Know™

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Table of Contents

Chapter 1: Introduction	5
Chapter 2: System Setup and Installation Considerations	7
Requirements	7
Timeout Multi-User Execution Parameter CGIEXP	7
Browser Requirements	7
JavaScript	7
Cookies	8
Security	8
Web Userids	8
Chapter 3: Invoking SYSTEM 2000 Applications	9
URL Setup	9
Database Access -- Sign-on SYSTEM 2000	9
Operator Communication	11
Chapter 4: Messages and Codes	13
S2KCGIDB AND S2KCGIOP	13
Unrecoverable Errors	14
Chapter 5: Installation	15

Chapter 1: Introduction

Chapter 1: Introduction 5

The SYSTEM 2000 CGI Web Interface provides direct access to SYSTEM 2000 databases via the internet. CGI (Common Gateway Interface) is a standard, supported by almost all Web servers, that defines how information is exchanged between a Web server and an external program (CGI program). CGI programs are stored in the CGI-BIN subdirectory, which is an HFS file under OS/390 UNIX.

Chapter 2: System Setup and Installation Considerations

Chapter 2: System Setup and Installation Considerations	7
Requirements	7
Multi-User Execution Parameter CGIEXP	7
Browser Requirements	7
JavaScript	7
Cookies	8
Security	8
Web Userids	8

Requirements

In order to use the CGI Interface your site must have an OS/390 Web server such as IBM'S HTTP server. A CGI-BIN subdirectory and userid and security authorizations must be defined by your OS/390 UNIX system services administrator.

Timeout Multi-User Execution Parameter CGIEXP

Having a large number of idle Web sessions can lead to storage problems, so a timeout mechanism to purge inactive Web users has been provided. SYSTEM 2000 control blocks that contain timestamp information for every Web user are scanned periodically. Users inactive for a set period, specified in CGIEXP, are terminated and the resources freed.

CGIEXP is the number of minutes a Web user can be inactive before being considered timed out. SYSTEM 2000 adds this value to the time of the last SYSTEM 2000 command issued to determine if a user should be terminated. Allowable values are 0-999 minutes. The default is 0. A value of zero disables timeout processing.

Browser Requirements

The SYSTEM 2000 Web interface functions under both Internet Explorer and Netscape. You should have installed at least version 4.0 of Internet Explorer and version 6.0 of Netscape, and security settings must allow JavaScript to execute and cookies to be written.

JavaScript

JavaScript is a scripting language written into SYSTEM 2000 Web pages to help manage and control the pages. JavaScript is a Netscape product but it executes in Internet Explorer as well. SYSTEM 2000 uses JavaScript for simple functions such as cursor placement and editing forms data, and for more complex functions such as button manipulation. One of the main uses of JavaScript is for the retrieval and writing of cookies. Screen customization data and certain forms data are saved by using cookies. User JavaScript functions may be added for such things as security and customization.

Cookies

SYSTEM 2000 uses cookies to maintain customized session information and retain prior SCF and operator commands. If values other than the defaults are used for session customization such as Screen Width, Maximum Output Lines or Case, a cookie is created.

In order to minimize the number of cookies created, session cookies are set to expire after one hour, and prior command cookies are set to expire after 12 hours.

Note: Browsers sometimes limit the number of cookies that can be created. SYSTEM 2000 will not create more than five cookies.

Security

In order to control access to Web resources on MVS, the Web server provides extensive access control support, including system validation of userids and passwords. In addition, encryption and authentication techniques, although beyond the scope of this discussion, can be employed to provide a secure network. SYSTEM 2000 provides yet another layer of security by requiring a password before any database can be accessed.

Web Userids

The first time the browser attempts to access MVS, it will prompt the user for a User name and Password. The User name and Password will be validated by a security manager such as RACF. This User name (userid) is also used by SYSTEM 2000 to uniquely identify each user.



Chapter 3: Invoking SYSTEM 2000 Applications

Chapter 3: Invoking SYSTEM 2000 Applications	9
URL Setup	9
Database Access.....	9
Operator Communication.....	11

URL Setup

After starting up your browser of choice, enter the URL in the following format to execute the required CGI program:

```
//S2KCUST.MVS.COM/CGI-bin/CGI-program
```

where

- S2KCUST.MVS.COM is the name of the MVS system on which your Multi-User is executing. You can also use the TCP/IP address of S2KCUST.MVS.COM.
- CGI-bin is the name of your CGI-BIN subdirectory. s2k-bin is the default.
- CGI-program is the name of the SYSTEM 2000 CGI program to be executed. For SCF access the default name is s2kcgid. For operator access the default name is s2kcgio.

Note: For security reasons each CGI program may access only one Multi-User, which is designated at installation time (see Installation Instructions). For sites with multiple Multi-Users, for instance a production and a test Multi-user, a unique subdirectory for each Multi-User is required.

To access your test Multi-User the URL might be:

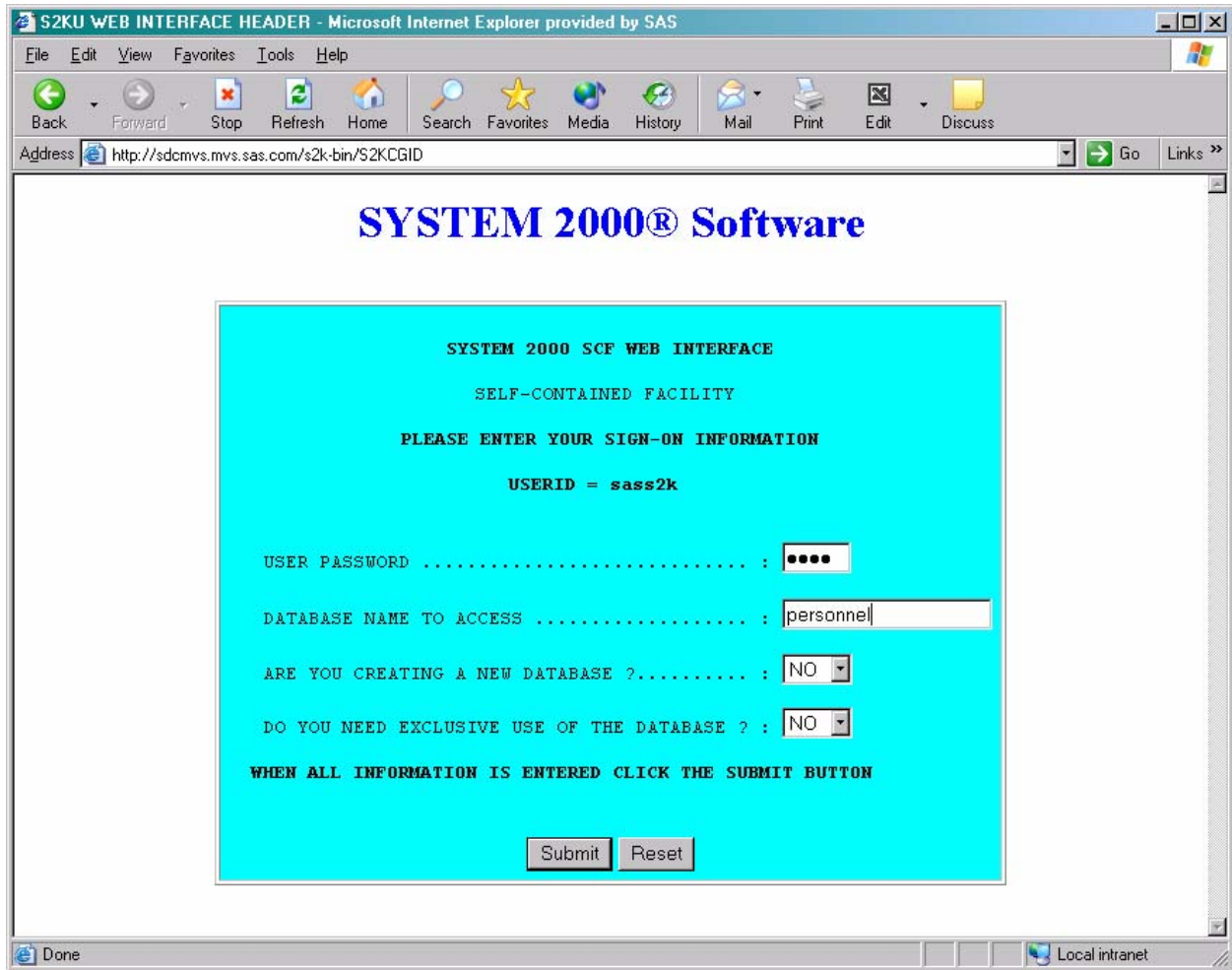
```
//S2KCUST.MVS.COM/s2k-testbin/s2kcgid
```

To access your production Multi-User the URL might be:

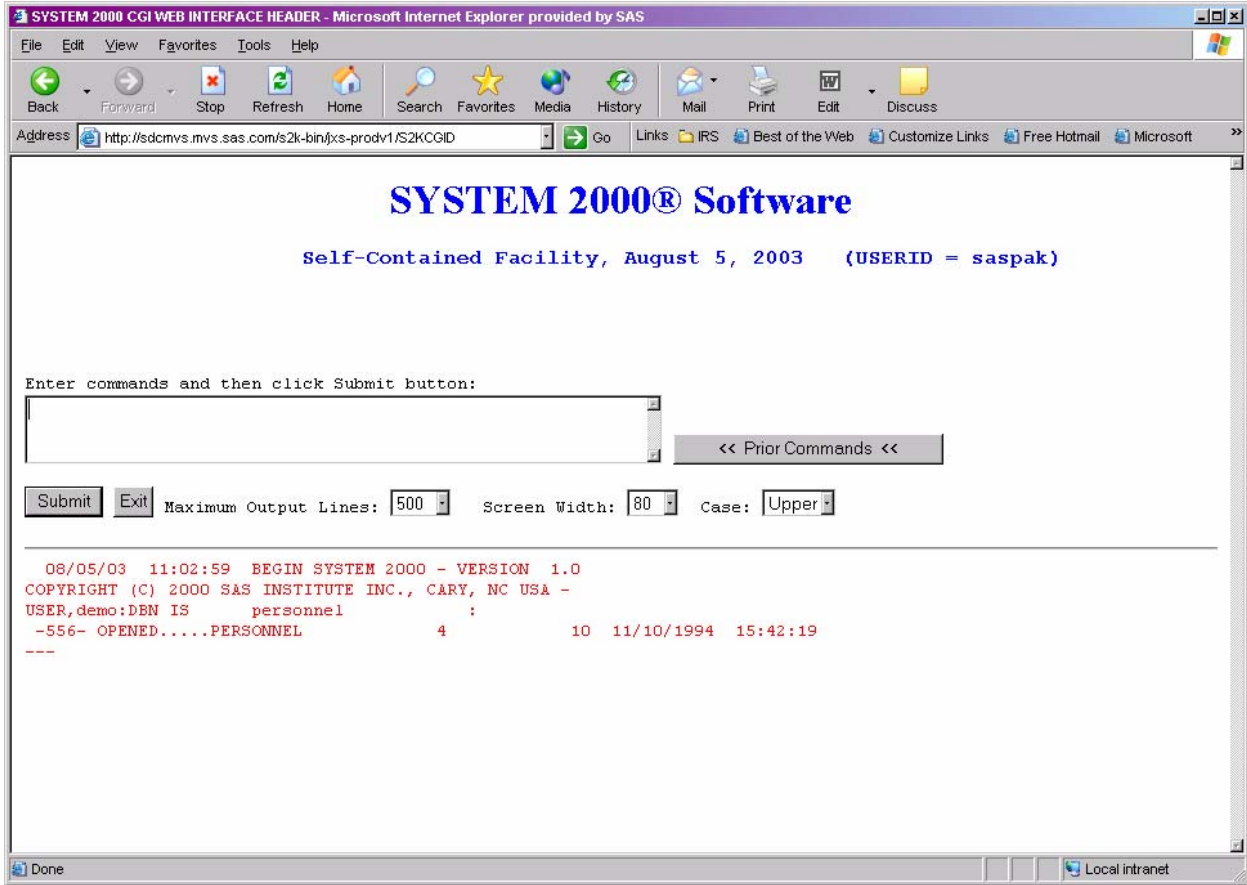
```
//S2KCUST.MVS.COM/s2k-prodbin/s2kcgid
```

Database Access -- Sign-on SYSTEM 2000

To begin Database Access enter the required URL for SCF access. You will receive the following Sign-on screen:



After the required information is entered you click on the Submit button to transfer data (known as a "form" in HTML terms) to your MVS Web server. To clear all the data in the form and restore the original values click on the Reset button. After sign-on the following screen will be displayed in your browser:



Key in your SCF commands and click on the Submit button. To exit, click on the Exit button. Three additional buttons let each user customize the session and you can change these values as often as you like.

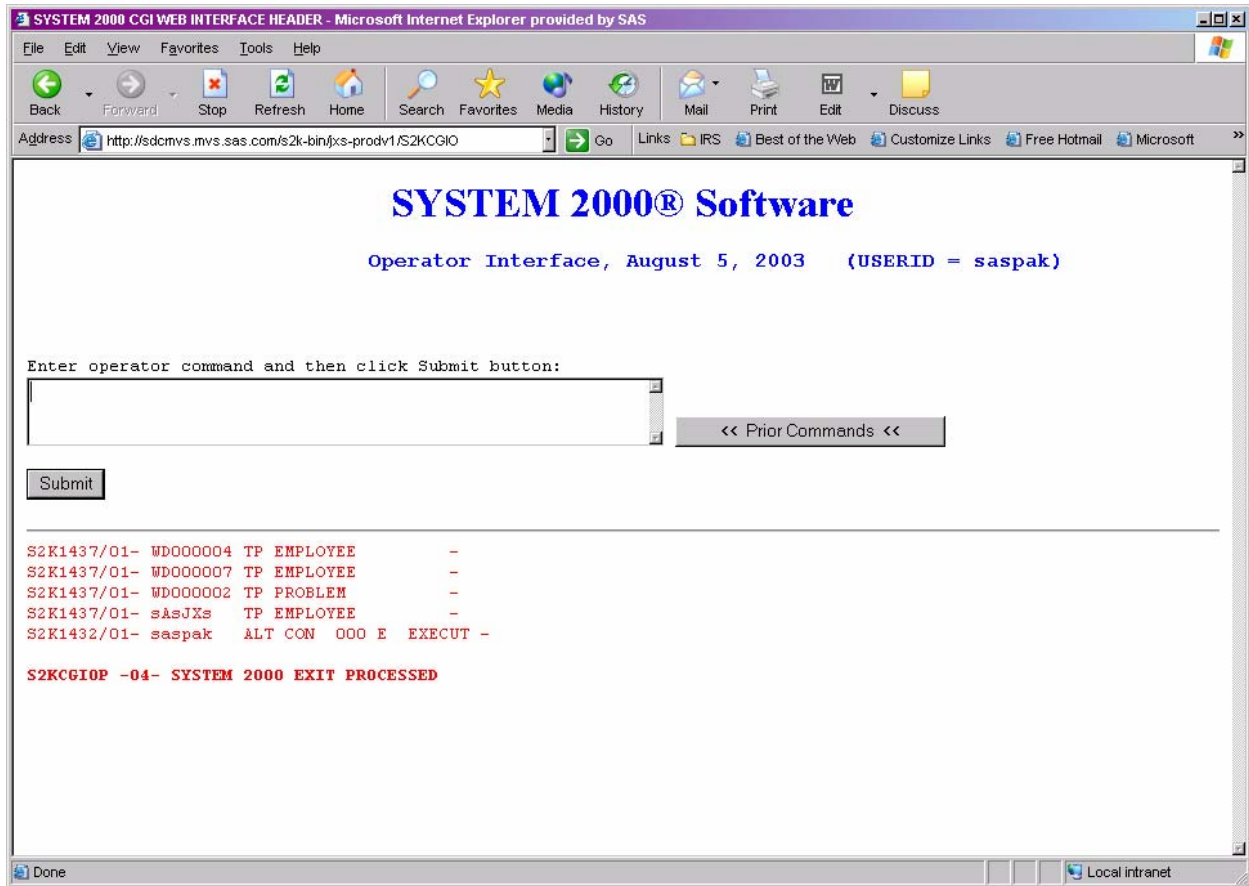
1. Maximum Output Lines -- user can limit the number of lines sent from SYSTEM 2000 to the browser.
2. Screen Width -- user can change screen width from the default of 80.
3. Case -- user can change the default case (upper) to mixed.

One additional button, Prior Commands, allows the user to view and select previous commands for editing and then submission.

Operator Communication

To begin Operator Access enter the required URL. You will receive the following screen. The initial request issues a D A command.

12 CGI Web Interface Administrator's Guide



To process your request, type a SYSTEM 2000 operator command and click on the Submit button. Prior operator commands can be viewed and edited for submission by clicking on the Prior Commands button. For further information see the *Product Support Manual* for operator command descriptions.

Chapter 4: Messages and Codes

Chapter 4: Messages and Codes.....	13
S2KCGIDB and S2KCGIOP.....	13
Unrecoverable Errors.....	14

S2KCGIDB AND S2KCGIOP

XX = "DB" OR "OP"

S2KCGIXX -01- UNABLE TO ALLOCATE STORAGE- TRY AGAIN

The CGI interface is unable to acquire sufficient storage to continue processing. Your region size may need to be increased.

S2KCGIXX -02- MULTI-USER COMMUNICATION ERROR. UNABLE TO CONTINUE, RC=

```

RC08 = Invalid SVC request code
RC12 = Invalid URB for this call
RC16 = No such SVC return code
RC20 = User found/not found in SVC table
RC24 = Multi-User TP busy ... try again
RC28 = IRA space not available for user

```

The CGI interface could not communicate with the Multi-User region. The return codes provide more detail.

S2KCGIXX -03- SYSTEM 2000 BUSY, PLEASE TRY AGAIN

The Multi-User region did not respond to a CGI request in a timely fashion. Try again.

S2KCGIXX -04- SYSTEM 2000 EXIT PROCESSED

A request to exit SYSTEM 2000 was successful.

S2KCGIXX -05- ERROR ENCOUNTERED IN SYSTEM 2000, UNABLE TO CONTINUE, RC=

```

RC04 = Request cancelled- S2K TP being quiesced
RC08 = TP terminal table is full
RC12 = User already active in Multi-User
RC16 = User Logon previously started
RC20 = Discrepancy in URB address
RC24 = Unknown error

```

Multi-User encountered an unexpected condition. The return codes provide more detail.

S2KCGIXX -06- -800- SYSTEM 2000 ERROR CODE ----

See the *Messages and Codes* manual for an explanation of the error code.

S2KCGIXX -07- USER NO LONGER ACTIVE, PLEASE SIGN-ON

Your session was terminated due to a lack of activity. Please sign on to SYSTEM 2000 again.

```
S2KCGIXX -08- RESOURCE SHORTAGE, TRANSACTION ABORTED
```

A request generated an excessive amount of output that could not be processed because of a storage shortage. Your region size may need to be increased or you may need to reduce the Maximum Output Lines limit.

```
S2KCGIXX -09- MULTI-USER TP NOT ACTIVE. UNABLE TO CONTINUE
```

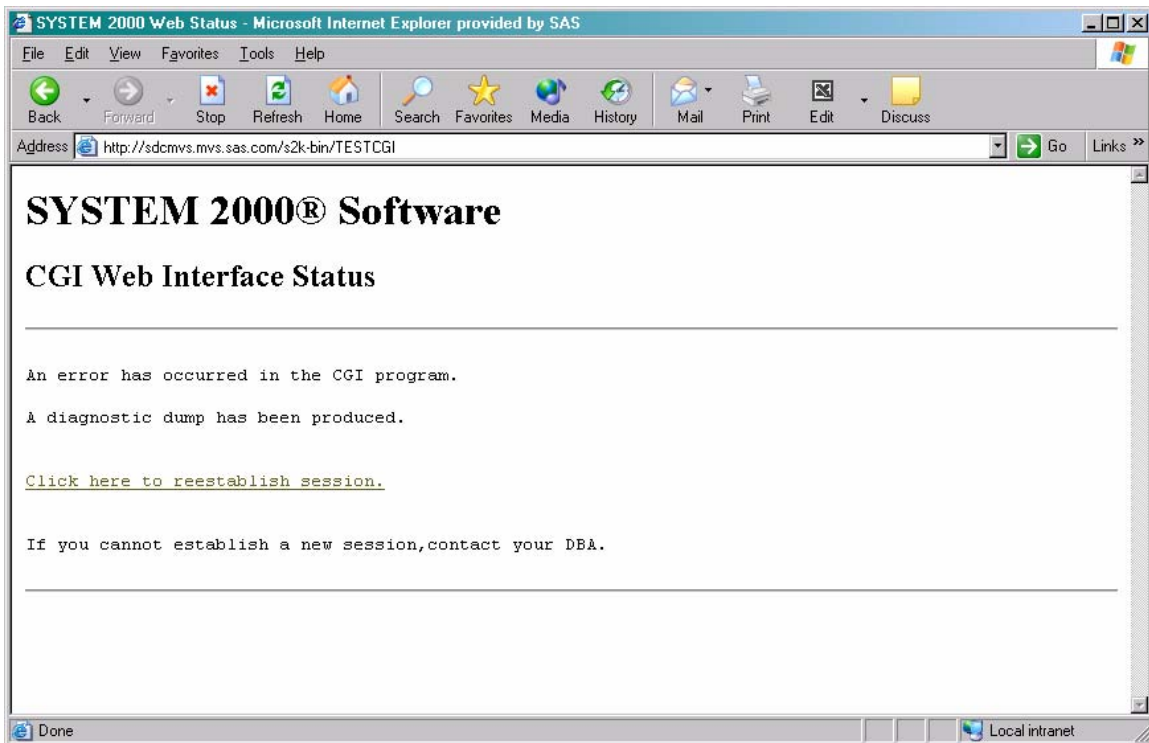
Multi-User is probably not executing.

```
S2KCGIXX -10- S2KCOM FILE INVALID, VERIFY INSTALLATION
```

The Multi-User com file data set name is invalid. Please refer to the Installation Instructions.

Unrecoverable Errors

When an unrecoverable error has occurred, SYSTEM 2000 takes a diagnostic dump to aid in problem determination. The following screen will be sent to browser:



Chapter 5: Installation

To install the CGI Web Interface you must create two load modules, S2KCGID (CGI SCF interface) and S2KCGIO (CGI operator interface), from object modules provided on your source library, and then zap the name of your Multi-User com file into the load modules you've created.

The jobs below, JCLCGID and JCLCGIO, are generated on your S2K.V1.CNTL library during installation.

The only modification you must make to the generated jobs is to supply the name of the HFS cgi-bin subdirectory that holds the CGI programs. Edit the SYSLMOD in STEP1 and the SYSLIB in STEP2. Consult your HFS or OpenEdition administrator for the proper PATHMODE and PATHOPTS settings.

Notes for more than one Multi-User:

Each CGI program can access only one Multi-User, which is specified by the com file that is zapped in STEP2. If your site wants to access multiple Multi-Users with CGI, you should have a unique CGI subdirectory for each Multi-User to be accessed. Change the CGI subdirectory name in STEP1 and STEP2 and the Multi-User com file data set name and then re-run the job.

An alternative is to change the CGI program name to allow access to different Multi-Users. Change all occurrences of S2KCGID in STEP1 and STEP2 to a unique name, and the com file data set name in STEP2, and re-run the job. The URL entered in your browser must reflect any changes to the subdirectory or program names.

For example, to access Multi-User "A" the CGI program name might be S2KMUDA. To access Multi-User "B" the program name might be S2KMUDB. Each program will have a unique data set name.

```
//JCLCGID JOB
//*
//* LINK OBJECT MODULES THAT COMPOSE SYSTEM 2000 CGI SCF
//* INTERFACE INTO HFS DIRECTORY WITH MEMBER NAME S2KCGID.
//* CHANGE SYSLMOD TO YOUR SITE'S CGI-BIN DIRECTORY.
//* CONSULT YOUR HFS ADMINISTRATOR FOR APPROPRIATE SETTINGS
//* FOR CORRECT PATHMODE
//*
//STEP1 EXEC PGM=IEWBLINK,REGION=500K,
// PARM=(LIST,NOREUS,NORENT,LET,MAP,
// 'CASE=MIXED','AMODE(31)','RMODE(ANY)')
//SYSPRINT DD SYSOUT=A
//INLIB DD DSN=S2K.V1.SOURCE,DISP=SHR
//*
//SYSLIB DD DSN=CEE.SCEELKEX,DISP=SHR
// DD DSN=CEE.SCEELKED,DISP=SHR
//SYSLMOD DD PATH='/www/s2k-bin',
// PATHOPTS=(OWRONLY,OCREAT,OTRUNC),
// PATHMODE=(SIRWXO,SIRWXG,SIRWXU)
//*
//SYSLIN DD *
        INCLUDE INLIB(S2KCGID)
```

16 CGI Web Interface Administrator's Guide

```
        INCLUDE INLIB(S2KCGIDB)
        INCLUDE INLIB(S2KCGIDH)
        INCLUDE INLIB(S2KCGICH)
        ENTRY CEESTART
        NAME S2KCGID(R)

/*
//*****
//* APPLY ZAP TO CGI WEB HFS MEMBER S2KCGID
//*****
//*
//* ZAP THE DSN NAME OF YOUR SYSTEM 2000 MULTI-USER COM FILE.
//* CHANGE THE SYSLIB DD STATEMENT TO THE CGI-BIN DIRECTORY
//* USED IN STEP1. THE REP STATEMENT SHOULD BE THE HEX
//* REPRESENTATION OF YOUR COM FILE.
//* I.E. S2K.COM.FILE = X'E2F2D24BC3D6D44BC6C9D3C5'
//*
//STEP2 EXEC PGM=IMASPZAP,
//      PARM='IGNIDRFULL'
//SYSPRINT DD SYSOUT=A
//SYSLIB DD PATH='/www/s2k-bin',
// PATHDISP=(KEEP,KEEP),PATHOPTS=(ORDWR)
//*
//SYSIN DD *
*
*   ZAP CARDS FOR CGI WEB
*
* S2KCOM DATASET NAME IS
* S2K.COM.FILE
*
  NAME S2KCGID S2KCGICM
  REP 0000 E2F2,D24B,C3D6,D44B,C6C9,D3C5
//*

//JCLCGIO JOB
//*
//* LINK OBJECT MODULES THAT COMPOSE SYSTEM 2000 CGI OPERATOR
//* INTERFACE INTO HFS DIRECTORY WITH MEMBER NAME S2KCGIO.
//* CHANGE SYSLMOD TO YOUR SITE'S CGI-BIN DIRECTORY.
//* CONSULT YOUR HFS ADMINISTRATOR FOR APPROPRIATE SETTINGS
//* FOR CORRECT PATHMODE
//*
//STEP1 EXEC PGM=IEWBLINK,REGION=500K,
// PARM=(LIST,NOREUS,NORENT,LET,MAP,
// 'CASE=MIXED','AMODE(31)','RMODE(ANY)')
//SYSPRINT DD SYSOUT=A
//INLIB DD DSN=S2K.V1.SOURCE,DISP=SHR
//*
//SYSLIB DD DSN=CEE.SCEELKEX,DISP=SHR
// DD DSN=CEE.SCEELKED,DISP=SHR
//SYSLMOD DD PATH='/www/s2k-bin',
// PATHOPTS=(OWRONLY,OCREAT,OTRUNC),
// PATHMODE=(SIRWXO,SIRWXG,SIRWXU)
//*
//SYSLIN DD *
        INCLUDE INLIB(S2KCGIO)
```

```

INCLUDE INLIB(S2KCGIOP)
INCLUDE INLIB(S2KCGIOH)
INCLUDE INLIB(S2KCGICH)
ENTRY CEESTART
NAME S2KCGIO(R)

/*
//*****
//* APPLY ZAP TO CGI WEB HFS MEMBER S2KCGIO
//*****
//*
//* ZAP THE DSN NAME OF YOUR SYSTEM 2000 MULTI-USER COM FILE.
//* CHANGE THE SYSLIB DD STATEMENT TO THE CGI-BIN DIRECTORY
//* USED IN STEP1. THE REP STATEMENT SHOULD BE THE HEX
//* REPRESENTATION OF YOUR COM FILE.
//* I.E. S2K.COM.FILE = X'E2F2D24BC3D6D44BC6C9D3C5'
//*
//STEP2 EXEC PGM=IMASPZAP,
//      PARM='IGNIDRFULL'
//SYSPRINT DD SYSOUT=A
//SYSLIB DD PATH='/www/s2k-bin',
// PATHDISP=(KEEP,KEEP),PATHOPTS=(ORDWR)
//*
//SYSIN DD *
*
* ZAP CARDS FOR CGI WEB
*
* S2KCOM DATASET NAME IS
* S2K.COM.FILE
*
NAME S2KCGIO S2KCGICM
REP 0000 E2F2,D24B,C3D6,D44B,C6C9,D3C5
//*

```

