

PROGRAMMER'S REFERENCE

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Unit 10
(Excerpt)



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Unit 10

Creating HTML documents from BMS mapsets

With IBM's 3270 Bridge facility, all you have to do to web-enable your CICS applications is convert your BMS mapsets to *HTML templates* that format HTML pages instead of 3270 displays. Then, all of the CICS application code stays the same, but the screen display is suitable for a web browser. Although there are other ways to web-enable CICS applications that provide more flexibility, this approach is the easiest. So this unit from *Murach's CICS Desk Reference* shows you how to create HTML templates from BMS source code, and how to enhance the HTML output in some basic ways.

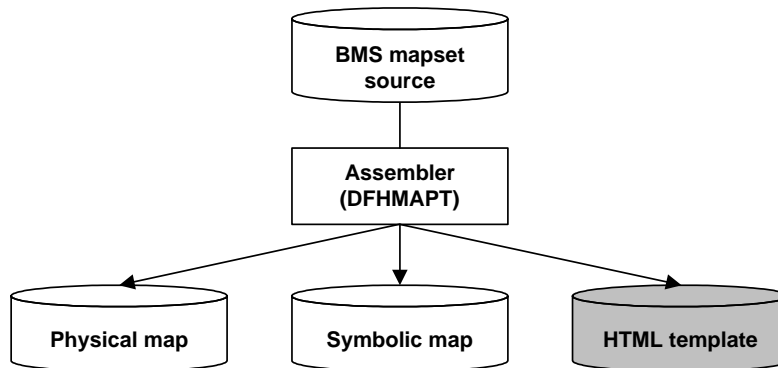
By the way, the main unit in the *Desk Reference* (Unit 8) gives you syntax, exceptional conditions, and coding advice and examples for 121 CICS commands, including the web commands for handling HTML documents. To see the complete table of contents, please go to www.murach.com.

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How to prepare an HTML template

Beginning with CICS TS 1.3, IBM added a JCL cataloged procedure named DFHMAPT that allows you to generate an HTML template from BMS macro source code. You use this procedure instead of DFHMAPS to assemble your mapset, as shown in figure 10-1. Figure 10-2 shows you how to invoke the procedure, and figure 10-3 shows you the procedure itself (the beginning of the new assembly step is shaded).

The conversion process



- If your BMS mapset specifies TYPE=&SYSPARM in the DFHMSD macro, the DFHMAPT procedure will produce an HTML template as well as the physical and symbolic map. Otherwise, you need to code TYPE=TEMPLATE to produce the HTML template.

Figure 10-1

JCL that invokes the DFHMAPT procedure

```

//MM01HTML JOB 36512,'R.MENENDEZ',NOTIFY=MM01
//JOBPROC JCLLIB ORDER=CICSTS13.CICS.SDFHPROC
//MAPASM EXEC DFHMAPT,
//          MAPLIB='MM01.CICS.LOADLIB',      TARGET LOADLIB FOR MAP
//          DSCTLIB='MM01.CICS.COPYLIB',     TARGET COPYLIB FOR DSECT
//          TEMPLIB='MM01.CICS.TEMPLIB',    TARGET FOR TEMPLATE
//          MAPNAME=INQSET1                 MAPSET NAME
//COPY.SYSUT1 DD DSN=MM01.CICS.SOURCE(INQSET1),DISP=SHR MAPSET SOURCE
/*
  
```

- Most of the JCL is the same as for invoking DFHMAPS. But besides specifying DFHMAPT in the EXEC statement, you may need to add a TEMPLIB parameter to identify the library that will contain the HTML template. You may also want to include a JCLLIB statement to specify the library where DFHMAPT is stored. And if your mapset includes a macro for customizing the HTML output, you may need to add a PARM parameter for the ASMTEMPL step (you'll see how to do this later in this unit).

Figure 10-2

The DFHMAPT procedure

```
//DFHMAPT PROC INDEX='CICSTS13.CICS', FOR SDFHMAC
//      MAPLIB='CICSTS13.CICS.SDFHLOAD', TARGET FOR MAP
//      DSCTLIB='CICSTS13.CICS.SDFHMAC', TARGET FOR DSECT
//      TEMPLIB='CICSTS13.CICS.SDFHHTML', TARGET FOR TEMPLATES
//      MAPNAME=,                NAME OF MAPSET - REQUIRED
//      A=,                        A=A FOR ALIGNED MAP
//      RMODE=24,                    24/ANY
//      ASMBLR=ASMA90,                ASSEMBLER PROGRAM NAME
//      REG=2048K,                    REGION FOR ASSEMBLY
//      OUTC=A,                        PRINT SYSOUT CLASS
//      WORK=SYSDA                    WORK FILE UNIT
//COPY      EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=&OUTC
//SYSUT2   DD DSN=&&TEMPM,UNIT=&WORK,DISP=(,PASS),
//          DCB=(RECFM=FB,LRECL=80,BLKSIZE=400),
//          SPACE=(400,(50,50))
//SYSIN    DD DUMMY
//* SYSUT1 DD * NEEDED FOR THE MAP SOURCE
//ASMMAP   EXEC PGM=&ASMBLR,REGION=&REG,
//          PARM='SYSPARM(&A.MAP),DECK,NOOBJECT'
//SYSPRINT DD SYSOUT=&OUTC
//SYSLIB   DD DSN=&INDEX..SDFHMAC,DISP=SHR
//          DD DSN=SYS1.MACLIB,DISP=SHR
//SYSUT1   DD UNIT=&WORK,SPACE=(CYL,(5,5))
//SYSUT2   DD UNIT=&WORK,SPACE=(CYL,(5,5))
//SYSUT3   DD UNIT=&WORK,SPACE=(CYL,(5,5))
//SYSPUNCH DD DSN=&&MAP,DISP=(,PASS),UNIT=&WORK,
//          DCB=(RECFM=FB,LRECL=80,BLKSIZE=400),
//          SPACE=(400,(50,50))
//SYSIN    DD DSN=&&TEMPM,DISP=(OLD,PASS)
//LINKMAP  EXEC PGM=IEWL,PARM='LIST,LET,XREF,RMODE(&RMODE) '
//SYSPRINT DD SYSOUT=&OUTC
//SYSLMOD  DD DSN=&MAPLIB(&MAPNAME),DISP=SHR
//SYSUT1   DD UNIT=&WORK,SPACE=(1024,(20,20))
//SYSLIN   DD DSN=&&MAP,DISP=(OLD,DELETE)
//ASMDSECT EXEC PGM=&ASMBLR,REGION=&REG,
//          PARM='SYSPARM(&A.DSECT),DECK,NOOBJECT'
//SYSPRINT DD SYSOUT=&OUTC
//SYSLIB   DD DSN=&INDEX..SDFHMAC,DISP=SHR
//          DD DSN=SYS1.MACLIB,DISP=SHR
//SYSUT1   DD UNIT=&WORK,SPACE=(CYL,(5,5))
//SYSUT2   DD UNIT=&WORK,SPACE=(CYL,(5,5))
//SYSUT3   DD UNIT=&WORK,SPACE=(CYL,(5,5))
//SYSPUNCH DD DSN=&DSCTLIB(&MAPNAME),DISP=OLD
//SYSIN    DD DSN=&&TEMPM,DISP=(OLD,PASS)
//ASMTEMPL EXEC PGM=&ASMBLR,REGION=&REG,
//          PARM='SYSPARM(TEMPLATE),DECK,NOOBJECT'
//SYSPRINT DD SYSOUT=&OUTC
//SYSLIB   DD DSN=&INDEX..SDFHMAC,DISP=SHR
//          DD DSN=SYS1.MACLIB,DISP=SHR
//SYSUT1   DD UNIT=&WORK,SPACE=(CYL,(5,5))
//SYSUT2   DD UNIT=&WORK,SPACE=(CYL,(5,5))
//SYSUT3   DD UNIT=&WORK,SPACE=(CYL,(5,5))
//SYSPUNCH DD UNIT=&WORK,SPACE=(CYL,(5,5)),DISP=(,PASS)
//SYSIN    DD DSN=&&TEMPM,DISP=(OLD,DELETE)
//UPDTEMPL EXEC PGM=IEBUPDTE,REGION=&REG,PARM=NEW
//SYSPRINT DD SYSOUT=&OUTC
//SYSIN    DD DSN=*.ASMTEMPL.SYSPUNCH,DISP=(OLD,DELETE)
//SYSUT2   DD DSN=&TEMPLIB,DISP=SHR
```

Figure 10-3

Generated HTML output

Although generating an HTML template from a BMS mapset requires no additional BMS coding, chances are, you won't be happy with the result. That's because DFHMAPT simply translates the BMS macro code "as is," resulting in a basic screen that is not too appealing. Fortunately, IBM provides additional BMS macros that you can use to enhance the appearance of the HTML page.

Standard output

Figure 10-4 shows an example of the HTML template that's generated when you run DFHMAPT without adding any code to the BMS mapset. The HTML template contains all of the fields from the BMS mapset and functions in a manner similar to its 3270-display counterpart. In general, a standard generation will produce the following:

- Labels and fields from the map.
- Buttons for the Enter and Clear keys, PA1, PA2, and PA3 keys, function keys PF1 to PF24, and the Reset key.
- Additional hidden variables used to manage the HTML page.
- A JavaScript function called `dfhsetcursor` that sets the cursor position to the field whose name is the value in the `DFH_CURSOR` hidden variable.

Generated HTML output without any customization

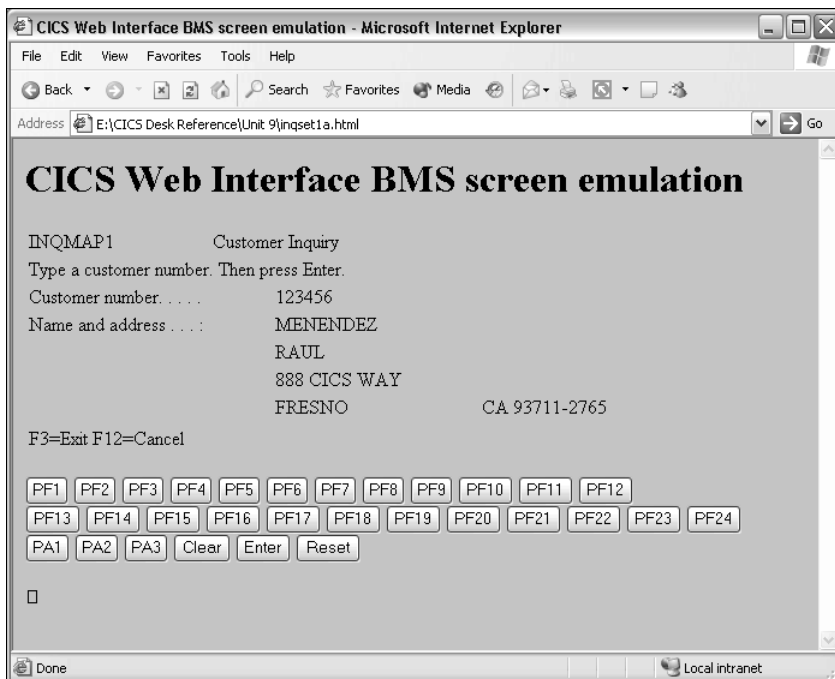


Figure 10-4

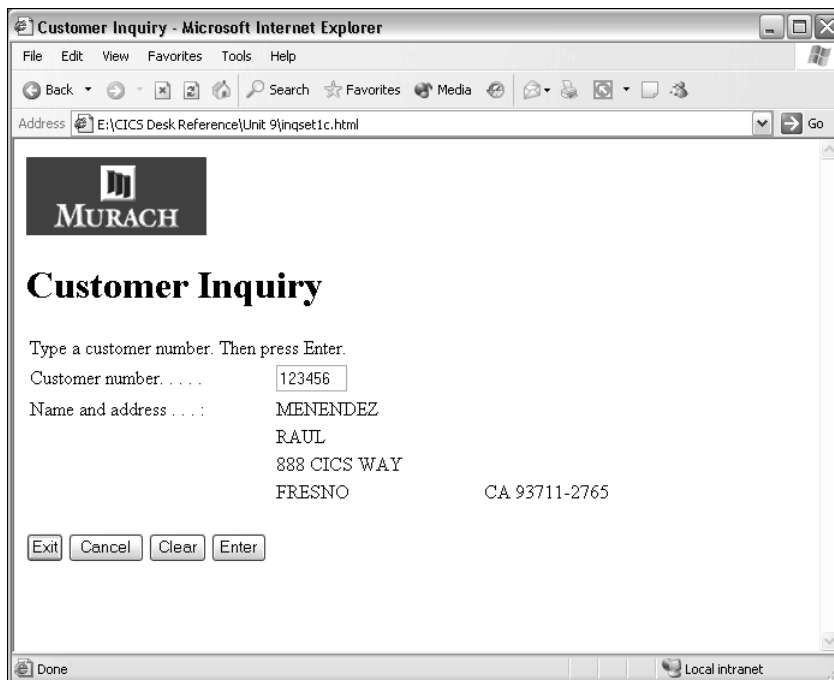
Customized output

Figure 10-5 shows the HTML template from figure 10-4 with some customization. There are two additional macro commands you can add to your BMS source code to customize an HTML template. If all you want to do is add text to the HTML template that will not be seen on the 3270 display, you simply code a DFHWBOUT macro at the place in the mapset where you want the text to appear.

However, if you want to add options that affect the look and feel of the HTML display, you use the DFHMDX macro. And to do that, you have to write your own macro definition, as summarized in the next topic. Among other things, the parameters of the DFHMDX macro allow you to:

- Modify the BMS colors for the text.
- Change the background color or specify a special background.
- Provide an HTML title for the HTML page.
- Suppress the generation of buttons for attention keys the program doesn't use.
- Change the appearance of the button keys, including the text associated with them.
- Include a masthead graphic for the HTML page.

Generated HTML output customized with the DFHMDX macro



Note: You can customize the HTML template manually by editing the HTML code, but be careful! The order in which the fields appear on the HTML page must be kept. Otherwise, the 3270 Bridge facility won't be able to process the page.

Figure 10-5

How to create a customizing macro definition with DFHMDX

To customize an HTML template using the DFHMDX macro, you have to supply a complete macro definition that is invoked by the CICS-supplied assembler macros for BMS mapsets. This customizing macro definition must contain the following elements:

1. A MACRO statement to begin the definition.
2. The name of the macro. CICS assumes a default name of DFHMSX, so if you use a different name, you need to include a PARM parameter for the template assembly step in the JCL that invokes the DFHMAPT procedure, like this:

```
PARM.ASMTEMPL='SYSPARM(TEMPLATE,macro-name),DECK,NOBJECT'
```

3. Any number of DFHMDX macros.
4. A MEND statement to end the definition.

Figure 10-6 shows the customizing macro definition for the HTML page in figure 10-5. Like standard BMS macro definitions, a continuation character must be placed in column 72 to continue a macro on more than one line.

The definition of a customizing macro named DFHMSX

```
MACRO
DFHMSX
DFHMDX MAPSET=*,                               X
        MAP=INQMAP1,                             X
        ENTER='Enter',                           X
        RESET=NO,                                 X
        CLEAR='Clear',                            X
        PF3='Exit',PF12='Cancel',                 X
        TITLE='Customer Inquiry',                 X
        BGCOLOR=WHITE,                            X
        SUPPRESS=((1,*),(24,*)),                  X
        MASTHEAD=www.murach.com/images/murachlogo.gif
MEND
```

Figure 10-6

The DFHMDX macro

Function

The DFHMDX macro lets you customize the HTML template generated from the BMS macro code. With the exception of the MAPSET and MAP parameters, all of the parameters are optional.

Syntax

```
DFHMDX MAPSET= { name | * }
      ,MAP= { name | * }
      [, MODULE=name ]
      [, DOCTYPE=doctype ]
      [, TITLE='title-text' ]
      [, MASTHEAD= { url | url,'alternate-text' } ]
      [, BACKGROUND=url ]
      [, BGCOLOR=color ]
      [, TEXT=color ]
      [, LINK=color ]
      [, VLINK=color ]
      [, ALINK=color ]
      [, bmscolor=color ]
      [, key=button ]
      [, RESET= { YES | NO | 'text' } ]
      [, SUPPRESS= ( (line,column...)[,...] [,HEAD] [,FOOT] ) ]
      [, ONLOAD='text' ]
      [, ONUNLOAD='text' ]
      [, PROPFONT= { NO | YES } ]
      [, CODEPAGE(data-value) ]
```

Parameters

MAPSET	Specifies the name of the mapset that contains the map the other parameters refer to. If you specify MAPSET=*, any parameters used become the default for subsequent mapsets within the same source file unless another DFHMDX macro is encountered.
MAP	Specifies the name of the map that the other parameters refer to. If you specify MAP=*, any parameters used become the default for subsequent maps within the same mapset unless another DFHMDX macro is encountered.
MODULE	Specifies the name of the link-edited load module.
DOCTYPE	Specifies the DTD (Document Type Definition) public identifier part of the <!doctype> tag that will appear in the HTML page.
TITLE	Specifies the value of the HTML title used in the first <h1> tag of the HTML page.
MASTHEAD	Specifies the URL location of a masthead graphic that's inserted into the HTML page before the first <h1> tag. If you specify a value for <i>alternate-text</i> , that text is inserted instead if the graphic can't be found.

BACKGROUND	Specifies the URL location of a graphic file that's used as a background for the HTML page.
BGCOLOR	Specifies the color of the HTML page background.
TEXT	Specifies the color for normal text.
LINK	Specifies the color for unvisited hypertext links on the HTML page.
VLINK	Specifies the color for visited hypertext links on the HTML page.
ALINK	Specifies the color for activated hypertext links on the HTML page.
bmscolor	Specifies a substitute color that replaces the bmscolor on the BMS map. For example: BLUE=green Valid bmscolors are BLUE, GREEN, NEUTRAL, PINK, RED, TURQUOISE, and YELLOW.
key	Specifies the text or image that's assigned to the simulated button for the corresponding 3270 attention key. For example: PF1='HELP' Valid key names are PF1-PF24, PA1-PA3, CLEAR, ENTER, and PEN.
RESET	Specifying YES allows the HTML reset function to be supported, so a Reset button is placed on the HTML page. You can also specify your own text to replace the default legend for the button.
SUPPRESS	Allows you to suppress map fields that you don't want to appear on the HTML page. The basic <i>line,column</i> format is the same as that for the POS option on the DFHMDF macro. You can specify an entire line by coding an * for the column value. You can also code multiple <i>line,column</i> pairs by enclosing each pair in parentheses, and separating them with commas. The HEAD and FOOT keywords let you suppress the heading and footer information for the HTML page.
ONLOAD	Specifies the JavaScript text that replaces the standard onLoad exception handler for the HTML page.
ONUNLOAD	Specifies the JavaScript text that's used as the onUnload exception handler for the HTML page.
PROPFONT	Specifying YES causes the text to be displayed in a proportional font where consecutive spaces are reduced to just a single space.
CODEPAGE	Specifies the IBM code page number specified in either the HOSTCODEPAGE option of a CICS DOCUMENT command or the SRVERCP option of the DFHCNV macro selected by the analyzer program.

Coding example (a single DFHMDX macro)

In this example, lines 1 and 24 of the maps within the INQSET2 mapset will not be displayed on the HTML page. Typically, you'll do this to remove any text that may be specific to the 3270 display.

```
DFHMDX MAPSET=INQSET2,MAP=*,SUPPRESS=((1,*),(24,*))
```

Coding example (multiple DFHMDX macros)

This example shows how two DFHMDX macros are applied to a map named INQMAP2. The first invocation of DFHMDX sets the default values that will be applied to all of the maps in this and subsequent mapsets. In this case, the PF3 button on all subsequent maps will display “Exit” and a Reset button won't be included in any of the maps. The second invocation of DFHMDX applies only to INQMAP2. It assigns name values to additional attention keys found only on that map, assigns an H1 title and a masthead company logo to be displayed at the top of the HTML page, and sets the page background color to neutral (white).

```
DFHMDX MAPSET=*,                                X
      MAP=*,                                    X
      PF3='Exit',                              X
      RESET=NO
DFHMDX MAPSET=*,                                X
      MAP=INQMAP2,                              X
      ENTER='Enter',                            X
      PF5='First',PF6='Last',                   X
      PF7='Prev',PF8='Next',                   X
      PF12='Cancel',                           X
      TITLE='Customer Inquiry',                X
      MASTHEAD=www.murach.com/images/murachlogo.gif, X
      BGCOLOR=NEUTRAL
```

