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Location

City and Country Locations

Mapmaker comes with a list of worldwide cities and countries. The Location menu option displays a list of these cities and country.

Clicking, with the left mouse button, on a country causes a label to be displayed; and clicking on a city displays a circle indicating the position of a city and a label indicating its name.

Clicking the city or country a second time removes any labels or circles that have been displayed for it.

Label Check Box

The **Label** check box, if turned on, causes labels to be displayed for cities. If the check box is turned off, labels for cities are not displayed and only a circle indicating the location of a particular city is shown.

City and Country Check Boxes

Toggling either the **City** or **Country** checkboxes causes the list of cities and countries to be reloaded with either city or countries or both depending upon which check boxes are checked.

Font Size

You can alter the size of the city and country labels by changing the font size. Higher numbers generate larger text.

Cancel or Update

Exiting the Location menu with **Cancel** leaves the map unchanged. Pressing the **Update** button causes the map to be updated with the displayed labels.

Warning !!!

Re-entry into the Location window after exiting by pressing **Update** will not allow the toggling of city or country labels that have been previously written to the map. The only way to return to the original map is to reload the map from disk (assuming it had been saved previously).

Distance

The Distance menu option will display a dialog box which contains the following three values:

Start

End

Distance

These values are defined by pressing the left mouse button and dragging it across the map. Upon release the system will calculate and display the longitude and latitude of the start and end points and the distance between them in miles or kilometers.

Clicking the miles or kilometer buttons causes subsequent distances to be displayed in desired format.

Entry into the Distance mode causes the process to leave the Zoom option.

Zoom

The Zoom function allows the selection of rectangular sections of the map by pressing and dragging the left mouse button.

Upon release the portion of the map selected will be expanded to fill the display window and the X value in the Level-X menu item will be increased by one.

Subsequent Zoom selections can be made through repeated left mouse press and drag operations.

Reversing of the Zoom sequence is caused by clicking the right mouse. This causes the X value in the Level-X menu item to be reduced by one and the previous map to be redisplayed.

Level X

As you zoom in on the map, by selecting rectangular areas of the map the X value in the Level-X menu selection will increase from zero.

When zoomed down more than one level clicking the right mouse button will display the previous map and reduce the level counter by one.

Selecting the Level-X menu item will cause the immediate display of the Level-0 map.

Exit

Exit will terminate the program.

Color

Mapmaker internally has assigned a color code from A to F to each country of the world. The color menu can be used to manipulate which color is associated with a given color code. These country colors can include any range of color value.

The colors associated with water, country border and map background can be modified in a similar fashion, however the range of colors allowed for these objects is limited to solid colors by the software.

Pressing CANCEL will leave the current color mapping unchanged.

Pressing RESET will restore the default color mapping.

Pressing OK will create a new color coding to be used in the generation of the next map.

Export

The export function is identical to the Save AS Menu item except it writes a uncompressed DIB bitmap to disk which can then be processed by the Microsoft Paintbrush Utility and optionally loaded back into Mapmaker. The bitmap file is saved with a **BMP** extension.

Save As

The Save As menu prompts for a filename to be used to save the current map view. This option is used in place of Save to write a map to disk with a new filename.

Save

The Save menu will save the current map view in a bitmap file and parameter file on disk.

A prompt for a filename is made if one does not previously exist. Any extension that is entered is ignored, and the RLE and PRM extensions are appended to the filename to form the names of the bitmap and parameter files.

Load

The Load menu displays the names of **RLE** files from the current directory in a list box. Double clicking on a selection or pressing OPEN will load the **RLE** map into the program. At the same time a parameter file with the same name as the **RLE** file, but with a **PRM** extension, is opened and read.

It is important that the **PRM** file and **RLE** file are located in the same directory.

Pressing Cancel will leave any previously loaded map as the current map.

New

VIEW GENERATION

Mapmaker is designed to generate a view of the earth as seen by and observer from space.

The New menu option prompts for the longitude, latitude and altitude of this observer, whether the view should be colored and whether the process should minimize while the map is drawn.

After entering this information, or taking the defaults, pressing DRAW will generate a view of the earth. This view is NOT automatically saved. If the process is not minimized during generation a plot status dialog box is displayed.

INPUTS

LONGITUDE

A value from 0 to 360 degrees indicating the longitude of the observer. To facilitate input there is not a degree's east or west indication. Any degree from 0 to 180 is degrees east and any degree from 180 to 360 is (360 - degree) degrees west. For example the following are rough estimates:

Geographic Object	Longitude
--------------------------	------------------

Central Europe.....	20
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Far East.....	110
---------------	-----

North America.....	270
--------------------	-----

LATITUDE

A value from 0 to 90 indicates the number of degrees north of the equator. A value from -1 to -90 indicates the number of degrees south of the equator.

Geographic Object	Latitude
--------------------------	-----------------

Central Europe.....	50
---------------------	----

Venezuela.....	5
----------------	---

Falkland Islands.....	-50
-----------------------	-----

South Pole.....	-90
-----------------	-----

North Pole.....	90
-----------------	----

BITMAP SIZE

Mapmaker generates square bitmaps whose dimension can be altered. The default value is 700 X 700, and the minimum value is 500 X 500. The maximum value is limited only by my memory limitations.

It is recommended that initially the default value should be used and experimentation with various values should be postponed until a comfort level with the software has been attained. For more information see [technical considerations](#).

AUTOCOLOR

If this box is checked then the view will be colored using the colors defined in the [Color](#) menu.

DRAW RIVERS

If this box is checked the generated view will contain rivers. The color of the river will be determined by value set in the [Color](#) menu.

DRAW STATES

If this box is checked the generated view will contain US state and Canadian boundary lines.

DRAW COUNTRIES

If this box is checked the generated view will display country borders.

Plot Status

PLOT STATUS

If the process is not minimized during map generation a dialog box is displayed which indicates:

Current time.

Elapsed time.

Estimated time of completion.

Number of points processed

Number of points to be processed

Number of points processed/second for the last five second period

Bar Line indicating percent completion.

After the last point has been processed the new view is displayed in the window. At this point the view can be optionally saved.

Pressing **STOP** will terminate the plotting process and leave the current map undefined.

Technical Considerations

BITMAP & MEMORY USAGE

It is recommended that Mapmaker not be used on systems with less than 2 megabytes of memory and at least a 16mhz clock speed.

Bitmaps require a lot of memory. Mapmaker uses a 16 color bitmap. This requires 4 bits per pixel. Thus a 700 X 700 bitmap will require:

$$700 \times 700 \times 4 \text{ bits} = 245\text{K of memory}$$

As the size of the bitmap increases memory usage increases dramatically. A 1200 X 1200 bitmap will require 720K of memory. The saved bitmaps are normally stored in BI_RLE4 (run length encoding format for 4 bit bitmaps) device independent format. Exported bitmaps (see Export), for use by Paintbrush use a uncompressed 4 bit/pixel format.

If you encounter memory limitation errors in standard mode then running the program in enhanced mode with a sizeable swap file should eliminate the problem.

CITY AND COUNTRY LABELS

The city and country labels are written to the bitmap. As the map is zoomed in and out the size of the labels will increase accordingly.

DATAFILE LOCATION

All the supporting datafiles read by Mapmaker must reside either in the same path as the Mapmaker program or be located in a subdirectory included in the path environment variable.

Summary

Mapmaker includes:

- 1) A digital spherical logical view of the earth.
- 2) A color coding scheme which associates a country with one of six color codes.
- 3) A color code for water, country borders and background.
- 4) A list of the major cities of the world.

This information can be used to draw a map of any portion of the globe based upon the position of an imaginary observer in space. This position is defined by entering the longitude and latitude of the point directly below him on earth and his altitude. (see NEW menu)

By default the system will generate a view of the earth on a 700 X 700 bitmap and use a predefined color coding scheme. Optionally the size of the bitmap used can be adjusted (NEW Menu) and the color codes redefined (COLOR menu) before the map is drawn.

After the map is generated the bitmap is compressed into a window where the user can perform the follow operations:

- 1) Zoom in on specific portions of the map by clicking and dragging the mouse to define a rectangular area on the map (see Zoom).
- 2) Determine distances between points on the map (see Distance).
- 3) Label the countries and the major cites of the world (see Location).
- 4) Export the bitmap to a BMP file compatible with Microsoft's Paintbrush utility (See Export) or save the bitmap ina compressed form for subsequent viewing (See Save).

Getting Started

The easiest way to learn how to use MapMaker is to select the File menu and click the New SubMenu option. This will display some default values of:

Altitude: 2400

BitMap Size: 700

Longitude: 20

Lattitude: 44

AutoColor: No

Draw Countries: No

Draw States: No

Draw Rivers: No

Setting the AutoColor and Draw Countries controls and clicking the DRAW button will cause a view of the globe as seen from 2400 miles over northern Europe to be generated on a 700 X 700 bitmap. The bitmap generated will be similar to the 400 X 400 Bitmap shown in sample.

Subsequent selection of the New submenu option will redisplay the last drawing parameters used. Experimentation by redrawing the image using differing bitmap sizes and altitudes will provide a feel for the applicable values to utilize to generate the desired image.

Sample Bitmap



