SDL_bgi and Emscripten

Unmodified **SDL_bgi** programs can be compiled to WebAssembly using the Emscripten compiler **emcc**; please see **INSTALL_Emscripten.md**.

When Emscripten support is installed, the following tools are used to make standalone **html** files that can be run in browsers without the need of a local webserver:

- **demo/emcc.sh** can be used to compile a program;
- **demo/Makefile.emcc** compiles the sample programs.

The **emcc** flag **-s ASYNCIFY** is used to simulate infinite loops without modifiying the program sources, at the expense of some performance hit.

Compiling Programs

Compilation example:

```
demo$ ./emcc.sh life.c
demo$ firefox ./life.html &
```

The script **emcc.sh** uses one of the available shells in directory **demo/shells**, and embeds files that exist in **demo/assets**. Type **./emcc.sh -h** for a brief explanation.

To compile nearly all available demo programs:

```
demo$ make -f Makefile.emcc
```

Not all programs can be compiled, though. For example, **loadimage.c** makes no sense when run in a browser; in fact, it expects to find files in the local file system, which is not accessible by the browser.

To compile a program directly in the command line:

```
demo$ emcc --emrun -o program.html program.c -lSDL_bgi \
    -std=gnu99 -O2 -Wall -lm \
    -s USE_SDL=2 -s ALLOW_MEMORY_GROWTH=1 -s ASYNCIFY -s SINGLE_FILE
```

The **-s SINGLE_FILE** flag can be omitted if you are running a local web server.

Available shells

Emscripten shell files are **html** templates that define how a program will look when run in the browser. Four shells are provided:

sdl_bgi.html: canvas + text area, no logo

shell_minimal.html: taken from Emscripten sources

canvas_only.html: canvas only, no text area, no logo

fullwindow.html: canvas only, full window, resizeable, no border. This shell is quite slow.

If no shell is specified, the default Emscripten shell will be used.

Environment Files

Environment variables don't exist in a browser environment. However, the same result as using variables can be obtained writing "environment files" in the **assets/** directory. The file **SDL_BGI_RES**, containing the string **VGA**, will have the same effect as the environment variable **SDL_BGI_RES**. The same holds for **SDL_BGI_PALETTE**, value **BGI**. Files must exist at compile time.

Caveats

SDL2 mutex support is not available in current releases of Emscripten. Hence, all references to mutex-related functions in **SDL_bgi.c** are excluded from compilation. For example:

```
#ifndef __EMSCRIPTEN__
static SDL_mutex
  *bgi_update_mutex = NULL;
#endif
```

As a result, automatic refresh is not available.

Programs running in fullscreen mode need keyboard input to toggle fullscreen mode in the browser.