8.【实战】从零开始移植lvgl

下载源码

首先获取GitHub下载脚本（实际上是镜像下载链接）
Github 增强 - 高速下载 (greasyfork.org)

然后下载下面两个仓库

仓库一：lvgl/lvgl: Embedded graphics library to create beautiful UIs for any MCU, MPU and display type. (github.com)---包含了LVGL图形界面控件源码、驱动接口源代码以及例程

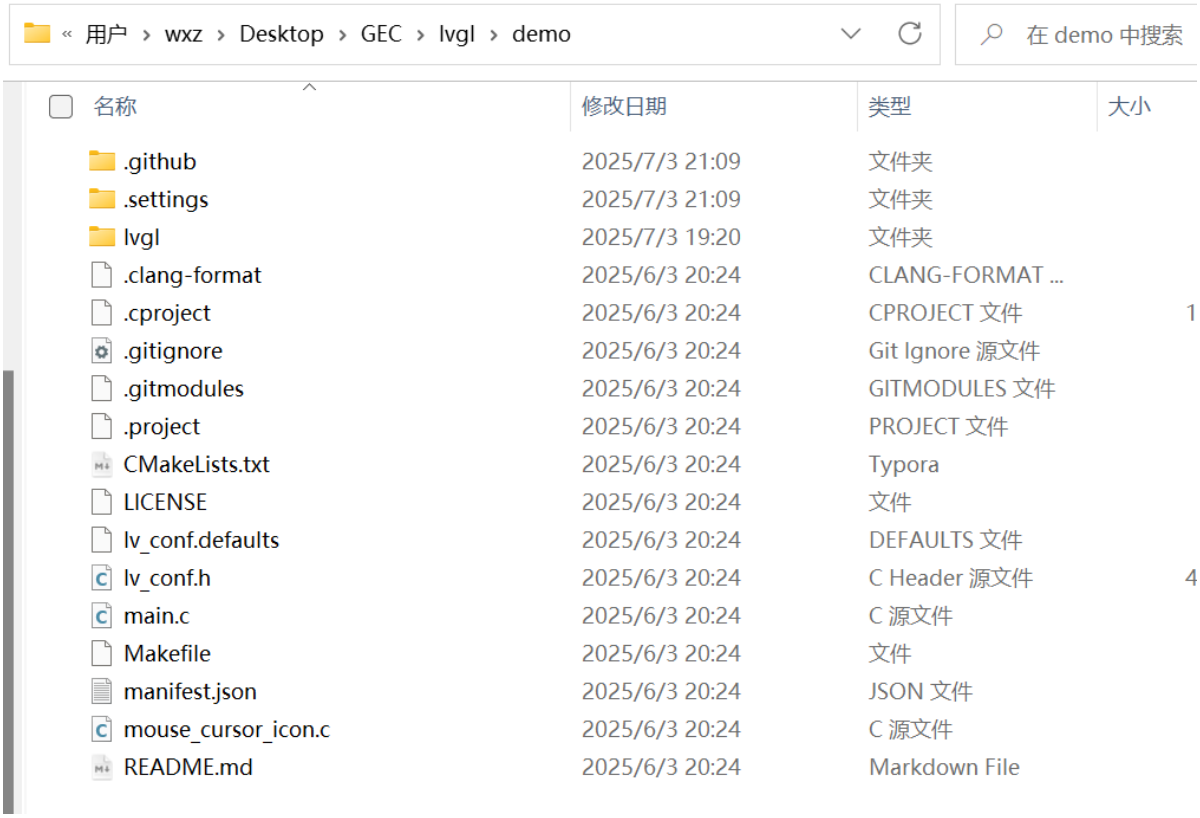
仓库二：【不要下载这个，点击分支选择对应版本分支源码】lvgl/lv_port_linux: LVGL configured to work with a standard Linux framebuffer (github.com)---适配有frame buffer的linux系统的接口

> **正确的分支**【当前使用的是9.3】：lvgl/lv_port_linux at release/v9.3 (github.com)

若网络访问受限，下面提供备用链接：
【暂空】

项目结构

创建一个demo 文件夹（作为项目根目录）
解压 `lvgl-master.zip` 并重命名为 `lvgl` ，放入 `demo` 文件夹。
将 `lv_port_linux-release-v9.3.zip` 内所有文件解压至 `demo` 目录



最后项目结构

修改源码内容

CMakeList.txt

直接替换即可

```
cmake_minimum_required(VERSION 3.10)
# 设置交叉编译
set(CMAKE_SYSTEM_NAME Linux)
set(CMAKE_SYSTEM_PROCESSOR arm)
# 这里指定的路径必须是绝对路径
set(CMAKE_C_COMPILER /usr/local/arm/5.4.0/usr/bin/arm-linux-gcc)
set(CMAKE_CXX_COMPILER /usr/local/arm/5.4.0/usr/bin/arm-linux-g++)

project(lvgl)

set(CMAKE_C_STANDARD 99)#C99 # lvgl officially support C99 and above
set(CMAKE_CXX_STANDARD 17)#C17
set(CMAKE_CXX_STANDARD_REQUIRED ON)

set(EXECUTABLE_OUTPUT_PATH ${PROJECT_SOURCE_DIR}/bin)

add_subdirectory(lvgl)
target_include_directories(lvgl PUBLIC ${PROJECT_SOURCE_DIR})

add_executable(main main.c mouse_cursor_icon.c)

# 注释掉下面两行，如果要使用DRM驱动，则需要放开这行
# include(${CMAKE_CURRENT_LIST_DIR}/lvgl/tests/FindLibDRM.cmake)
# include_directories(${Libdrm_INCLUDE_DIRS})

# 注释掉下面三个，这个是在PC端使用的
# find_package(SDL2)
# find_package(SDL2_image)
# include_directories(${SDL2_INCLUDE_DIRS} ${SDL2_IMAGE_INCLUDE_DIRS})

target_link_libraries(main lvgl lvgl::examples lvgl::demos lvgl::thorvg
${SDL2_LIBRARIES} ${SDL2_IMAGE_LIBRARIES} ${Libdrm_LIBRARIES} m pthread)
add_custom_target (run COMMAND ${EXECUTABLE_OUTPUT_PATH}/main DEPENDS main)
```

lv_conf.h

```
// 根据你屏幕的选择合适的色深（默认32位，不用改）
#define LV_COLOR_DEPTH 32
// 14毫秒刷新一次
#define LV_DEF_REFR_PERIOD  14
// 关闭调试检测以提升性能（默认开启会显著增加资源消耗）
#define LV_USE_ASSERT_STYLE         0
#define LV_USE_ASSERT_MEM_INTEGRITY 0
#define LV_USE_ASSERT_OBJ           0
// 对象样式缓存默认1，这里设置20
#define LV_OBJ_STYLE_CACHE      20
// 系统监控（默认关闭，不用改）
#define LV_USE_SYSMON   0
```

```
#define LV_USE_PERF_MONITOR 0
#define LV_USE_MEM_MONITOR 0
// 开启framebuffer，确保这一项是开启的，
// 如果要使用DRM驱动，请配置LV_USE_LINUX_DRM 1
// （默认开启framebuffer，不用改）
#define LV_USE_LINUX_FBDEV      1
// 开启输入设备驱动，这项默认是关闭的
#define LV_USE_EVDEV    1
```

main.c

```
// 在main.c里lv_linux_disp_init();下添加下面这条
lv_indev_t * indev = lv_evdev_create(LV_INDEV_TYPE_POINTER, "/dev/input/event0");
// Crrl+左键lv_evdev_create 函数中跳转到lv_evdev.c文件，搜索函数lv_indev_set_read_cb
，再通过它的第2形参 _evdev_read 回调函数跳转到read函数。将触摸屏坐标进行校准。

// 【注意，LVGL v9.3 已内置自动坐标校准，无需手动调整 `_evdev_read` 回调函数】
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```

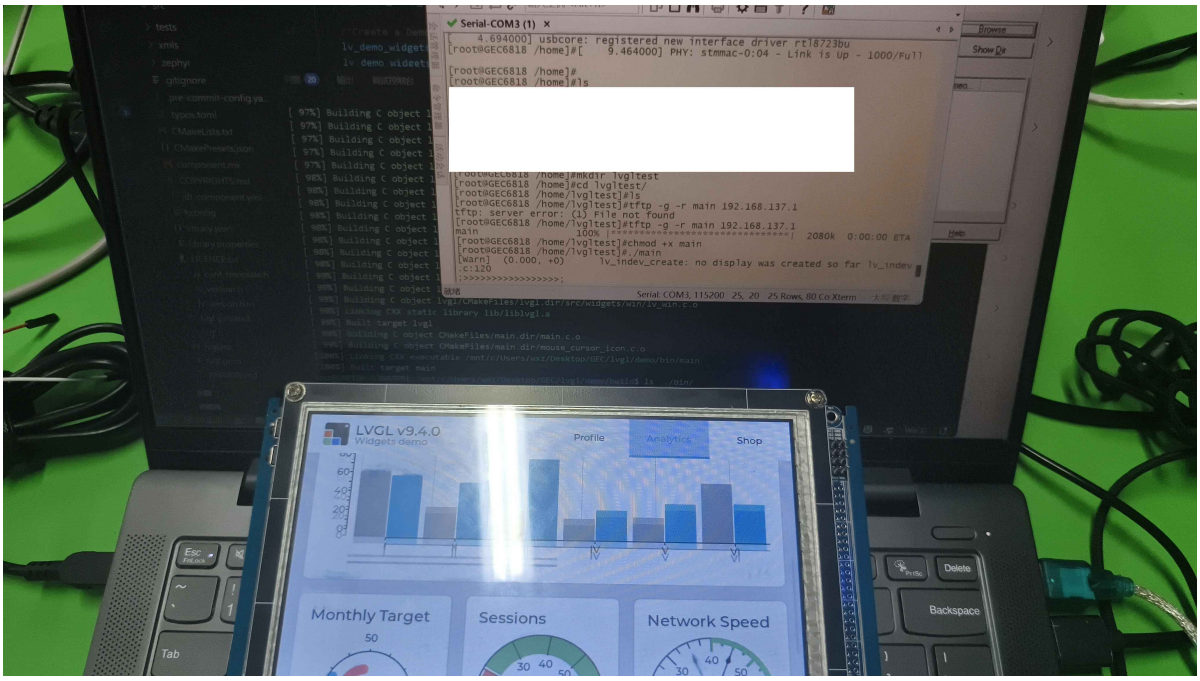
```
struct input_event in = { 0 };
ssize_t br;
while((br = read(dsc->fd, &in, sizeof(in))) > 0) {
    if(in.type == EV_REL) {
        if(in.code == REL_X) dsc->root_x += in.value;
        else if(in.code == REL_Y) dsc->root_y += in.value;
    }
    else if(in.type == EV_ABS) {
        if(in.code == ABS_X || in.code == ABS_MT_POSITION_X) dsc->root_x = in.value*800/1024;
        else if(in.code == ABS_Y || in.code == ABS_MT_POSITION_Y) dsc->root_y = in.value*480/600;
        else if(in.code == ABS_MT_TRACKING_ID) {
            if(in.value == -1) dsc->state = LV_INDEV_STATE_RELEASED;
            else if(in.value == 0) dsc->state = LV_INDEV_STATE_PRESSED;
```

编译运行

```
先切换到 demo/下面去 ：
mkdir build
cd build
cmake ..
make -j
```

```
wxz@LAPTOP-CJNATPRL:/mnt/c/Users/wxz/Desktop/GEC/lvgl/demo$ ls
CMakeLists.txt  LICENSE  Makefile  README.md  lv_conf.defaults  lv_conf.h  lvgl  main.c  manifest.json  mouse_cursor_icon.c
wxz@LAPTOP-CJNATPRL:/mnt/c/Users/wxz/Desktop/GEC/lvgl/demo$ mkdir build
wxz@LAPTOP-CJNATPRL:/mnt/c/Users/wxz/Desktop/GEC/lvgl/demo$ cd build/
wxz@LAPTOP-CJNATPRL:/mnt/c/Users/wxz/Desktop/GEC/lvgl/demo/build$ cmake ..
-- The C compiler identification is GNU 5.5.0
-- The CXX compiler identification is GNU 5.5.0
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Check for working C compiler: /usr/local/arm/5.4.0/usr/bin/arm-linux-gcc - skipped
-- Detecting C compile features
-- Detecting C compile features - done
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Check for working CXX compiler: /usr/local/arm/5.4.0/usr/bin/arm-linux-g++ - skipped
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- The ASM compiler identification is GNU
-- Found assembler: /usr/local/arm/5.4.0/usr/bin/arm-linux-gcc
--
-- Using lv_conf.h from the top-level project directory
-- Enabling the building of ThorVG internal
-- Enabling the building of examples
-- Enabling the building of demos
-- Configuring done (58.2s)
-- Generating done (11.5s)
-- Build files have been written to: /mnt/c/Users/wxz/Desktop/GEC/lvgl/demo/build
wxz@LAPTOP-CJNATPRL:/mnt/c/Users/wxz/Desktop/GEC/lvgl/demo/build$ make -j 8
[  0%] Building C object lvgl/CMakeFiles/lvgl_demos.dir/demos/benchmark/assets/img_benchmark_avatar.c.o
[ 99%] Linking CXX static library lib/liblvgl.a
[ 99%] Built target lvgl
[ 99%] Building C object CMakeFiles/main.dir/main.c.o
[ 99%] Building C object CMakeFiles/main.dir/mouse_cursor_icon.c.o
[100%] Linking CXX executable /mnt/c/Users/wxz/Desktop/GEC/lvgl/demo/bin/main
[100%] Built target main
wxz@LAPTOP-CJNATPRL:/mnt/c/Users/wxz/Desktop/GEC/lvgl/demo/build$ ls ../bin/
main
wxz@LAPTOP-CJNATPRL:/mnt/c/Users/wxz/Desktop/GEC/lvgl/demo/build$ cp ../bin/main /mnt/d/tftpboot/
```

利用tftp传输文件到开发板上运行



备用标题

【实战】LVGL 最新(9.3)移植指南：嵌入式Linux帧缓冲环境配置与开发板部署
嵌入式GUI实战：从零构建LVGL Linux运行环境（v9.3+ARM交叉编译）
LVGL移植避坑指南：Linux帧缓冲驱动与触摸输入适配实战
轻量级GUI移植实战：LVGL 9.3在嵌入式Linux的部署与优化