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Interfacing with Hardware Peripherals How to Guide

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1 Introduction

This application note describes how to interact with simple hardware in TouchGFX applications.

For a more general discussion, see this article on the Help Desk:

<https://touchgfx.zendesk.com/hc/en-us/articles/205074561-Connecting-the-UI-to-your-system>

2 Prerequisites

To try the example in this note, you need the following:

1. TouchGFX 4.8.0 Installation
2. STM32 ST Link Utility installation
3. STM32F469I Evaluation board
4. IAR or GCC
5. The Pool Demo Hardware Integration from this link:

<http://ftp.draupnergraphics.com/TouchGFX/community/PoolDemoHwInt469Eval.zip>



Figure 1 - STM32F746G-DISCO

3 Application overview

Main screen – Pool Light On/Off & entering Pool Temp View



Pool Light on/Off switch. This will toggle the green LED in the lower left corner of the board

Button for entering second screen – Set Pool Temperature.

Second screen – Set Pool Temperature

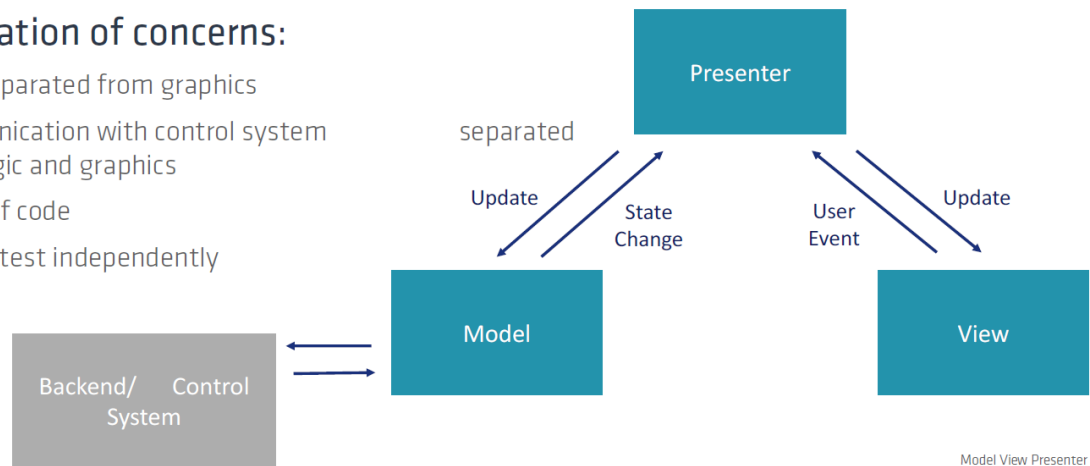


PoolTempView: The user can change the temperature by rotating the potentiometer on the board.

4 TouchGFX architecture

Separation of concerns:

- Logic separated from graphics
- Communication with control system from logic and graphics
- Reuse of code
- Easy to test independently



Potentiometer

A separate ADC thread samples the potentiometer. See the function ADCTask in target/main.cpp. The ADC thread sends a message to the UI thread on a FreeRTOS message queue, msgQueueUI.

The Model::tick method checks the message queue and retrieves the new temperature. If the temperature has changed, the model class notifies the view through the ModelListener interface.

LED

When the user touches the On/Off toggle button on the UI, the view calls a method on the Presenter which calls the Model::setLightState() method. This method stores the state of the light. This state is set on the LED in the next call to Model::tick.

5 How to guide

1. To run the example, unzip the project into c:\TouchGFXProjects\
2. Remember to plug in the Evaluation board.
3. Then open the TouchGFX Environment (white hand icon) and type:
4. `$ cd /c/TouchGFXProjects/PoolDemoHwInt469Eval`
5. `$ make -f target/ST/STM32469I-EVAL/gcc/Makefile flash`
6. You can also open the .touchgfx file in TouchGFX Designer.
7. An IAR project file can be found here: target/ST/STM32469I-EVAL/IAR/application.ewp