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/*
 * ticTacToeDisplay.c
 *
 *  Created on: May 26, 2015
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 */


#include "ticTacToeDisplay.h"
#include "switches.h"
#include "buttons.h"
#include "supportFiles/display.h"
#include <stdint.h>
#include "supportFiles/utils.h"

#include <stdio.h>


// Inits the tic-tac-toe display, draws the lines that form the board.
void ticTacToeDisplay_init(){
    display_init();
    display_fillScreen(TICTACTOEDISPLAY_BACKGROUND_COLOR);
    ticTacToeDisplay_drawBoardLines();
}

// Draws an X at the specified row and column.
void ticTacToeDisplay_drawX(uint8_t row, uint8_t column){
    //calculate the offsets to start drawing the x in the TICTACTOEDISPLAY_RIGHT box
    uint8_t x_offset = TICTACTOEDISPLAY_ONE_THIRD_WIDTH * row;
    uint8_t y_offset = TICTACTOEDISPLAY_ONE_THIRD_HEIGHT * column;

    //TICTACTOEDISPLAY_TOP TICTACTOEDISPLAY_LEFT to TICTACTOEDISPLAY_BOTTOM
TICTACTOEDISPLAY_RIGHT line for the x
    display_drawLine(   x_offset +
TICTACTOEDISPLAY_TICTACTOEDISPLAY_TOP_TICTACTOEDISPLAY_LEFT_X_X,        y_offset +
TICTACTOEDISPLAY_TICTACTOEDISPLAY_TOP_TICTACTOEDISPLAY_LEFT_X_Y,
                        x_offset +
TICTACTOEDISPLAY_TICTACTOEDISPLAY_BOTTOM_TICTACTOEDISPLAY_RIGHT_X_X,    y_offset +
TICTACTOEDISPLAY_TICTACTOEDISPLAY_BOTTOM_TICTACTOEDISPLAY_RIGHT_X_Y, TICTACTOEDISPLAY_X_COLOR);

    //TICTACTOEDISPLAY_TOP TICTACTOEDISPLAY_RIGHT to TICTACTOEDISPLAY_BOTTOM
TICTACTOEDISPLAY_LEFT line for the x
    display_drawLine(   x_offset +
TICTACTOEDISPLAY_TICTACTOEDISPLAY_TOP_TICTACTOEDISPLAY_RIGHT_X_X,       y_offset +
TICTACTOEDISPLAY_TICTACTOEDISPLAY_TOP_TICTACTOEDISPLAY_RIGHT_X_Y,
                            x_offset +
TICTACTOEDISPLAY_TICTACTOEDISPLAY_BOTTOM_TICTACTOEDISPLAY_LEFT_X_X, y_offset +
TICTACTOEDISPLAY_TICTACTOEDISPLAY_BOTTOM_TICTACTOEDISPLAY_LEFT_X_Y, TICTACTOEDISPLAY_X_COLOR);
}

// Draws an O at the specified row and column.
void ticTacToeDisplay_drawO(uint8_t row, uint8_t column){
    //calculate the offsets to start drawing the x in the TICTACTOEDISPLAY_RIGHT box
    uint8_t x_offset = TICTACTOEDISPLAY_ONE_THIRD_WIDTH * row;
    uint8_t y_offset = TICTACTOEDISPLAY_ONE_THIRD_HEIGHT * column;

    display_drawCircle(x_offset + TICTACTOEDISPLAY_O_COORD_X,   y_offset +
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TICTACTOEDISPLAY_O_COORD_Y, TICTACTOEDISPLAY_O_RADIUS, TICTACTOEDISPLAY_O_COLOR);
}

// After a touch has been detected and after the proper delay, this sets the row and column
arguments
// according to where the user touched the board.
void ticTacToeDisplay_touchScreenComputeBoardRowColumn(uint8_t* row, uint8_t* column){
      int16_t x;        //init variables for to find where on board it is
      int16_t y;        //init variables for to find where on board it is
      uint8_t z;        //Not used, but needed for next line
      display_getTouchedPoint(&x, &y, &z);  //compute position on board! store in x, y, z
      display_clearOldTouchData();          //clear it for the next touch :)
      if(x < TICTACTOEDISPLAY_ONE_THIRD_WIDTH) {            //on the TICTACTOEDISPLAY_LEFT 3rd
          *row = TICTACTOEDISPLAY_LEFT;                 //TICTACTOEDISPLAY_LEFT
      } else if(x > TICTACTOEDISPLAY_TWO_THIRD_WIDTH){  //on the TICTACTOEDISPLAY_RIGHT 3rd
          *row = TICTACTOEDISPLAY_RIGHT;                    //TICTACTOEDISPLAY_RIGHT
      } else {                          //in the TICTACTOEDISPLAY_MIDdle
          *row = TICTACTOEDISPLAY_MID;                  //TICTACTOEDISPLAY_MID
      }

      if(y < TICTACTOEDISPLAY_ONE_THIRD_HEIGHT) {       //in the TICTACTOEDISPLAY_TOP third
          *column = TICTACTOEDISPLAY_TOP;               //TICTACTOEDISPLAY_TOP
      } else if (y > TICTACTOEDISPLAY_TWO_THIRD_HEIGHT){    //in the TICTACTOEDISPLAY_BOTTOM
third
          *column = TICTACTOEDISPLAY_BOTTOM;                //TICTACTOEDISPLAY_BOTTOM
      } else{                           //in the TICTACTOEDISPLAY_MIDdle
          *column = TICTACTOEDISPLAY_MID;               //TICTACTOEDISPLAY_MID
      }
}

// Runs a test of the display. Does the following.
// Draws the board. Each time you touch one of the screen areas, the screen will paint
// an X or an O, depending on whether switch 0 (SW0) is slid up (O) or down (X).
// When BTN0 is pushed, the screen is cleared. The test terminates when BTN1 is pushed.
void ticTacToeDisplay_runTest(){
    ticTacToeDisplay_init();
    switches_init();
    buttons_init();
    while(1){
        if(display_isTouched()){
            utils_msDelay(50);
            uint8_t row;
            uint8_t col;
            ticTacToeDisplay_touchScreenComputeBoardRowColumn(&row, &col);
            (switches_read() & 0x01) ? ticTacToeDisplay_drawO(row, col) :
ticTacToeDisplay_drawX(row, col);
        }

        if((uint32_t)buttons_read() & RAW_BUTTON_0){
            ticTacToeDisplay_init();
        }

        if((uint32_t)buttons_read() & RAW_BUTTON_1){
            printf("Test terminated");

            display_setTextColor(DISPLAY_BLACK, DISPLAY_WHITE);
            display_setTextSize(5);
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            display_setCursor(10, TICTACTOEDISPLAY_ONE_THIRD_HEIGHT);
            display_println(" Test\nTerminated");

            return;
        }

    }

    ticTacToeDisplay_init();
    ticTacToeDisplay_drawX(1,2);
    utils_msDelay(1000);
    ticTacToeDisplay_drawO(1,1);
    utils_msDelay(1000);
    ticTacToeDisplay_drawX(2,0);
    utils_msDelay(1000);
    ticTacToeDisplay_drawO(0,0);
    utils_msDelay(1000);
    ticTacToeDisplay_drawX(2,2);
    utils_msDelay(1000);
    ticTacToeDisplay_drawO(2,1);
    utils_msDelay(1000);
    ticTacToeDisplay_drawX(0,2);

    display_setTextColor(DISPLAY_BLACK, DISPLAY_WHITE);
    display_setTextSize(6);
    display_setCursor(10, TICTACTOEDISPLAY_ONE_THIRD_HEIGHT);
    display_println("X WINS!");
}

// This will draw the four board lines.
void ticTacToeDisplay_drawBoardLines(){
    //TICTACTOEDISPLAY_LEFT vertical line
    display_drawLine(TICTACTOEDISPLAY_ONE_THIRD_WIDTH,  0,  TICTACTOEDISPLAY_ONE_THIRD_WIDTH,
    TICTACTOEDISPLAY_DISP_HEIGHT,   TICTACTOEDISPLAY_BOARD_COLOR);
    //TICTACTOEDISPLAY_RIGHT vertical line
    display_drawLine(TICTACTOEDISPLAY_TWO_THIRD_WIDTH,  0,  TICTACTOEDISPLAY_TWO_THIRD_WIDTH,
    TICTACTOEDISPLAY_DISP_HEIGHT,   TICTACTOEDISPLAY_BOARD_COLOR);
    //TICTACTOEDISPLAY_TOP horizontal line
    display_drawLine(0, TICTACTOEDISPLAY_ONE_THIRD_HEIGHT,
    TICTACTOEDISPLAY_DISP_WIDTH,        TICTACTOEDISPLAY_ONE_THIRD_HEIGHT,
    TICTACTOEDISPLAY_BOARD_COLOR);
    //TICTACTOEDISPLAY_BOTTOM horizontal line
    display_drawLine(0, TICTACTOEDISPLAY_TWO_THIRD_HEIGHT,
    TICTACTOEDISPLAY_DISP_WIDTH,        TICTACTOEDISPLAY_TWO_THIRD_HEIGHT,
    TICTACTOEDISPLAY_BOARD_COLOR);
}
```