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\*Starblaster program for Microcontroller

\*System Design CPE 3280

\*Written by Cypress Payne

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#include "project.h"

#include <stdlib.h>

#include <stdio.h>

int TARGETX;

int TARGETY;

//declaration of functions

void drawStars(int arr[200][2]);

void remStars(int arr[200][2]);

void drawTarget(int x, int y);

void remTarget(int x, int y);

void drawBlast(int x, int y);

void drawSuperBlast(int x, int y);

void starTwinkle(int arr[200][2]);

void starScroll(int arr[200][2], int dir);

int main(){

//intialize screen

GLCD\_Start();

GLCD\_Clear(GLCD\_BLACK);

Backlight\_Write(1);

LED\_Blue\_Write(1); LED\_Green\_Write(0); LED\_Red\_Write(1);

// generate stars

int sky[200][2];

int starNum = 100 + rand()%100;

int16 i;

for(i = 0; i < starNum; i++){

int starX = rand()%131;

int starY = rand()%131;

sky[i][0] = starX;

sky[i][1] = starY;

GLCD\_Pixel(starX, starY, GLCD\_WHITE);

}

//generate target

TARGETX = 63;

TARGETY = 63;

drawTarget(TARGETX,TARGETY);

int32 counter = 0;

//infinite loop

for(;;)

{

starTwinkle(sky);

//check time for blast

if (counter%10 == 0){

if(LED\_Green\_Read() == 0){

LED\_Green\_Write(1);

LED\_Blue\_Write(0);

}

if(LED\_Red\_Read() == 0){

LED\_Red\_Write(1);

LED\_Green\_Write(0);

}

}

//check if buttons are pressed

while(PinA\_Read() == 0) {

if(TARGETX > 15){

remTarget(TARGETX,TARGETY);

TARGETX -= 1;

drawTarget(TARGETX,TARGETY);

}

else{starScroll(sky,0);}

}

while(PinB\_Read() == 0) {

if(TARGETY < 120){

remTarget(TARGETX,TARGETY);

TARGETY += 1;

drawTarget(TARGETX,TARGETY);

}

else {starScroll(sky,1);}

}

while(PinC\_Read() == 0) {

if (TARGETX < 120){

remTarget(TARGETX,TARGETY);

TARGETX += 1;

drawTarget(TARGETX,TARGETY);

}

else{starScroll(sky,2);}

}

while(PinD\_Read() == 0) {

if(TARGETY > 15){

remTarget(TARGETX,TARGETY);

TARGETY -= 1;

drawTarget(TARGETX,TARGETY);

}

else{starScroll(sky,3);}

}

while(PinCenter\_Read() == 0) {

if(LED\_Green\_Read() == 0){

drawBlast(TARGETX,TARGETY);

drawStars(sky);

drawTarget(TARGETX,TARGETY);

LED\_Green\_Write(1);

LED\_Red\_Write(0);

}

if (LED\_Blue\_Read() == 0) {

drawSuperBlast(TARGETX,TARGETY);

drawStars(sky);

drawTarget(TARGETX,TARGETY);

LED\_Blue\_Write(1);

LED\_Red\_Write(0);

}

}

counter++;

}

}

/\*function definitions\*/

//draws stars for background

void drawStars(int arr[200][2]){

for(int i = 0; i < 200; i++){

int x,y;

x = arr[i][0];

y = arr[i][1];

GLCD\_Pixel(x, y, GLCD\_WHITE);

}

}

//removes stars in background leaving black sky

void remStars(int arr[200][2]){

for(int i = 0; i < 200; i++){

int x,y;

x = arr[i][0];

y = arr[i][1];

GLCD\_Pixel(x, y, GLCD\_BLACK);

}

}

//draws target

void drawTarget(int x, int y){

GLCD\_DrawCircle(x, y,5,GLCD\_YELLOW);

GLCD\_DrawLine(x,y-10,x,y+10,GLCD\_YELLOW);

GLCD\_DrawLine(x-10,y,x+10,y,GLCD\_YELLOW);

}

//removes target

void remTarget(int x, int y){

GLCD\_DrawCircle(x, y,5,GLCD\_BLACK);

GLCD\_DrawLine(x,y-10,x,y+10,GLCD\_BLACK);

GLCD\_DrawLine(x-10,y,x+10,y,GLCD\_BLACK);

}

//draws blast

void drawBlast(int x, int y){

int rad;

for(rad = 0; rad < 20; rad++){

CyDelay(15);

GLCD\_DrawCircle(x,y,rad,GLCD\_GREEN);

}

for(rad = 0; rad < 20; rad++){

CyDelay(15);

GLCD\_DrawCircle(x,y,rad,GLCD\_BLACK);

}

}

//draws superblast for when blast has charged

void drawSuperBlast(int x, int y){

int rad;

for(rad = 0; rad < 20; rad++){

CyDelay(15);

GLCD\_DrawCircle(x,y,rad,GLCD\_GREEN);

}

for(rad = 20; rad < 30; rad++){

CyDelay(15);

GLCD\_DrawCircle(x,y,rad,GLCD\_BLUE);

}

for(rad = 0; rad < 30; rad++){

CyDelay(15);

GLCD\_DrawCircle(x,y,rad,GLCD\_BLACK);

}

}

//makes stars twinkle

void starTwinkle(int arr[200][2]){

int16 i;

for(i = 0; i < 10; i++){

int x, y, randi;

randi = rand()%200;

x = arr[randi][0];

y = arr[randi][1];

GLCD\_Pixel(x, y, GLCD\_BLACK);

CyDelay(100);

GLCD\_Pixel(x, y, GLCD\_WHITE);

i++;

}

}

//allows for scrolling in all directions

void starScroll(int arr[200][2], int dir){

remStars(arr);

if (dir == 0){

for(int i = 0; i < 200; i++){

int curX = arr[i][0];

if (curX == 131){

arr[i][0] = 0;

}

else{arr[i][0] += 1;}

}

drawStars(arr);

drawTarget(TARGETX,TARGETY);

}

else if (dir == 1){

for(int i = 0; i < 200; i++){

int curX = arr[i][1];

if (curX == 0){

arr[i][1] = 131;

}

else{arr[i][1] -= 1;}

}

drawStars(arr);

drawTarget(TARGETX,TARGETY);

}

else if (dir == 2){

for(int i = 0; i < 200; i++){

int curX = arr[i][0];

if (curX == 0){

arr[i][0] = 131;

}

else{arr[i][0] -= 1;}

}

drawStars(arr);

drawTarget(TARGETX,TARGETY);

}

else if (dir == 3){

for(int i = 0; i < 200; i++){

int curX = arr[i][1];

if (curX == 131){

arr[i][1] = 0;

}

else{arr[i][1] += 1;}

}

drawStars(arr);

drawTarget(TARGETX,TARGETY);

}

}

/\* [] END OF FILE \*/