```c
#include "Proj_2A_header_file.h"

int main (void){
unsigned int rand;                          //random number
unsigned int PORT_1, PORT_2;

setup_HW;
while(switch_2_up);                         //wait for switch 3 to be pressed before starting


PORT_1=0b0000000000000001;
PORT_2=0b1000000000000000;
while (1){                                  //Infinite loop that could be replaced by a "SW_reset"

while(1){                                    //Infinite loop.
Timer_T0_10mS_delay_x_m(1);                  //The "break" statement is used to exit this loop
while(switch_2_up);                           //halt if switch 3 is released
rand = (PRN_16bit_GEN(0))%3 + 1;              //generate a random number (1,2 or 3)
for (int m = 0; m < rand; m++)                //set up a loop
{if (PORT_1 == 0b1000000000000000)            //Either reinitialise PORT_1
PORT_1 = 0b0000000000000001;                  //or
else PORT_1 = PORT_1 << 1; }                  //prepare to shift the top row of the display left
if (PORT_2 == 0b1000000000000000)             //by 1, 2 or 3 places
PORT_2 = 0b0000000000000001;                  //prepare to shift the lower row of the
else PORT_2 = PORT_2 << 1;                    //display left but only by one place

I2C_Tx_2_integers(PORT_1, PORT_2);             //update the display

if(PORT_1 == PORT_2)                          //If a single vertical line in illuminated
{Timer_T0_10mS_delay_x_m(35);                  //start a timer and pause
if(switch_2_up)break;                         //If switch 3 has been released "break" out of the while loop
else while(switch_3_down);}                   //else wait for it to be released

if(PORT_1 != PORT_2)                          //If disjointed segments are illuminated
{Timer_T0_10mS_delay_x_m(8);}}                //momentarily pause before returning
                                              //to the top of the while loop
while(switch_2_up){
I2C_Tx_2_integers(PORT_1, 0);                 //flash the display until the switch is up
Timer_T0_10mS_delay_x_m(16);
I2C_Tx_2_integers(0, PORT_2);
Timer_T0_10mS_delay_x_m(16);}}}                //When it is pressed again return to the outer while loop
```