**Homework #1**

**정보컴퓨터공학부**

**201424423**

**김영진**

**1. Put your program source as here**

**<digitalclock.h>**

#ifndef \_DIGITALCLOCK\_H

#define \_DIGITALCLOCK\_H

// Declare variables for date, time and functions

#include <stdio.h>

#include <time.h>

#include <pthread.h>

#include <ncurses.h>

#include <unistd.h>

time\_t now;

struct tm t;

void \*showdate(void \*ptr);

void \*showtime(void \*ptr);

void \*showelapsedtime(void \*ptr);

#endif

**<localdate.c>**

#include "digitalclock.h"

void \*showdate(void \*ptr){

    // Declare variable for storing date data

    char date[50];

    while(1){

        time(&now);

        t = \*localtime(&now);

        //Calculate current time and convert to form that we want

        strftime(date, sizeof(date), "%Y-%m-%d", &t);

        //Print On Window

        mvprintw(1, 2, "Local Date");

        mvprintw(3, 2, date);

        sleep(1);

    }

}

**<localtime.c>**

#include "digitalclock.h"

void \*showtime(void \*ptr){

    //Declare variable for storing current time data

    char time\_now[50];

    while(1){

        time(&now);

        t = \*localtime(&now);

        //Calculate time and convert to form that we want

        strftime(time\_now, sizeof(time\_now), "%H-%M-%S", &t);

        //Print on Window

        mvprintw(1, 41, "Local Time");

        mvprintw(3, 41, time\_now);

        sleep(1);

    }

}

**<elapsedtime.c>**

#include "digitalclock.h"

void \*showelapsedtime(void \*ptr){

    //Declare variables for storing hour, minute, second for each

    int hour, minute, second;

    // counting for each second

    int elapsed = 0;

    while(1){

        //Convert elapsed count to each time unit

        second = elapsed % 60;

        minute = (elapsed / 60) % 60;

        hour = elapsed / 3600;

        //Print on Window

        mvprintw(1, 71, "Elapsed Time");

        mvprintw(3, 71, "%02d:%02d:%02d", hour, minute, second);

        sleep(1);

        //Increasing elapsed count

        elapsed++;

    }

}

**<main.c>**

#include "digitalclock.h"

int main(){

    // Declare variables for subwindows and threads

    WINDOW \*date\_win, \*time\_win, \*elapsed\_win;

    pthread\_t date\_thread, time\_thread, elapsed\_thread;

    // Initiating window

    initscr();

    // set cursor

    curs\_set(0);

    // Set subwindows' position

    date\_win = subwin(stdscr, 5, 40, 0, 0);

    time\_win = subwin(stdscr, 5, 30, 0, 40);

    elapsed\_win = subwin(stdscr, 5, 30, 0, 70);

    // Set subwindows' borders

    box(date\_win, ACS\_VLINE, ACS\_HLINE);

    box(time\_win, ACS\_VLINE, ACS\_HLINE);

    box(elapsed\_win, ACS\_VLINE, ACS\_HLINE);

// Create Threads and Run

    date\_thread = pthread\_create(&date\_thread, NULL, showdate, NULL);

    time\_thread = pthread\_create(&time\_thread, NULL, showtime, NULL);

    elapsed\_thread = pthread\_create(&elapsed\_thread, NULL, showelapsedtime, NULL);

    // Refresh each windows

    while(1){

        wrefresh(date\_win);

        wrefresh(time\_win);

        wrefresh(elapsed\_win);

    }

    // After finishing all work, windows are deleted

    delwin(date\_win);

    delwin(time\_win);

    delwin(elapsed\_win);

    endwin();

    return 0;

}

2. You must show the building result after compiling and linking your source codes. You must show no warnings and errors.



I am sorry, I cannot find the reason

3. Put a screen shot of output generated by your program as well as the Ubuntu system’s clock to verify if your clock is working correctly or not



