

CPSC 223N Assignment 2

Traffic Light

Introduction

Make a traffic light in your computer using C#.

What you will learn or experience in this assignment

1. How to declare an internal clock and set its speed.
2. How to attach a listener to a clock
3. How to pause a clock and re-start a clock.

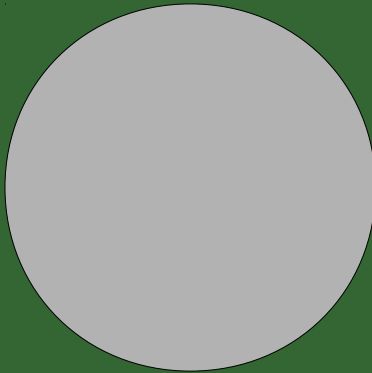
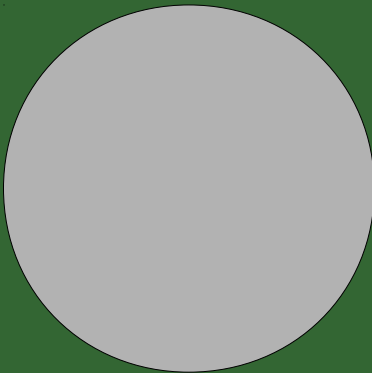
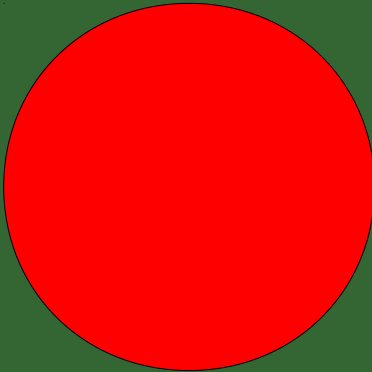
User Interface

You probably realize by now that in this course we make lots of user interfaces. During the technical phase of your future job interviews if you are asked what do you know about C# you are certainly qualified to say that “I made a lot of user interfaces”.

For this assignment make a form that will hold your traffic light. The traffic light appears to be embedded in the form. The following is an illustration of the traffic light inside the form. The example shows the red light “on”, and the yellow and green lights are “off”.

Only one light is on at any time. If the green light is on then the other two lights are grayed out.

Traffic Light by Lisa Ostrogradsky



Start

Rate of Change



Slow



Medium



Fast

Pause

Exit

Programming specifications

When the program starts the traffic light is off (no electricity).

When the user clicks on “Start” the traffic begins normal operations at the default speed “slow”, which is explained in the next paragraph.

If the user clicks on “Pause” then the traffic light freezes. The traffic signal does not turn off the electricity; it simply pauses where it is. When “Pause” is clicked the string “Pause” on that button changes to “Resume”. When “Resume” is clicked the string “Resume” changes to the string “Pause”.

If the user clicks on “Resume” then the traffic signal begins operation from the point in time when operation was suspended.

At any time the user may change the speed (rate of change) by clicking on one of the radio buttons. Here are the rates for slow, medium, and fast operation. The numbers represent number of seconds each light is on.

	Red light	Green light	Yellow light
Fast	1.0 s	0.75 s	0.25 s
Medium	2.0 s	1.50 s	0.50 s
Slow	4.0 s	3.0 s	1.0 s

The table shows how many seconds the light remains ‘on’ in each mode of operation. For example, in the ‘Slow’ mode of operation the red light is on for 4 seconds, followed by the yellow light on for 1.0 second, followed by the green light ‘on’ for 3.0 seconds.

Classroom instruction

Very few people are able to program in a new language in isolation. Classroom attendance is very helpful, but attendance is not mandatory. You may program in a vacuum if you chose that style.

In the classroom it will be explained how to set up a clock, change its speed dynamically, and cause functions to be called according to the tic’s of the clock.

Comments in source code

In the university you are in training for a future career in computing. Part of this training is to make professional looking documents. Source code is a document. Source code must have comments that fully explain all aspects of the program. All the posted sample programs include comments of the kind you are expected to put into your own programs. Programs sent to me without professional-looking comments will simply be returned until the source code looks professional.

Script files

These are the files whose extension is .sh. These are important components of your computer science education. You have to include a script file with any program submitted for a grade. If there is no working script file the grade defaults to 0 out of 100. The script file must be commented as if it were a C# source file.

Your attendance is important

You have to be present in the class room at the time of the midterm. There is no makeup midterm because I have only one question for the midterm. There is no “make up question” period. Do not ask to re-schedule the midterm at a special time.

When you are finished working on the assignment do send me the source files and the script file as simple attachments to an email message. Do not compress the files into a zip pack. Send to: holliday@fullerton.edu

Comment about word processed documents.

You probably know from your experience with open source software that “odt” is the open source format for documents. [“doc” and “docx” are closed source formats created by Microsoft] Since we are all scientists your homework naturally arrives in the “odt” format. Most open source documents are created in Libre Office. A few open source document files are created in the older word processor Open Office. All of that is just fine. The issue here is the fact that if an open source document (odt) containing drawings is opened in MS Word it is often the case that the images are distorted, but the text will appear correctly.

All the assignments of this course are created with Libre Office. If you read the document with MS Word you will probably lose the pictures. If you really want to see your homework from a Windows platform then go get a free copy of Open Office for Windows.

Enjoy your programming.

Due date: September 30, 2018 at 23:59pm

If you send me the program before this date I will evaluate it and send you the feedback.

If you send me the program after this date I will evaluate it and send you the feedback.

Check off list for evaluating Traffic Signal program

Source code

Written in C# with no evidence of Visual Studio
Program design partitions the solution into 2 and sometimes 3 files.
Comments identify the author, course, program, and purpose.
No meaningless residual comments remaining from one of professor's programs.
Program compiles without warnings and without fatal errors.
The script file runs out of the box.

User Interface qualities

Program executes and shows a UI.
UI shows a title strip across the top with the program's name and the author's name
Outline of a traffic signal appears (3 circles)
The graphic area around the traffic signal has a distinguishing official highway color.
The control strip has a unique color
There are slow, medium, fast radio buttons in the control strip
There is a button labeled 'Start'.
There is a button labeled 'Pause'.
There is an Exit button

Run-time functionality

The signal does not function until the start button is clicked.
Visually the red light is longest, green is middle, yellow is shortest in duration.
Visually 'fast' runs about 4 times faster than 'slow'.
Visually 'slow' runs about 2 times faster than 'slow'.
No two lights are 'on' concurrently.
At least one light is 'on' at any given instant.
The user can change the speed of flashing without exiting from the program.

Announcements

Links to announcements about jobs in the video game industry.

==> <https://www.indeed.com/q-video-game-producer-jobs.html>

==> <https://ca.indeed.com/Video-Game-Programmer-jobs>

==> <https://www.gamedesigning.org/career/programming-languages>

The video design club at CSUF meets every Friday, from 12:00 to 4:00pm, in room 101. Interested persons may arrive anytime during that time period and leave at any time.

For questions about the game club send mail to csufvgdc@gmail.com