
Traffic Signal Control System

The idea is to design a traffic signal control system at an intersection that monitors waiting vehicles and pedestrians using sensors and buttons, and accordingly schedules the lights that allow the traffic or pedestrians to cross the intersection.

For added complexity, this could be a busy intersection with different traffic patterns at different times of day (such as peak vs. off-peak) with different scheduling algorithms in each case.

Of course, if that proves to be **too** complex, this could be as simple as a controller for the lights outside an unpopular apartment complex which only change when a car wants to turn into or drive out.



I plan on making a Security System for a Bank – with additional security features for the vault – such as the dual-key unlock system and stuff like that. Also, an emergency override if there is some sort of robbery-alert switch pressed.



I would like to do my project on a portable CD player.
Some of the functions it has are:

1. Stop
2. Previous Track
3. Next Track
4. Play
5. Pause
6. Hold
7. Anti-Skip
8. Volume
9. Bass Boost
10. Programmable Tracks



Coen 120
Individual Project Proposal

For my Individual project I plan on designing an mp3 player. The player will be equipped with a LCD screen to display information, standard interface buttons, a earphone port, a USB port, a compact flash port and on board memory for storage. The player receives song files from the memory and plays them. You can play in a standard first through last song or do a shuffle style of play. The LCD will display the song title, song time and track number.



Individual Project Proposal

I'd like to design the embedded system for a treadmill...I haven't decided exactly how sophisticated it's going to be, but here are my ideas for attributes and operations:

Attributes:

- speed
- incline
- time interval

Operations:

- start
- stop
- pause
- resume
- cooldown
- setspeed
- setincline
- setinterval
- setprogram (manual, cardio, fatburn, marathon, etc)

The start operation will prompt the user to enter a program. Stop clears all operations and sets speed to zero. Pause will save the current settings and reduce speed to zero, meanwhile wait for the user to resume. Certain programs will have predefined speeds, inclines, and interval times...the manual program will have default values but will always be waiting user input. At any point, the cooldown operation can override all other operations and start a cooling down mode which moves the treadmill at a reduces speed and low incline for a short period of time, and then stops.



Coen120
4-12-01

Project Proposal: full-featured portable Mp3 player

The player will of course offer the standard features of play, next track, previous track, and forward and reverse seek. In addition it will link to a PC via USB and have a SmartMedia slot for memory expansion. The Unit itself will also have its own memory to store songs. The Unit's display will indicate the current song, and other basic information.



Prof. Quinn,

I'm not quite sure what I want to do. I need your advice. My first choice is either a complex remote (with a LCD touch screen to control various items in a house), but I'm not sure how the wireless aspect of that would work. So my second option is a mini ATM, but here again, I'm not sure if that is too simple. Let me know your thoughts.

Thank you,



COEN 120

Individual Project Proposal

Proposal: Car Stereo/CD player

The stereo can operate in one of two modes when on, either in CD player mode, in which the user can play a CD, skip tracks, skip ahead in a track, pause, stop, etc. In radio mode you can scan for a station or pick a preset station. In both modes, one can control the volume, bass, and treble levels, press a preset volume softening button for quick decrease and increase in volume. This project sounds a bit complicated, but I'm not used to the programs used to create such a thing yet, so I'm not really sure.



Topics for Personal Project

I would like to design an alarm and keyless entry system for a car. The user would have a device that would allow her to lock or unlock the car door(s) with the push of a button. If the user pushed the unlock button once, it would only unlock the driver's side door. If the unlock button was pushed twice, all the car doors would unlock. There would also be a panic button that would sound the alarm if pressed.

Another option I considered was a fax machine. This machine would scan in documents and trasmit them. It would also be able to receive documents and print them out.

I would prefer to design the car alarm and keyless entry system if possible.



Personal Project
COEN120

Below are two project that I would like to work on for my personal project. I would be prefer to work on the garage door opener, but I am open to either one. Let me know which one you think would be better.

The firts project option is a garage door opener. This garage door opener would have a button for in (which opens the door if it is closed) and a button for out (it closes if the door is open). Also it would include a safety mechanism that would sense if there is an object underneath it before closing and if there is an object it will not close.

Another option for my project is a digital camera. The camera would have a storage for images and would allow the user to delete or save images.



Individual Project Proposal

GigaBaby ☺

It's like a giga-pet, but that project failed because it had the wrong target – kids don't want to wait on the darn thing hand and foot or else it dies!

Target is potential parents. GigaBaby would be for parents unsure about having children. Or for teenagers to reinforce birth control.

GigaBaby cries really loud when he or she needs to be fed, and then burped, for a diaper change, and for attention. If the baby goes for a time without being attended to it will get sick and subsequently die. If the baby is healthy and loved it will make happy gurgling – laughing sounds.

Real Time System:

Runs a clock – at certain times output “cry”
and loop until corresponding input.

If no input go into the “sick” state.

After a certain time in the “sick” state go into “death” state.

If “doctor” input then go into the “happy” state and output “gurgle”.

If corresponding input go into the “happy” state and output “gurgle”.

After a certain time, move from “happy” state to “ready” state.

At next time slot, output “cry” ...

Resource being shared – speakers / the babies voice.

“Hungry”, “Stinky”, and “Need to be burped” states have higher priorities than the “happy” state.

Of course babies are more complex and many other features could be added to GigaBaby. (just don't ask how I thought up this idea!)



Project:

I plan on creating an embedded system for a Surveillance system.

Functions:

- 1) Turning on camera when motion is detected.
- 2) Distinguishing different types of motion (so a leaf falling wont cause it to turn on)
- 3) What to do when video memory is filled
- 4) What to do if there is inadequate light
- 5) Sensitivity settings



COEN 120

04/12/01

Individual Project Proposal

I would like to work on a car stereo system. I'm not sure if this project is too simple. I would implement all the different sources of audio medium, including cd, tape, am/fm, etc. I would also include working on the basic features including rear versus front speakers.

I chose this topic because I remember sitting in a car once, where one of the stereo's features was an automatic volume change with respect to the car's speed. For example, when we accelerated to 65 mph on the freeway, the volume would increase with the acceleration of the car. Another feature could also be when the stereo turns off. In some cars, the stereo is still on when the engine shuts off, and the keys are out of the ignition. The stereo only turned off when the passenger exited the car, causing the door to open and then close, which triggered the stereo to then turn off. These are just a few ideas.

Is this enough for a project? Please let me know. I am not familiar with what exactly we will be implementing. Thanks!



Saturday, April 14, 2001

Individual Project Proposal

I would like to develop a robot controller. There is a robot, and this software is for controlling the robot. There is a joystick for the person to control which direction it is going. The robot can be in many modes, linear motion (going forward, going backward), turning around, receiving inputs from sensors that take input from its environment, etc. It can also view its surroundings and display this on a screen on the controller.

The robot itself has many components. The controller would send signals to the brain, its central processing unit (its brain, the head), which control all its actions. The brain would then send messages to the corresponding “body parts” to do certain tasks. For example, to pick up something, it would have to bend down and pick up the material. This would require bending of the knee, ankle, and back (to bend down) and bending of its elbow and wrist accordingly. Walking would require bending of the knee and ankle. Furthermore, it can remember a sequence of instructions, and execute without a person actually controlling it.

Although making this a multi-threaded application would greatly enhance the robot’s performance (such as allowing it to run, which need simultaneous functionality of both legs), it would also greatly increase the complexity of implementation, especially for me because I have not have much experience with multi-threaded applications.


Moreover, due to our time constraint, I would not able to learn to program with multi-threaded application while simultaneously try to learn how to utilize Rhasody and other tools, which is the focus of this course. Therefore, this simplification is almost necessary.



Coen 120
4/12/2001

Individual Project Proposal
Home Security System with Motion Sensors

My project will consist of creating a home security system with motion sensors or noise activated sensors, like the one at my house. This type of alarm system will monitor anyone's entrance to the house through motion, rather than detecting if a door has been opened, except for the garage door and the windows, which will not have motion detectors. This security device will have several predefined areas so when a motion sensor detects movement it will report its area location so the user will know where the "thief" has entered. On the other hand, if the movement caught by the sensor is too quick, like that of a mosquito, it will not report an entrance. The user will have one minute to deactivate the alarm before it goes off and when activated the user will have one minute to exit the house and if this condition is not met on time, the alarm will also go off. The user will be able to activate the alarm and disable a specific area, like the second floor where the sleeping rooms are, while having the rest of the house secure. The windows and garage door will have magnetic detectors that will detect if the doors are being closed or opened indifferently, so if the user activates the alarm while inside the house and disables one sleeping room area for example but leaves the window open, the security system will load as usual but if the user then decides to close the window with the alarm on, the magnetic detector will detect this and make the alarm go off. Also, if the house is accessed through the back door, the alarm will automatically go off without giving the user one minute to deactivate it.

These are most of the actions I've thought of, so far, for the motion sensor security system I nd to work on hoping it makes a challenging project to be good enough.

COEN 120
Prof. Quinn
4-12-01

Individual Project Proposal

The device that I have chosen for this project is an ATM machine used by banks. The ATM machine is used by bank customers to process transactions pertaining to their accounts.

The ATM machine (or at least the one at Washington Mutual) consists of a 10-key keypad as well as eight multi-functional buttons surrounding the display screen. Prior to processing any transactions, customers must identify themselves by inserting the ATM card and entering a PIN. Once the customer's identification has been verified, they are given the options to either withdraw or deposit money, or do a balance inquiry. Choosing the withdraw option then prompts the customer to choose which account to withdraw from, savings or checking. After executing one of the two options, they are given the different denominations of money that they are able to withdraw. In choosing the deposit option, the customer is also prompted to choose either savings or checking. Once the desired account has been chosen, the user then enters the amount that he/she is depositing and is further prompted to feed the deposit envelope into the machine.

After each individual transaction is complete, the customer is asked if they want another transaction. If yes, the customer is prompted again to choose either to deposit or withdraw. If no, the customer's session at the ATM

machine is terminated, and they are given a printed receipt of their transactions.



Coen 120

remote control for stereo

- capabilities to play, stop, rewind, forward a cd
- random play
- switch radio stations
- control volume
- turn power on/off
- switch over from cd to stereo
- possibly set a clock



Food Vending Machine Real Time System
COEN 120 Project Proposal

Im going to do my project on a vending machine like the ones on campus. It will check that the correct change was given or if the customers access card has enough money to buy the selected item. If the right amount of change was given or the access card has enough money it will turn the coil that is identified with the letter and number that the customer entered which will drop the item down and it will release any excess change to the change slot.



COEN 120
Personal Project Proposal I
April 12, 2001

Personal CD Player

My project will be a personal CD player consisting of the basic functions or features.

Description:

The Personal CD Player's features include playing a CD, stopping a CD, fastforwarding songs on the CD, rewinding songs on the CD, and programming playlists of songs from the CD.

Playing

The Personal CD player will play songs in the order according to the CD or the programmed playlist of songs.

Stopping

The Personal CD player will stop playing the CD and resets the memory. The programmed playlist, if there is one programmed, must be re-programmed.

Fastforwarding

Fastforwarding a song on the CD is skipping that whole song and the player will play the next song. Therefore, it is not possible to start listening to a song from the middle of a song.

Rewinding

Rewinding a song on the CD is repeating that whole song from the beginning. Therefore, like *fastforwarding*, it is not possible to start listening to a song from the middle of the song.

Programming

Programming a playlist of songs from the CD is saving a selected list of songs from the CD, and the Personal CD Player will play the playlist (with the option of repeating the playlist) until the player is *stopped*. When the player is *stopped*, the playlist must be re-programmed, if desired to have one, the next time playing the player.



COEN 120
4/12/01

Individual Project Proposal

I plan on implementing a control system for a DVD player. It will have the basic features such as play, pause, search – both forward and reverse, and stop. If possible I'll also try to implement the feature that allows users to choose which chapter of the DVD they want to view. Please let me know if you think this task is too simple or too difficult. Thanks. Happy Easter.



Basic Home Theater Receiver

I wish to design a basic model of how a receiver distributes sound among the six speakers in a home theater system. This is commonly called Dolby Digital 5.1 or DTS. How it basically works is multiple sound signals comes in from the DVD (in one stream) and the receiver decides (based on the type of signal) which sound it will send to each of the six speaker(s). The receiver must be able to switch between 5.1 and stereo and must also be able to adjust the main volume as well as the individual volume of each speaker individually. I'm not sure about the complexity of this project or the logistics of it, but I will get a better understanding of what's involved later next week.



Dr. Quinn,

I thought I'd try modeling a handheld GPS receiver as my personal project.

The most obvious functions I thought of include: continuous synch w/ satellite signals and moving maps; zooming views; trip waypoints, time, distances, elevations, and speeds; perhaps a backtrak function; search capability (the eMap can find the nearest bank, restaurant (by type), or entertainment venue - it can also find specific intersections and addresses); and maybe the ability to upgrade/download new maps.

This may be too simple for the project you want; on the other hand, it may be way too complicated for me to implement completely in the next month, so I'd appreciate your feedback. Thanks.



Coen 120
Project Proposal

For my project, I plan to design a car alarm. The car alarm will be able to detect if the hood, trunk, or door is being opened. The alarm will also have a starter kill does not allow the car to start if the alarm is on. The alarm will be connected to a pager that the owner carries. It pages the owner if the car is being tampered with or being broken into. It will also page the owner if the for some reason, the thief gets to the main system and disconnects it from the batter or disables it. It will have a two-way paging system. The pager will be able to warn the user even if the main system has been killed. This will allow the user know at all times whether his/her car is being stolen.

If the car is broken into and no sirens are going off, the thieves will take more time than usual to steal things because they think no one knows what they are doing. But during this time, you already know that your car has been broken into and can call the authorities or go stop them yourself. One of the main functions of the alarm is to prevent the car from being stolen. When a thief tries to start the car and it does not start, he/she will likely try to disconnect the alarm so that the starter kill will no longer function. If the thief tries this, the pager will go off and hopefully you can get to your car before it is stolen.

Most car alarms out in the market today do nothing to stop a thief from stealing your car. The main purpose is to deter potential thieves. I want a system that will help in actually stopping theft.

Well, I hope this is an adequate proposal.



Garage Door Opener

Features:

Remote controlled.

Three Operation: Open, Close, Stop from any position.

Sensor to detect any obstruction in its path.

Prevent the door from hitting the object in the path.

Alert the user of the obstruction through an alarm or a beep.

Nothing is done when the Open command is given and the door is already open.

Same is when the door is closed and the close command is given.



Date: 4/12/01

Individual Project Proposal

For my individual project, I want to implement a remote ignition system for a car. From a certain range, the user presses a button and the car starts automatically.



Project Proposal

I am going to have a car cassette stereo with AM and FM tuner and a connection to a CD changer for the trunk of the vehicle. I am going to be honest Dr. Quinn, I have run out of time so I am making this short. I will do my best to keep up with the project and I am going to ask for some support during office hours. I apologize for such a vague summary of my project but it is Thursday night and I am almost out of time.



Project #1 Proposal

For the first project I would like to design a “Home Theater *Receiver*” (Kenwood VR-306) with the following features:

Audio Inputs:

- Video 1
- Video 2
- DVD
- CD
- Tape
- AUX
- Tuner



Video Inputs:

- DVD
- Video 1
- Video 2

Audio Outputs:

- Left Speaker
- Right Speaker
- Center Speaker
- Two surround speakers
- Sub-woofer

Controls:

- Volume
- Bass
- Treble
- Input Selector
- Speaker Selector
- Power

To: Neil Quinn
Date: Thursday - April 12, 2001 11:55 PM
Subject: project proposal
Mime.822 (2022 bytes) [View] [Save As]

Your FTP seems to be down or I'm doing something wrong, here's my project proposal, I'll gladly upload my file once the server's back up.

N2O control module.

N2O (Nitrous Oxide) is a power adder often use by drag racers. It's a gas that flows from a bottle into the engines, under high pressure and high temperature it breaks down into it's elements. The increased amount of O2 enables you to burn more fuel. This is done by opening up a nitrous solenoid and a fuel solenoid which then mix inside the cars intake.



The control module would be used to pulsate both the n2o solenoid and the fuel solenoid (quickly opening and closing it) so that a predetermined amount of n20 and fuel can be attained without having to change jets (funnel like metal pieces that limit the fuel and n20 flow; the traditional way of adjusting N2O). The device would need a button to activate the module, and 2 knobs to control the amount of fuel and the amount of N2O.

It would have a display that would show the readings of the cars O2sensors: determining if the car's running rich (too much fuel) or lean (too much n20). It would also shut itself down when ti reaches a predetermined lean condition (which is when things can go wrong with n20).

The device could also automated itself to reach a preset condition (ideally just a little rich), guarantying a maximum "shot" of n20 under relatively safe conditions.

Project Proposal
=====

For my project I will implement software for a digital answering machine - voicemail. It would have different mailboxes, remote access, different settings (like remote access password, number of rings before pickup...),...



April 11, 2001
Coen 120
Proposal

I will be using a Portable DVD Player for my project. This DVD player is very advanced and has many functions. Besides the typical "play", "next chapter", and other basic functions it has a built in remote on the actual player. This remote guides one through the menu screens. There are also other buttons such as "DVD menu", "Title", and "Return". There is a portable battery compartment, inputs for S-Video, Optical, as well as A/V outputs, DC power input and others. There is a digital screen displaying information about the DVD .



COEN120 Proposal

The device that I was thinking about working with is a portable MP3 player. The following functions are found on the device:

- play/pause button
- stop button
- search forward/back button
- power button
- a display which shows the song title, artist, and possibly the time left
- volume up/down buttons
- some connection to establish communication with a PC (*I am assuming this may somewhat to difficult?*)
- headphone output
- expandable memory slot

Please let me know what you think of this. I was also considering a DVD player, so just to let you know where I might head if this is somewhat out of range for implementing. Thank you.



COEN 120
Individual Project Proposal

I was thinking of making a program that monitors signal lights at an intersection. This is pretty self-explanatory. I'm not sure how I would display my program without graphics. If this isn't a valid proposal then I was thinking of doing a stereo system, with a CD and tape player, and radio. There would be a main switch to change from each mode. CD player would have play, next track, previous track, stop, pause, fast-forward, rewind. Tape player would have the same features of the CD without the next track and previous track. The radio station would just be set to the radio station that is set. You can e-mail me back on your suggestions.



Individual Project Proposal

For my individual project, I would like to work on a wireless cycling computer. Today's cycling computers have enough functions to make this a viable, and worthwhile project. There would be at least two sensors, one for speed and all relevant ride information, as well as one to track pedal cadence. Features would include 24 hour clock, an automatic shutoff controlled by a timer, constant display of the speed (updated at either one half, or one second intervals), average speed, maximum speed, time for current ride, distance for current ride, total distance since installation of the computer, pedal cadence, and also altitude gain for individual rides.



Individual project

Digital Camera

Features:

- 1) Programmed electronic shutter.
- 2) Real image zoom viewfinder.
- 3) Auto focus system.
- 4) Programmed automatic exposure control.
- 5) Electronic self-timer with approx. 12 sec. delay.
- 6) Infrared remote control unit with approx. 3 sec. delay.
- 7) Flash Modes: Auto flash, Red-Eye Reducing Flash, Off, Fill-In Flash, Night Scene Flash and Red-Eye Reducing Night Scene Flash.
- 8) Battery Check: displayed on LCD.
- 9) The camera must have quite a bit of on-board ram to hold those images while you swap in the second smart Media Card or floppy to copy them to.
- 10) LCD display of images and a User Interface.

11) Virtual Film or Smart Card

Internal memory; with removable cards.

12) Superb Settings

The colorful onscreen menu system to make it easy to manage the powerful camera's many settings, modes, and options.

13) Safe and Sound

To protect its glass lens it has a circular plate that rotates to reveal the lens and turn on the camera. In the off position, the lens is covered.

14) ZOOM LENS: includes zoom lenses to zero in on your target at different ranges.



COEN 120
4/12/01

Project One Proposal

Telephone with answering machine:

The Telephone's default state is idle. There are a number of events that can trigger an action. One is that if a call is received. In this case there are also a number of events. The call can be picked up by the user or after a certain number of rings picked up by the answering machine. This would trigger the counter to add a message to the display allowing the user to know that a message was received while they were away. The other scenario is where the user answers the telephone before the answering machine picks up. The phone is then in active mode while the user is talking. The system is returned to the default state once the user hangs up the phone. For increased difficulty a call waiting feature could also be implemented, in which if a call was received while the user was on the other line then a *beep would sound notifying them of the call. An alternative would be a line busy transmitted by the telephone. Additional features could be caller ID, and redial and phone number storage which would be implemented from the on state.

States

Idle: Waiting for call

On: User has picked up the handset, waiting for input.

Active: Talking

Is this too easy or too boring?

Thank you.



To: Neil Quinn
Date: Thursday - April 12, 2001
Subject: project

My basic project idea is an a intelligent lighting desk - takes an array on analog inputs, a few buttons, and a jog wheel, has some options for storing scenes and such, gives user feedback on a simple text-only LCD and talks to the lights via the european standard 9600bps RS-232 based PMX.



COEN 120 Project Proposal

Digital automotive instrument display ("digital dash")

Inspired by modern formula race cars, the digital dash allows the driver to see all relevant vehicle information such as engine speed or gear information in a very small footprint. For race cars that take advantage of data acquisition systems, the dash allows monitoring of the information in real time. My project is to simulate a digital dash for use on modern street cars, based and modified slightly on the Honda S2000 dash (<http://www.honda2001.com/models/s2000/images/photos/3-big.jpg>). The system will display most of the regular information available on current cars, with the possibility of interfacing with data acquisition systems in the future.

The number of outputs and sensor readings is limitless; for the sake of simplicity I have reduced the outputs to a reasonable number listed below (or so I hope). Unfortunately, the accuracy of these outputs requires baseline values that I have no information about.

Engine speed

Process of continuously taking engine speed value through ignition voltage or from computer (ECU) and representing the value with a sequence of LEDs in increments of 100 to 250 RPMs, from zero on up to the engine redline. ex: 4700 RPM will light 47 bars.

Three stage shift light

Sequentially lit, the lights will respond to three preset RPM values, the last one being just before redline. This allows the driver a quick way of determining when to shift without looking at the bar display. ex: stage 1: 5600, stage 2: 6500; stage 3: 7500.

Gear number

Based on the gear selected via the car's computer (ECU), or corresponding an electronic switch value based on the shift lever position, a 7 segment LED will display a value corresponding to gear number (1-6), neutral (n), or reverse (r).

Vehicle speed

Similar to getting data from engine speed sensor, vehicle speed will take the information and light up three 7 segment LEDs to display speed (0-299).

Warning lights: Oil and Water

Temperature sensors placed within the individual streams will report a voltage that when detected will set off their respective warning light.

Bar gauges: Water and Gas.

Water temperature and gas gauge values will be read in from sensors and similar to RPM display, will light LED bars in increments respective of the system. Ex: one LED bar per 50 degrees F up to max, or per unit of gas capacity (1/6 tank) up to full.

Numeric mileage displays: Odometer and trip meter (w/ reset)

Using a wheel sensor, information about the tire size will be computed with the number of revolutions to calculate number of miles traveled. Unlike the other parts of the dash which are event based and calculate values on the spot, mileage will require memory to store values—something that adds to the complexity to the overall project and might be removed later on.



Smart Car:

The idea is to have a computer system in a car which will maintain custom features of any given driver.

The system will keep track of what the seating distance from the steering wheel is, the angles of the rear and side view mirrors, the driver's fav. audio preferences etc. There will also be security implemented through this system.

The above are just a few to mention.

When a driver gets into the car the system will request the driver's name and based on its database of drivers it will upload all the features mentioned above and perform the necessary adjustments to suit the current driver.

Access to change settings on the system will be allowed only upon authorized voice activation codes.



Coen 120 project proposal

Simple Video Camera

This handheld camera would have three modes: off, recording, and playing (selected by knob). The recording mode would have options to adjust brightness to zoom. These would be controlled by a knob and by two buttons, respectively. The playback mode would have five functions (controlled by buttons): play, stop, rewind, fast-forward, and slow motion. It could also have functions to automatically turn off after 5 minutes of idleness, check to make sure a tape is inserted, recharge, etc.

