

AVR COG

Atmel AVR Contest Entry #A3754

Overview:

A home automation and security system needs a way to keep the occupants informed about what's happening around the home. Like many households, mine has several TV's, at least one of which is usually on whenever someone is awake in the house. It makes sense to use them as a display device for the control system.

There are devices available off the shelf that will overlay text onto a video signal, but they are all more expensive than my budget would allow to equip all my TV's and video monitors with one. So I built the AVR Character Overlay Generator, or COG, using the AT90S2313 and a handful of other components as one of the important parts of my system. It is small, simple, versatile, and best of all, inexpensive enough that I can have as many as I need without breaking my budget.

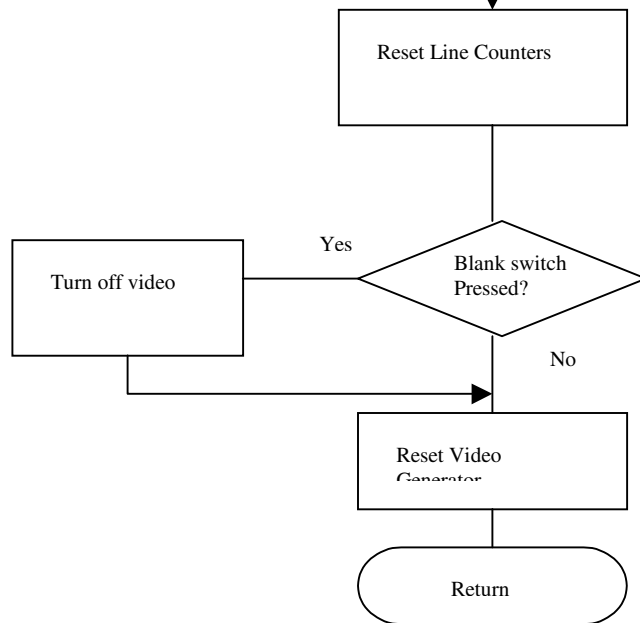
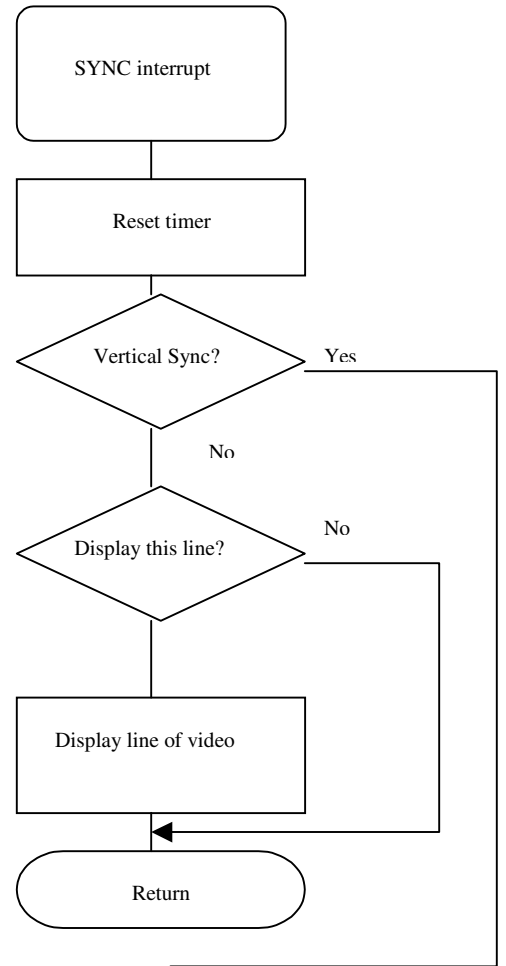
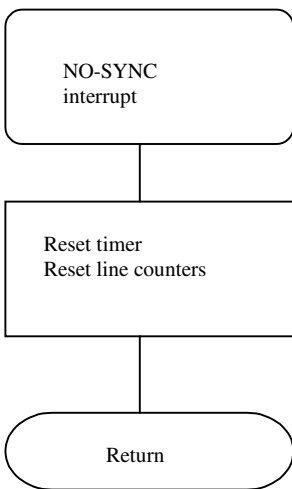
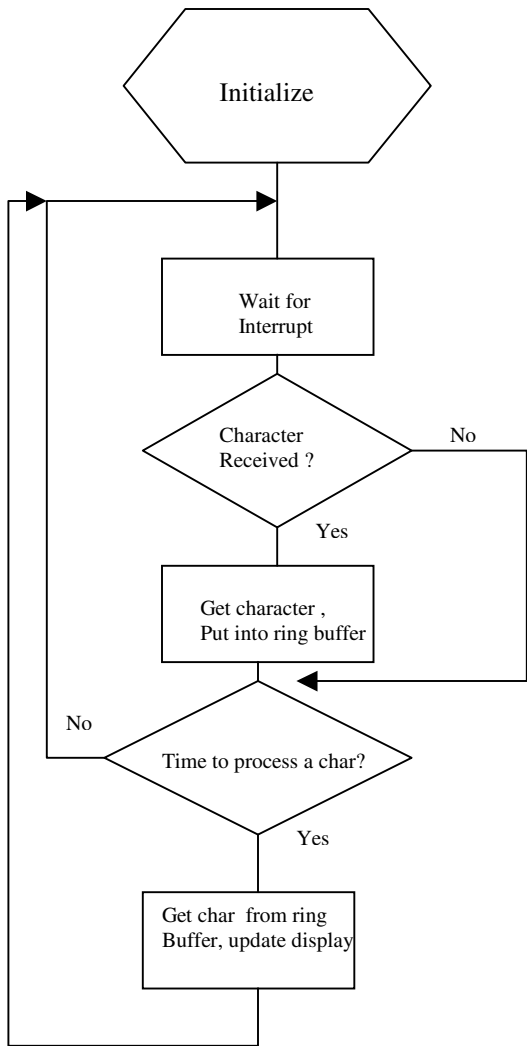
What it's for:

The main focus of the COG is to provide a status display on a TV or security monitor. It's designed to go between a video source (tuner, DVD player, camera, etc.) and a TV or monitor and put status updates onscreen under control of a remote host. It has other uses, especially for robotics or remote monitoring, which I will discuss later. But first, I will describe what the COG does and how it does it.

What it does:

The COG hooks in line between an NTSC video source and display device. It locks itself to the NTSC video and displays text received over a 9600 bps RS-232 link. The text is monochrome and consists of six rows of twenty columns each displayed in the lower half of the screen. The COG works much like the display side of a dumb terminal, recognizing most normal ASCII control codes such as carriage returns and line feeds, as well as a few other codes to control the display. It has 128 displayable characters and can accept data as fast as the serial port can send it. The display can be cleared of all text by a control code, or blanked by a front panel button. If the display is blanked, it will become visible again whenever another character is received from the serial port. There is also a 4 bit output port with a strobe line. This port is intended to select alternate video sources, such as a security camera, under control of the system. However, the port is not dedicated to that and can be used for any other purpose. The input of the serial port is designed to allow up to 16 COGs to be driven from the same port, displaying the same data on every attached device.

AVR COG
Flowchart



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