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LIBRARY SIENCE BREAKING ALARM SYSTEM

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Abstract : The Library Noise Detector with Short Information Provider is a portable device that is used in detecting noise in the library. The device is used to control excessive noise inside the library. The system uses an operational amplifier as a sensor to detect noise and microcontroller in displaying the output in the message display. The design was developed as an alternative or additional help in controlling the noise and prevent disturbances in a specific area of the library.

Keywords:

Library, sensor, noise, noise detector, microcontroller, operational amplifier, message display

Introduction Noise is widely known in science and technology. Its general meaning in such fields, as in everyday life, is useless or interfering signal of some form. It is any unwanted sound due to a variety of causes. Often, noise is a nuisance because it interferes with a measurement that it is being made or with some signal that is being transmitted. The amount of signal, divided by the amount of noise that is also present, is often called 'signal – to – noise ratio'. Techniques such as electronic filtering are often used to improve the signal – to – noise ratio. This is useful if the signal that is being looked for is at particular frequency; the filter allows that frequency to pass through, but not the other frequencies which are present in the noise. The study of noise is important, because by understanding the processes that cause it we can try to reduce it. Judgments of whether or not environmental sounds are noises are subjective, but the fact is that unwanted sounds can precipitate severe psychological effects. In addition, above certain levels of intensity, noises can cause physical harm.

Such uses of the term noise have been extended to the fields of electricity and electronics and, in general, to all areas that involve some form of frequency range. Noise is generated within electron tubes and electrical conductors in general, and all circuits posses an inherent level of random noise. External interferences also contribute to electrical and electronic noise.

I. Literature Survey:

Previous work has shown that the detection of band-pass noise patterns is well described by an ideal observer, indicating that observers can integrate spatial frequency information efficiently over a six-octave wide band (Kersten, 1987). One interpretation of this result is that observers use a channel with an adjustable bandwidth that matches the bandwidth of the signal when detecting band-pass noise (Green, 1960). To investigate the notion that observers use adjustable bandwidth channels for spatial frequency, we had observers perform a noise detection task under two conditions: an uncertainty condition where the bandwidth of the noise could vary from trial to trial and a blocked condition where the bandwidth of the signal was held constant during a block. We used horizontal, one-dimensional, band-pass noise patterns that were Gaussian windowed. The center-frequency of the noise was 5 cycles/degree and bandwidth varied from one-half to four octaves. Seven bandwidths were used and a detection threshold measured at each bandwidth for both the blocked and uncertainty conditions. Stimuli were presented for 200ms. At each bandwidth, three 150 trial thresholds were collected. Noise detection r.m.s. contrast thresholds increase with the fourth-root of bandwidth for the ideal observer. For our blocked condition, we again found that human observers' noise detection thresholds increase with the fourth-root of bandwidth (Kersten, 1987).

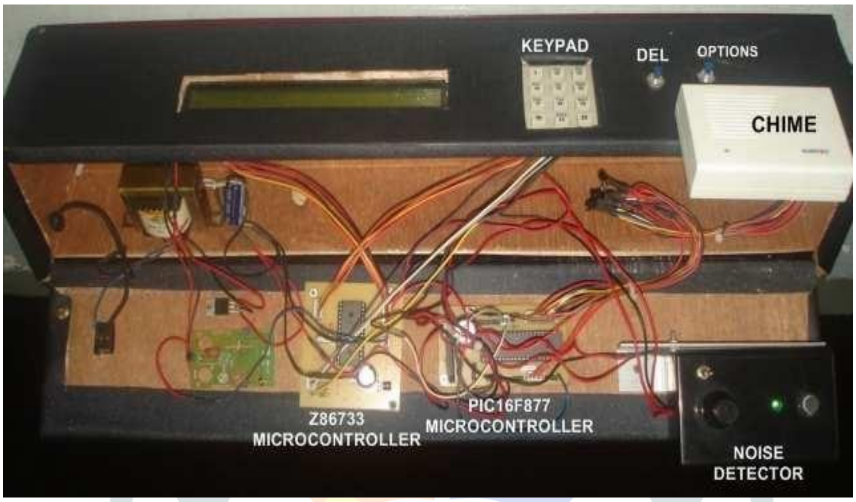
II. OBJECTIVES:

- The noise level that the detector should detect can be varied through a potentiometer.
- LCD display is used to see the saved messages or user input message. The keypad can be used to input lowercase and uppercase letters and numbers as well or a combination of different format of characters.
- The LED matrix is used for message display.
- Select button and delete button are provided.
- A chime sound will occur once a noise is detected and the selectedmessage will appear.
- It automatically returns to a monitoring mode with a default message upon completion of its response mode.

- The device is a stand alone; it does not need a computer or otherdevices to change message and do other things.
- It will use the principle of noise detector.

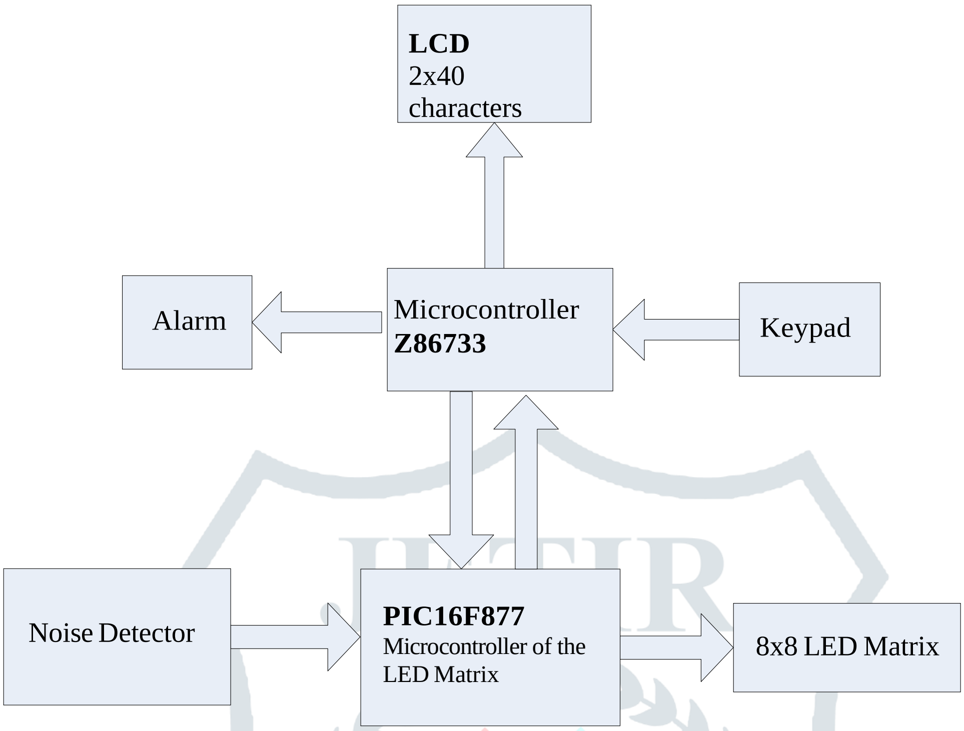
III. SYSTEM DESIGN:

The Library Noise Detector with Short Information Provider is a portable device that is used in detecting noise in the library. The device is used to control excessive noise inside the library. The system uses an operational amplifier as a sensor to detect noise and microcontroller in displaying the output in the message display. The design was developed as an alternative or additional helpin controlling the noise and prevent disturbances in a



specific area of the library.

BLOCK DIAGRAM:



V. METHODOLOGY:

The Library Noise Detector with a Short Message Provider was developed for implementation in school libraries to be used as an alternative or additional help in controlling noise and prevent disturbances in a specific area of the library. The design is a microcontroller - based prototype that can stand-alone without connecting to computer devices.

The design methodology was applied research that is often used to solve practical problems that relate to this kind of study. This form of research is necessary to improve this field of technology. The group research is based on different designs of previous studies in relation to the design project. Additional information and concepts needed were gathered from books, journals, articles, and internet for further understanding of the design concepts. With this information, the group was able to portray the process of the system. This approach helps the design to obtain a balance to the objectives and expectations from the actual results of the produced design prototype.

VI. RESULTS & CONCLUSION:

In conducting the test, the circuit of the noise detector and the source of sound are needed. The initial testing made was checking if the existing room noise detector with a fixed noise level will work after replacing it with a potentiometer with variable resistances. The noise detector circuit was formed and temporarily tested in a bread board with a LED indicator for the noise detection. After the circuit was formed, it was placed in a slightly noisy environment. In this testing the exact noise level was not yet exactly measured.

KNOB POSITION OF THE POTENTIOMETER	STATUS OF THE LED	CONDITION
Approx. 50 dB	Lights on and continuously blinking	Very good
Approx. 65 dB	Lights on and blinking	Good
Approx. 85 dB	Lights on	Slight delay of detection

Table : Testing of the Operation of the Noise Detector

The result of this test showed the behavior of the noise detector as it detected noise or different sources of sounds from its environment. Since the noise level did not measure the threshold value of the resistance set for 50 db to 85 db, noise level the position of the knob showed how the noise level varied. The KNOB POSITION OF THE POTENTIOMETER became the comparative medium in determining the validity of the data in noise detection. Moreover, the STATUS OF THE LED can be determined when the LED lighted on as the noise detector detected noise. The CONDITION results indicated that the tests simply show that the noise detector is in good condition and that it can determine the validity of an input noise.

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