Department of Electronic and Telecommunication Engineering
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EN2160 - Electronic Design Realization

Specifications and Extra Features

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Morse Code Module

Existing Product includes the following specifications.

- This module can be used for decoding and coding Morse code.
- Code sending process: ASCII code input is received by the module, converted into Morse code, and then converted into audio signal.
- Code receiving process: It converts the received audio signal into Morse code, and then convert it into ASCII code and sends it.
- Operating voltage is 5V.
- There are 4 header pins
  - 5V : Power supply positive interface.
  - GND : Power supply ground interface.
  - RXD : receiving end of the module.
  - TXD : sending end of the module.
- Signal input interface : 3.5mm audio input interface.
- Signal output interface : 3.5mm audio output interface.
- There is a potentiometer to adjust the input.

- There are LEDs to indicate different operations/processes handled by the module.
  - Power (PWR)
  - Receive (RX)
  - Transmit (TX)
- Channel impairments are **not handled** by the module.

Following will be the extra features that will be implemented.

- LCD screen with Button inputs.
  - The user will be able to input text and output Morse codes.
- The integration of an enclosure. (Considering the absence of an enclosure in the available product within the market.)
  - Additionally the enclosure will contain a concise guide to the Morse code, intended for easy reference.
- A Buzzer to produce Morse code outputs.
- May include several Morse code protocols that the user can select. Such as,
  - American Morse code (Railroad Morse)
  - International/Continental Morse code
  - Japanese Morse code/Wabun code
  - Russian Morse code

  Implementation of these protocols will depend on the storage availability of the micro controller.

Is Morse code still used?

The Morse Code, which was initially introduced by Samuel F.B. Morse and became known as the "American" version, has undergone significant changes over time. Today, the usage of the original American Morse Code is scarce. However, the International Morse Code remains in use among various groups such as U.S. Navy intelligence specialists, aviation professionals who rely on Morse Code to communicate succinct identifiers, and enthusiasts who constitute the International Morse Code Preservation Society. Following are some specific applications of the Morse code in recent times.

- Morse code was used extensively by the military in the past and is still used today in some contexts, such as for emergency signalling or low-bandwidth communication. It's low bandwidth compared to voice or even text, and can be discerned against background noise even at extremely low signal strengths.

- Morse code is used in some aviation communication systems, especially in situations where radio contact is lost or unreliable. The Federal Aviation Administration in the USA requires pilots to understand Morse code and to identify aircraft call signs since NDBs and VORs still send their identifying letters via Morse code.
- Morse code is still used by some mariners, particularly in emergency situations or when other forms of communication are not available.
- Morse code proves to be highly advantageous in circumstances that demand survival skills. In addition, it also serves as an effective tool to overcome censorship barriers.

Overall, while Morse code is no longer a primary means of communication in most contexts, but still used in some specialized applications.