CSI 416 Computer Communications Network
Project 1 – CRC-CCITT

due: Sep. 17, Thursday.

In this assignment, you will implement the modified Cyclic Redundancy Check procedure. The generator polynomial you will use is the CRC-CCITT polynomial \( X^{16} + X^{12} + X^5 + 1 \). Your program should read data from the standard input and output the 16-bit fcs in hexadecimal.

- Your program should provide the following function:

  ```c
  unsigned int crc( msg, len)
  unsigned char msg[];
  int len; /* length of the msg, including the appended zeros */
  ```

- The `main()` function reads the input data (including the newline character, the space character, etc.) until reaches EOF (not included in the msg), append zero bits at the end of data, pass the data to the function `crc()`, and print the CRC value that the function `crc()` returns.

- Review C’s bit manipulation facilities, including the shift operator “<<” and “>>”, the “^” XOR operator, the “|” OR operator, the “&” operator, and the bit negation operator “~”. Be sure and use `unsigned` variables when working with checksums.

- **Turnin**
  submit your program electronically using the following turnin command:

  ```bash
  turnin-csi416 -p crc crc.c
  ```