Lab Sheet –1

1. Implement an error detection mechanism using the standard CRC algorithm. Write two programs generator and verifier. The generator program reads from standard input an n-bit message as a string of 0's and 1's as a line of ASCII text. The second line is the k-bit polynomial, also in ASCII. It outputs to standard output a line of ASCII text with n + k 0's and 1's representing the message to be transmitted. Then it outputs the polynomial, just as it read it in. The verifier program reads in the output of the generator program and outputs a message indicating whether it is correct or not. Finally write a program, alter, that inverts one bit on the first line depending on its argument but copies the rest of the two lines correctly. Now type the following and report the outcome.

   (i) generator < file | verifier
   (j) generator < file | alter arg | verifier

2. Write a program that takes an IP header (Hex data) as input and calculates its checksum. Your program should show the final result as well as it should also demonstrate the working of your algorithm. Why the method works for both big and little endian machines?