Internet Node

By

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Project:

Goal of this project is to implement a network node on TI Tiva launchpad kit which has Arm Cortex M4F Microcontroller mounted on it. This network node runs basic Internet protocol suite & it works on 100 Base-T ethernet connection for which ENC28J60 ethernet chip is used. The node accesses an http website www.clocktab.com & extract current GMT time from http response header & send it over UART for display purpose. In order to do so it performs following functions:

1) It uses **DHCP** protocol to request an IP address for itself as well as to get subnet information & DNS server Ip address.
2) It uses **DNS** Protocol to get IP address of the website from the DNS server.
3) It makes **TCP** connection with the website.
4) It sends **http** GET request to the website every second & extracts Time related information from the http response header received from website & sends in over UART.
5) It closes the TCP connection if the pushbutton has been pressed by user or FIN request is received from the website. If the TCP connection is terminated by the user, it can restarted by pressing the pushbutton. If TCP connection is terminated by website, then the node will immediately start a new connection with new port number.
6) **UDP** protocol is implemented to run DHCP & DNS protocols.
7) The node responds to the **ICMP** ping requests.
8) The node responds to the **ARP** requests.

   All the protocols are completely implemented in the source code (Embedded C) right from the packet formation to sending it over SPI bus to ENC28J60 chip without use of any external library.