CN LAB ASSIGNMENT - 8

Name: - Arpit Jain
Roll No: - 18ucs085

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1) arpa/inet.h

This header file has the following features: -

a) unit 32_t htonl (hostlong)
unit 16_t htons (hostshort)
unit 32_t ntohl (netlong)
unit16_t ntohs (netshort)

b) The following are declared as functions and may also be defined as macros:

i. in_addr_t inet_addr (const char *cp);
converts the string pointed to by cp to an integer value suitable for use as internet address.

ii. in_addr_t inet_lnaof (struct in_addr in);
takes an internet host address specified by in and extracts the local network address part in host byte order.

iii. struct in_addr inet_makeaddr (in_addr_t net, in_addr_t lna);
takes the internet network number specified by net and the local network address specified by lna both in byte order and constructs an internet address.

iv. in_addr_t inet_netof (struct in_addr in);
takes an internet host address specified by in and extracts the local network number part in host byte order.

v. in_addr_t inet_network (const char *cp);
converts the string pointed to by cp, in internet standard dot notation, to an integer value suitable for use as internet network number.

vi. char *inet_ntoa (struct in_addr in);
converts the internet host address specified by into a string in the internet standard dot notation.

2) netinet/in.h

This header file has the following features: -

a) sockaddr_in

This structure has the following members:

i. sa_family_t sin_family
ii. in_port_t sin_port
iii. struct in_addr sin_addr
iv. unsigned char sin_zero[8]

b) Includes the following macros for use as level argument of getsockopt() and setsockopt():
IPPROTO_IP – dummy for IP
IPPROTO_ICMP – control message protocol
IPPROTO_TCP – TCP
IPPROTO_UDP – UDP

c) Include following macros for use as destination address for connect(), sendmsg() and sendto():
INADDR_ANY – local host address
IN_ADDR_BROADCAST – broadcast address

3) sys/socket.h

This header file has the following features: -

a) socklen_t – unsigned opaque integral type of at least 32-bit length defines length/size value of socket parameters.
b) sockaddr - includes the following members:
i. sa_family_t sa_family address family
ii. char sa_data[] socket address

It also includes the following macros:

i. SOCK_DGRAM (datagram socket) - datagram based protocol which sends one datagram, receives a reply and terminates.
ii. SOCK_STREAM (byte stream socket) - connection based protocol.

4) net/if.h

This header file has following features: -

a) if_nameindex
i. unsigned if_index numeric index of interface
ii. char *if_name null-terminated name of interface
b) IF_NAMESIZE – interface name length
c) The following shall be declared as functions and may also be defined as macros:
unsigned if_nametoindex(const char*);
char *if_indextoname(unsigned char*);

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struct if_nameindex     *if_nameindex(void);
void    *if_freenameindex(struct if_nameindex*);
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5) errno.h

This header file has following features: -

[E2BIG]	Argument list too long.
[EACCES]	Permission denied.
[EADDRINUSE]	Address in use.
[EADDRNOTAVAIL]	Address not available.
[EAFNOSUPPORT]	Address family not supported.
[EAGAIN]	Resource unavailable, try again (may be the same value as [EWOULDBLOCK]).
[EALREADY]	Connection already in progress.
[EBADF]	Bad file descriptor.
[EBADMSG]	Bad message.
[EBUSY]	Device or resource busy.
[ECANCELED]	Operation cancelled.
[ECHILD]	No child processes.
[ECONNABORTED]	Connection aborted.

6) netdb.h

This header file has following features: -

a) hostend

i.	char *h_name	Official name of the host.
ii.	char **h_aliases	A pointer to an array of pointers to alternative host names, terminated by a null pointer.
iii.	int h_addrtype	Address type.
iv.	int h_length	The length, in bytes, of the address.
v.	char **h_addr_list	A pointer to an array of pointers to network addresses (in network byte order) for the host, terminated by a null pointer.

b) servent

i.	char *s_name	Official name of the service.
ii.	char **s_aliases	A pointer to an array of pointers to alternative service names, terminated by a null pointer.

iii.	int s_port	The port number at which the service resides, in network byte order.
iv.	char *s_proto	The name of the protocol to use when contacting the service.

7) ctype.h

This header file has following features: -

isalnum

int isalnum (int c);

isalpha

int isalpha (int c);

isblank

int isblack (int c);

iscntrl

int iscntrl (int c);

isdigit

int isdigit (int c);

isgraph

int isgraph (int c);

islower

int islower (int c);

isprint

int isprint (int c);

ispunct

int ispunct (int c);

isspace

int isspace (int c);

isupper

int isupper (int c);

8) stdbool.h

This header file has following features: -

a) bool – expands to _Bool

b) true – expands to integer const 1

c) false – expands to integer const 0