System Information: Chapter 6

- Users -- /etc/passwd
  - Root -- uid 0
  - encrypted passwords, shadow passwords
  - finger(1) (Print out password information)
  - chfn(1) (Change information in password file)
  - chsh(1) (Change your login shell)
- Groups -- /etc/group
  - wheel (BSD) - gid 0

- Program access?
  - struct passwd *getpwent(void);   (open, get next)
  - void setpwent(void);   (rewind)
  - void endpwent(void);   (close)

  - struct passwd *getpwnam(const char *login);
  - struct passwd *getpwuid(uid_t uid);

struct passwd

```
struct passwd { /* Linux version */
        char    *pw_name;       /* user name */
        char    *pw_passwd;     /* encrypted password */
        uid_t   pw_uid;         /* user uid */
        gid_t   pw_gid;         /* user gid */
        char    *pw_gecos;      /* general information */
        char    *pw_dir;        /* home directory */
        char    *pw_shell;      /* default shell */
};
```

Returned pointers are not dynamically allocated ....
Don’t free them!

Group information

- struct group *getgrent(void); (open, get next)
- void setgrent(void); (rewind)
- void endgrent(void); (close)
- struct group *getgrnam(const char *name);
- struct group *getgrgid(gid_t gid);

```
struct group {
        char    *gr_name;      /* group name */
        char    *gr_passwd;    /* group password */
        gid_t   gr_gid;        /* group id */
        char    **gr_mem;      /* group members */
 };
```

Supplementary Group Ids

- Belong to more than just the primary group
- Group checks -- if you are a member of that group
- User can change group of any file/directory to any group of which they are a member.

Other data & configuration files

Very UNIX version specific

Network related

- /etc/hosts
- /etc/networks
- /etc/protocols
- /etc/services
- /etc/resolv.conf
- /etc/ssh

Shell related

- /etc/csh.cshrc
- /etc/profile

Other data & configuration files (page 2)

System startup

- /etc/rc* (BSD)
- /etc/init.d (SYSV)

Generic information

- /etc/termcap (/usr/share/misc/termcap)
- /etc/printcap
- /etc/motd

Many more .....

Login accounting & such

finger(1)

- List information about users

who(1)

- /var/log/wtmp
- /var/run/utmp

last(1)

uptime(1)

rwho(1), ruptime(1)

lastcomm(1) [accton(8)]

System identification

uname(1)
uname(3)

```
#define _SYS_NMLN      256

#if !defined(_POSIX_C_SOURCE) && !defined(_XOPEN_SOURCE)
#define SYS_NMLN       _SYS_NMLN
#endif

struct utsname {
     char   sysname[_SYS_NMLN];    /* Name of this OS. */
     char   nodename[_SYS_NMLN];   /* Name of this network node. */
     char   release[_SYS_NMLN];    /* Release level. */
     char   version[_SYS_NMLN];    /* Version level. */
     char   machine[_SYS_NMLN];    /* Hardware type. */
};
```

BSD -- gethostname(3)

Date & Time routines

time_t time(time_t *calptr);

- seconds since epoch
- midnight Jan 1, 1970

BSD systems / Linux systems

- int gettimeofday(struct timeval *tp, struct timezone *tzp);
- int settimeofday(struct timeval *tp, struct timezone *tzp);

```
struct timeval {
        long    tv_sec;         /* seconds since Jan. 1, 1970 */
        long    tv_usec;        /* and microseconds */
};

struct timezone {
        int     tz_minuteswest; /* of Greenwich */
        int     tz_dsttime;     /* type of dst correction to apply */
};
```

Other time related stuff

Most UNIX systems have hardware clock set to Greenwich.

Time zone information (Actual details vary, NetBSD in example)

- /etc/localtime
- TZ=/usr/share/zoneinfo/US/Alaska date

time related functions

- strftime(3)
- ctime(3) and related functions
  - struct tm *localtime(const time_t *timep)
  - char *asctime(const struct tm *tm)

```
struct tm {
    int tm_sec;    /* Seconds (0-60) */
    int tm_min;    /* Minutes (0-59) */
    int tm_hour;   /* Hours (0-23) */
    int tm_mday;   /* Day of the month (1-31) */
    int tm_mon;    /* Month (0-11) */
    int tm_year;   /* Year - 1900 */
    int tm_wday;   /* Day of the week (0-6, Sunday = 0) */
    int tm_yday;   /* Day in the year (0-365, 1 Jan = 0) */
    int tm_isdst;  /* Daylight saving time */
};
```