

## 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)

rwwho(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 */
};
```

