MA 511: Computer Programming

Lecture 23

http://www.iitg.ernet.in/psm/indexing_ma511/y08/index.html

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Mon 10:00-10:55 Tue 11:00-11:55 Fri 9:00-9:55 Class: 1G2

MA512 Lab : Wed 14:00-16:55

Macro Definition

- We have already seen that #define statement can be used to define symbolic constants within a C program.

Ex: #define SIZE 100

```
int Array[SIZE];
```

- It can be used to define **macros**
  - Single identifiers that are equivalent to expressions, complete statements or groups of statements.
  - It looks like functions in that sense.
  - These are treated differently during the compilation process.

Example: Macro

```
#include <stdio.h>

#define area length*width

main(){
    int length, width;
    printf("Length =  ");
    scanf("%d", &length);
    printf("width = ");
    scanf("%d", &width);
    printf("area = %d", area);
}
```

Example: Macro

```
#include <stdio.h>
main(){
      int c, i, n;
      printf(“number of lines : ”);
      scanf(“%d”, &n);
      printf(“\n”);
            for(i =1; i <= n; i++){
                        for(c=1; c <= n-i; c++)
                                    putcar(‘ ’);
                        for(c=1; c <=2*i-1; c++)
                                    putcar(‘* ’);
                        printf(“\n”);
            }
}
```

```
#include <stdio.h>

#define loop(n) for(i=1; i<= n; i++){                \
                        for(c=1; c<=n-i; c++)        \
                                putchar(' ');        \
                        for(c=1; c<=2*i-1; c++)      \
                                putchar('*');        \
                        printf("\n");                \
                }
main(){
            int c, i, n;
            printf("number of lines :  ");
            scanf("%d", &n);
            printf("\n");

            loop(n)
}
```

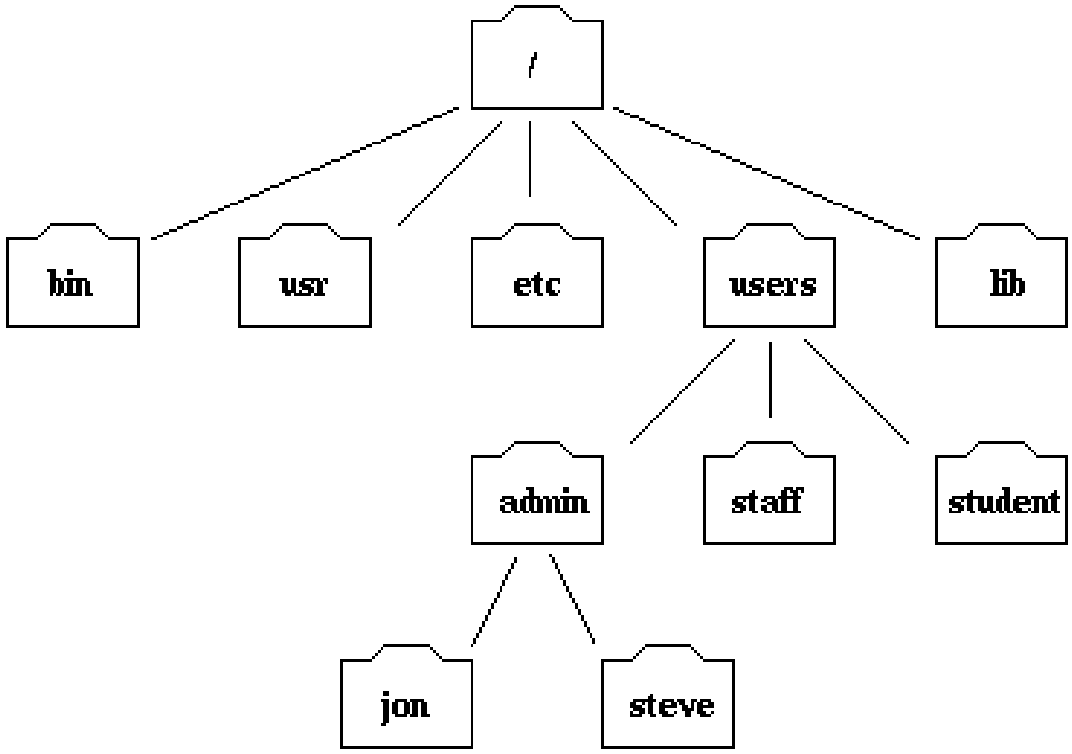
n = 6

```
     *
    ***
   *****
  *******
 *********
***********
```

File system

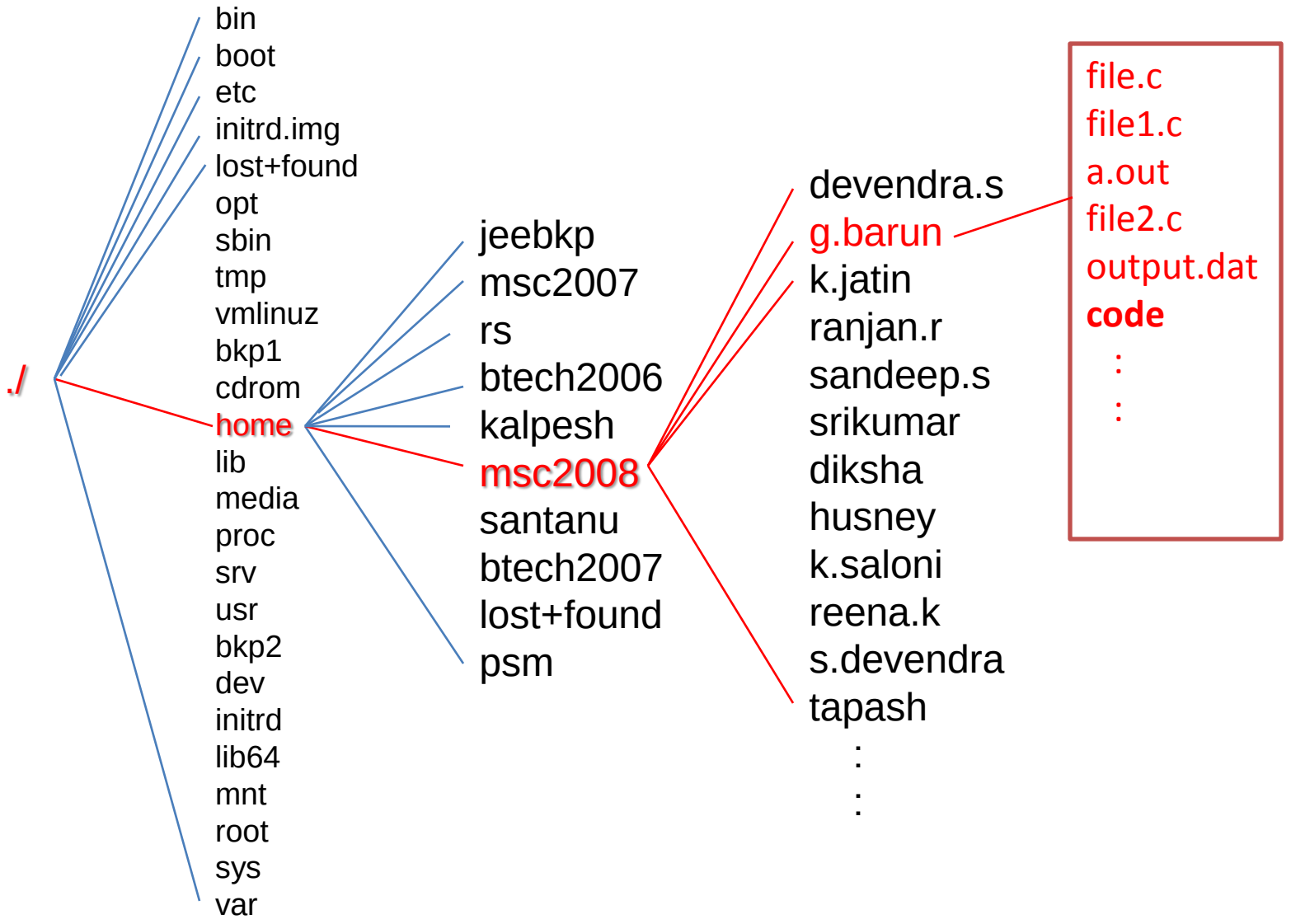
- A **file system** is a method for storing and organizing computer files.
- Make it easy to find and access them.
- Systems may use a data storage device such as a hard disk or CD-ROM.

Understanding the Root File System



Part of the filesystem tree

Understanding the Root File System



GNU/Linux Command-Line Tools
Execute the command *ls -l*

To view the information on the system password database

$ ls -l /etc/passwd

The output should look similar to this:

$ -rw-r--r-- 1 root sys 41002 Apr 17 12:05 /etc/passwd

- The first 10 characters describe the access permissions.
- The first dash indicates the type of file (d for directory, s for special file, - for a regular file).
- The next three characters ("rw-") describe the permissions of the owner of the file: read and write, but no execute.
- The next three characters ("r--") describe the permissions for those in the same group as the owner: read, no write, no execute.
- The next three characters describe the permissions for all others: read, no write, no execute.

Frequent used Unix Commends

```
mandal@mandal-PC ~
$ pwd
/home/mandal
mandal@mandal-PC ~
$ ls
code
mandal@mandal-PC ~
$ ls -al
total 36
drwxrwxrwx+ 4 mandal None  4096 Sep 11 01:12 .
drwxrwxrwx+ 3 mandal None     0 Jun 23 16:56 ..
-rw-------  1 mandal None  2157 Nov 12 20:41 .bash_history
-rwxr-xr-x  1 mandal None  1150 Jun 23 10:30 .bash_profile
-rwxr-xr-x  1 mandal None  3116 Jun 23 10:30 .bashrc
-rwxr-xr-x  1 mandal None  1461 Jun 23 10:30 .inputrc
drwx------+ 2 mandal None     0 Jul  1 16:07 .ssh
drwxrwxrwx+ 3 mandal None 16384 Nov 14 14:20 code
mandal@mandal-PC ~
$ cd code
mandal@mandal-PC ~/code
$ pwd
/home/mandal/code
mandal@mandal-PC ~/code
```

$pwd
Show path to current directory
$ls
Show list of files and folder in the current directory
$ls –l
Show specification of all files and folders with permission.
$cd folder
Change directory
$cd ..
Return to previous directory
$ mkdir newfolder
Create a folder
$ rm filename
Delete file
$ cp file1 file2
Copy file1 to file2
$cp file1 folder\
Copy file1 to the folder