

# Lab Work Week 3

## Create a ls program using C

`getcwd()`

These functions return a null-terminated string containing an absolute pathname that is the current working directory of the calling process. The pathname is returned as the function result and via the argument `buf`, if present.

The `getcwd()` function copies an absolute pathname of the current working directory to the array pointed to by `buf`, which is of length size.

```
int scandir(const char *dirp,
            struct dirent ***namelist,
            int (*filter)(const struct dirent *),
            int (*compar)(const struct dirent **, const struct dirent **))
;
```

The `scandir()` function scans the directory `dirp`, calling `filter()` on each directory entry. Entries for which `filter()` returns nonzero are stored in strings allocated via `malloc(3)`, sorted using `qsort(3)` with the comparison function `compar()`, and collected in array `namelist` which is allocated via `malloc(3)`. If `filter` is `NULL`, all entries are selected.

// Code example below

To do: can you find a solution to the warning for `getwd` warning??

```

#include <sys/types.h>
#include <sys/dir.h>
#include <sys/param.h>
#include <stdio.h>
#include <stdlib.h>

// List of functions
int file_select();
extern int alphasort();

main() {
    int count,i;
    struct direct **files;

    char pathname[MAXPATHLEN];
    int t = 1;

    getwd(pathname);

    printf("PWD = %s\n",pathname);
    count = scandir(pathname, &files, file_select, alphasort);

    /* No files in Dir */
    if (count <= 0)
    {
        printf("No files in Dir\n");
        exit(0);
    }

    printf("Number of files = %d\n",count);

    for (i=1;i<count+1;++i)
    {
        printf("\n%s",files[i-1]->d_name);
    }

    printf("\n");
}

int file_select(struct direct *entry)
{
    return (1);
}

```

**Create separate programs to offer the following functionality:**

1. Write a C program to emulate the `ls -l` UNIX command that prints all files in a current directory. Hint: Use the `exec` command.
2. Write a C program to offer the following functionality:
  - a. List all the processes running on a system if no params are passed via the command line
  - b. Search for a process by name eg. `./myprog search calculator`
  - c. Kill a process for a given PID eg. `./myprog kill 1292`
3. Create a program that manages the process of automatically creating a log file in a directory. This should be a separate process. If this process terminates unexpectedly the main program should be informed via an appropriate signal.
4. Create a program to ask a user for their name and then append this to a log file (text file).
5. Create a program to display all the names stored in the log file from part 4 above.
6. Create a program to change the permissions of the log file to `777`.
7. Write a C program to emulate the `ls -l` UNIX command that prints all files in a current directory and lists access privileges etc. DO NOT use the `exec ls -l` from the program.
8. Expand the functionality of the program from step 7 to only list specific types. Eg, `.c .doc .txt` etc. The program also should not display the `.` and the `..` when listing the file names.