

Basic Linux/Unix shell

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- ABOUT THE CODE

I have written external function in different c files.

2019418_cat.c

2019418_date.c

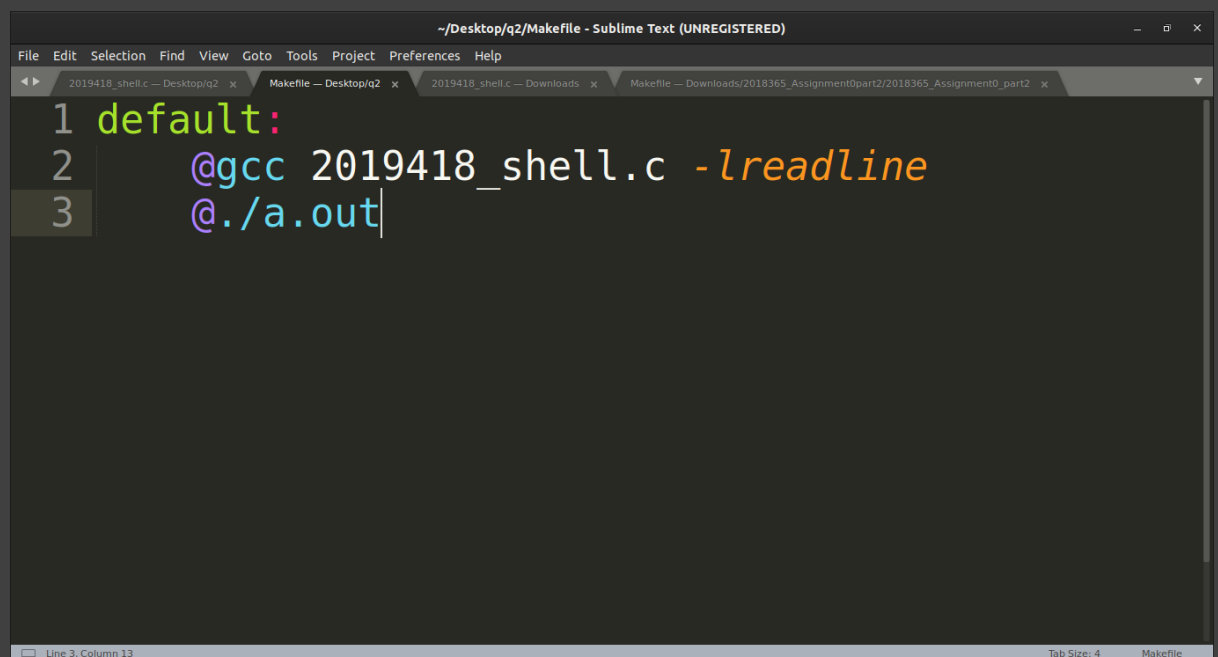
2019418_ls.c

2019418_mkdir.c

2019418_rm.c

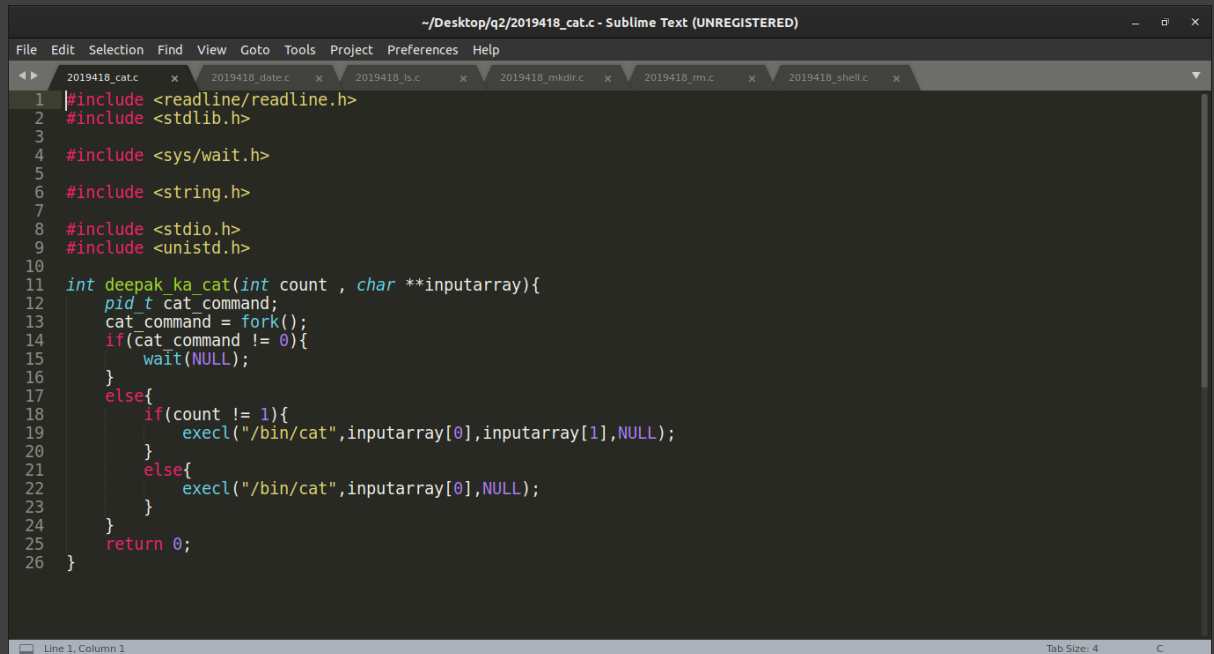
My internal functions are inside 2019418_shell.c , those functions are cd , echo , history , pwd , exit.

This is my make file



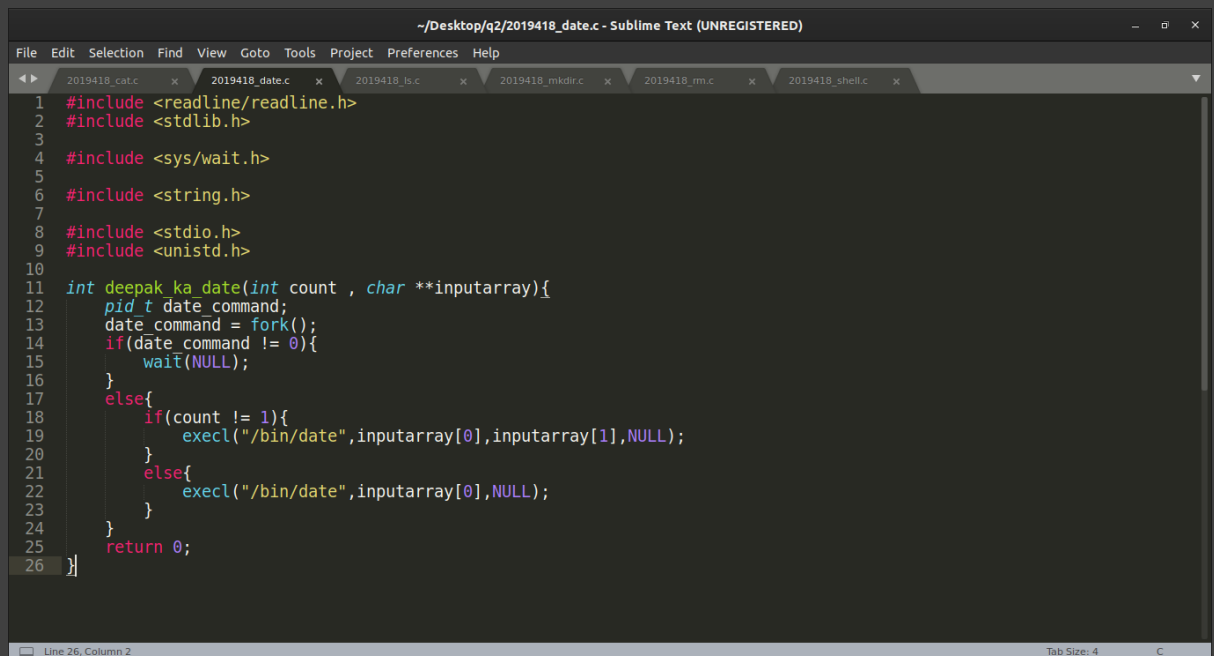
```
~/Desktop/q2/Makefile - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
2019418_shell.c -- Desktop/q2 x Makefile -- Desktop/q2 x 2019418_shell.c -- Downloads x Makefile -- Downloads/2018365_Assignment0part2/2018365_Assignment0_part2 x
1 default:
2 @gcc 2019418_shell.c -lreadline
3 @./a.out
Line 3, Column 13 Tab Size: 4 Makefile
```

- Explaining all functions:
Cat – cat is used to display all files.
Eg – cat a.txt



```
~/Desktop/q2/2019418_cat.c - Sublime Text (UNREGISTERED)
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2019418_cat.c x 2019418_date.c x 2019418_ls.c x 2019418_mkdir.c x 2019418_rm.c x 2019418_shell.c x
1 #include <readline/readline.h>
2 #include <stdlib.h>
3
4 #include <sys/wait.h>
5
6 #include <string.h>
7
8 #include <stdio.h>
9 #include <unistd.h>
10
11 int deepak_kat(int count , char **inputarray){
12     pid_t cat_command;
13     cat_command = fork();
14     if(cat_command != 0){
15         wait(NULL);
16     }
17     else{
18         if(count != 1){
19             execl("/bin/cat",inputarray[0],inputarray[1],NULL);
20         }
21         else{
22             execl("/bin/cat",inputarray[0],NULL);
23         }
24     }
25     return 0;
26 }
```

- Date – date is used to display the current date and time.
Eg – type date in shell



```
~/Desktop/q2/2019418_date.c - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
2019418_cat.c x 2019418_date.c x 2019418_ls.c x 2019418_mkdir.c x 2019418_rm.c x 2019418_shell.c x
1 #include <readline/readline.h>
2 #include <stdlib.h>
3
4 #include <sys/wait.h>
5
6 #include <string.h>
7
8 #include <stdio.h>
9 #include <unistd.h>
10
11 int deepak_kat(int count , char **inputarray){
12     pid_t date_command;
13     date_command = fork();
14     if(date_command != 0){
15         wait(NULL);
16     }
17     else{
18         if(count != 1){
19             execl("/bin/date",inputarray[0],inputarray[1],NULL);
20         }
21         else{
22             execl("/bin/date",inputarray[0],NULL);
23         }
24     }
25     return 0;
26 }
```

- Ls – ls is used to get list of all the files in current directory.

Eg – if two files a.txt and b.txt is present in current directory then type ls in shell and it will display a.txt and b.txt.

```
~/Desktop/q2/2019418_ls.c - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
2019418_cat.c x 2019418_date.c x 2019418_ls.c x 2019418_mkdir.c x 2019418_rm.c x 2019418_shell.c x
1 #include <readline/readline.h>
2 #include <stdlib.h>
3
4 #include <sys/wait.h>
5
6 #include <string.h>
7
8 #include <stdio.h>
9 #include <unistd.h>
10
11 int deepak ka ls(int count , char **inputarray){
12     pid_t ls_command;
13     ls_command = fork();
14     if(ls_command != 0){
15         wait(NULL);
16     }
17     else{
18         if(count != 1){
19             execl("/bin/ls",inputarray[0],inputarray[1],NULL);
20         }
21         else{
22             execl("/bin/ls",inputarray[0],NULL);
23         }
24     }
25     return 0;
26 }
```

Line 1, Column 1 Tab Size: 4 C

Mkdir – mkdir is used to make a new directory.

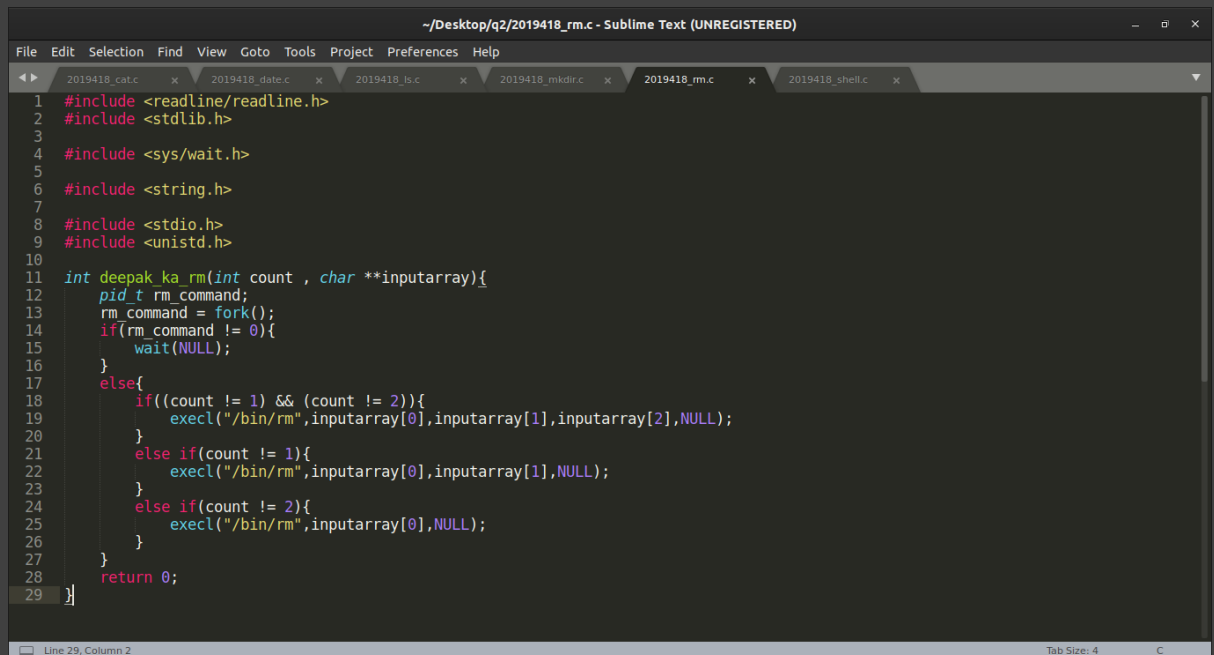
Eg. mkdir newdict

This makes a new directory newdict in current directory.

```
~/Desktop/q2/2019418_mkdir.c - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
2019418_cat.c x 2019418_date.c x 2019418_ls.c x 2019418_mkdir.c x 2019418_rm.c x 2019418_shell.c x
1 #include <readline/readline.h>
2 #include <stdlib.h>
3
4 #include <sys/wait.h>
5
6 #include <string.h>
7
8 #include <stdio.h>
9 #include <unistd.h>
10
11 int deepak ka mkdir(int count , char **inputarray){
12     pid_t mkdir_command;
13     mkdir_command = fork();
14     if(mkdir_command != 0){
15         wait(NULL);
16     }
17     else{
18         if((count != 1) && (count != 2) && (count != 3)){
19             execl("/bin/mkdir",inputarray[0],inputarray[1],inputarray[2],inputarray[4],NULL);
20         }
21         else if((count != 2) && (count != 3)){
22             execl("/bin/mkdir",inputarray[0],NULL);
23         }
24         else if((count != 1) && (count != 3)){
25             execl("/bin/mkdir",inputarray[0],inputarray[1],NULL);
26         }
27         else if((count != 1) && (count != 2)){
28             execl("/bin/mkdir",inputarray[0],inputarray[1],inputarray[2],NULL);
29         }
30     }
31     return 0;
32 }
```

Line 1, Column 1 Tab Size: 4 C

Rm – rm deletes a file.



```
~/Desktop/q2/2019418_rm.c - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
2019418_cat.c x 2019418_date.c x 2019418_ls.c x 2019418_mkdir.c x 2019418_rm.c x 2019418_shell.c x
1 #include <readline/readline.h>
2 #include <stdlib.h>
3
4 #include <sys/wait.h>
5
6 #include <string.h>
7
8 #include <stdio.h>
9 #include <unistd.h>
10
11 int deepak_ka_rm(int count , char **inputarray){
12     pid_t rm_command;
13     rm_command = fork();
14     if(rm_command != 0){
15         wait(NULL);
16     }
17     else{
18         if((count != 1) && (count != 2)){
19             execl("/bin/rm", inputarray[0], inputarray[1], inputarray[2], NULL);
20         }
21         else if(count != 1){
22             execl("/bin/rm", inputarray[0], inputarray[1], NULL);
23         }
24         else if(count != 2){
25             execl("/bin/rm", inputarray[0], NULL);
26         }
27     }
28     return 0;
29 }
```

Eg – rm a.txt

This will delete a.txt from current directory.

Cd – cd is used to change directory.

Echo – echo is used to print something on shell.

Eg – echo doremon

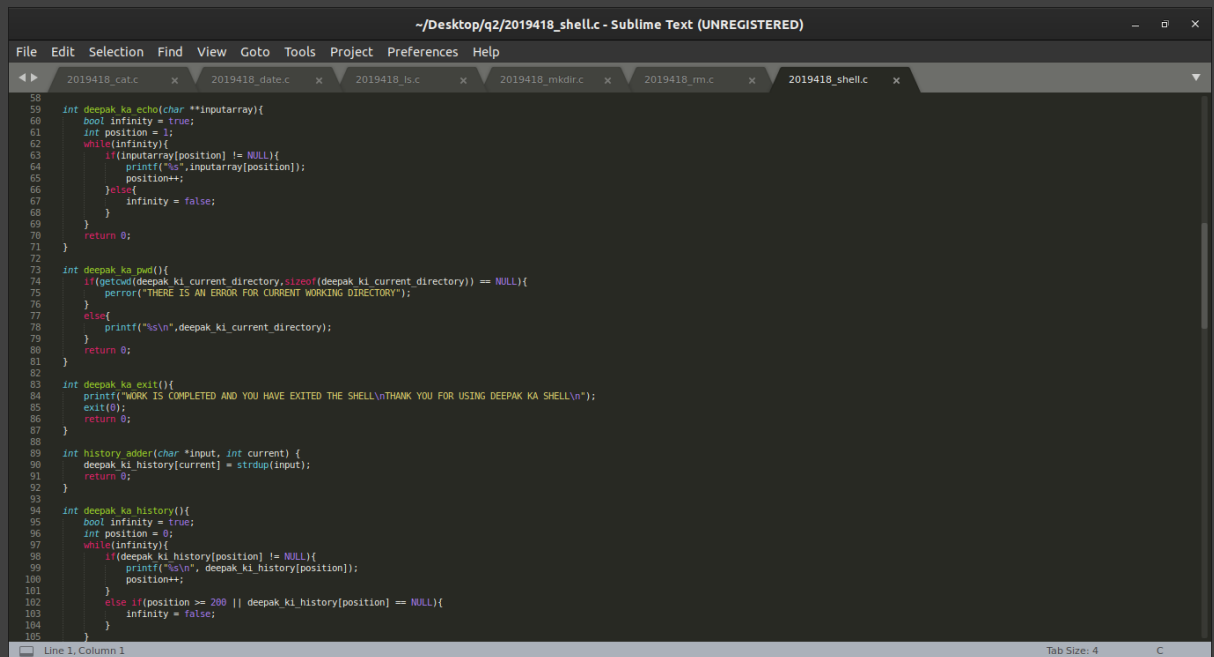
Will print doremon on shell.

History – history tells which all commands are used till now.

Eg – if we used ls till now then history command will tell us ls is used

Pwd – pwd tells the full path of current working directory.

Exit – exit is used to exit the shell and end all tasks going on.



```
58
59 int deepak_ka_echo(char **inputarray){
60     bool infinity = true;
61     int position = 1;
62     while(infinity){
63         if(inputarray[position] != NULL){
64             printf("%s",inputarray[position]);
65             position++;
66         }else{
67             infinity = false;
68         }
69     }
70     return 0;
71 }
72
73 int deepak_ka_pwd(){
74     if(getcwd(deepak_ki_current_directory,sizeof(deepak_ki_current_directory)) == NULL){
75         perror("THERE IS AN ERROR FOR CURRENT WORKING DIRECTORY");
76     }
77     else{
78         printf("%s\n",deepak_ki_current_directory);
79     }
80     return 0;
81 }
82
83 int deepak_ka_exit(){
84     printf("WORK IS COMPLETED AND YOU HAVE EXITED THE SHELL\nTHANK YOU FOR USING DEEPAK KA SHELL\n");
85     exit(0);
86     return 0;
87 }
88
89 int history_adder(char *input, int current) {
90     deepak_ki_history[current] = strdup(input);
91     return 0;
92 }
93
94 int deepak_ka_history(){
95     bool infinity = true;
96     int position = 0;
97     while(infinity){
98         if(deepak_ki_history[position] != NULL){
99             printf("%s\n", deepak_ki_history[position]);
100             position++;
101         }
102         else if(position >= 200 || deepak_ki_history[position] == NULL){
103             infinity = false;
104         }
105     }
106 }
```

- OUTPUT FOR VARIOUS INPUT



```
deepak@deepak-VPCEH35EN: ~/Desktop/q2$
DEEPAK KA SHELL >>>># echo doremon
doremonDEEPAK KA SHELL >>>># ls
2019418_cat.c 2019418_ls.c 2019418_rm.c a.out Makefile
2019418_date.c 2019418_mkdir.c 2019418_shell.c asdfd.zip
DEEPAK KA SHELL >>>># pwd
/home/deepak/Desktop/q2
DEEPAK KA SHELL >>>># exit
WORK IS COMPLETED AND YOU HAVE EXITED THE SHELL
THANK YOU FOR USING DEEPAK KA SHELL
deepak@deepak-VPCEH35EN:~/Desktop/q2$
deepak@deepak-VPCEH35EN:~/Desktop/q2$ make
DEEPAK KA SHELL >>>># echo humpty
humptyDEEPAK KA SHELL >>>># pwd
/home/deepak/Desktop/q2
DEEPAK KA SHELL >>>># ls
2019418_cat.c 2019418_ls.c 2019418_rm.c a.out Makefile
2019418_date.c 2019418_mkdir.c 2019418_shell.c asdfd.zip
DEEPAK KA SHELL >>>># history
echo humpty
pwd
ls
history
DEEPAK KA SHELL >>>># mkdir newone
DEEPAK KA SHELL >>>># ls
2019418_cat.c 2019418_date.c 2019418_ls.c 2019418_mkdir.c 2019418_rm.c 2019418_shell.c a.out asdfd.zip Makefile newone
DEEPAK KA SHELL >>>># exit
WORK IS COMPLETED AND YOU HAVE EXITED THE SHELL
THANK YOU FOR USING DEEPAK KA SHELL
deepak@deepak-VPCEH35EN:~/Desktop/q2$
```