Assignment – 2
UNIX and Shell Programming
TOPIC: FILE SYSTEM COMMANDS

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1. Create two C files to print **"Hello World!"** in two different ways:
   a. `Program containing normal statement terminator → HelloWorld1.c.`

   ```
   rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$ vim HelloWorld1.c
   #include <stdio.h>

   int main() {
           printf("Hello World!\n");
           return 0;
   }
   ```

   b. `Program without any statement terminator → HelloWorld2.c.`

   ```
   rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$ vim HelloWorld2.c
   include <stdio.h>

   int main() {
           printf("Hello World!\n")
                   return 0

   }
   ~
   ```

2. Display the contents of the files.

   ```
   rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$ cat HelloWorld1.c
   #include <stdio.h>

   int main() {
           printf("Hello World!\n");
           return 0;
   }
   ```

   ```
   rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$ cat HelloWorld2.c
   include <stdio.h>

   int main() {
           printf("Hello World!\n")
                   return 0

   }
   rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$
   ```

3. Concatenate the two files to a third file.

```
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$ cat HelloWorld1.c HelloWorld2.c > CombinedHelloWorld.c
```

4. Show the above file types.

```
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$ file HelloWorld2.c
HelloWorld2.c: C source, ASCII text
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$ file CombinedHelloWorld.c
CombinedHelloWorld.c: C source, ASCII text
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$
```

5. Copy all the files to the home directory in an interactive manner.

```
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$ cp -i HelloWorld1.c HelloWorld2.c CombinedHelloWorld.c ~
cp: overwrite '/home/rudra/HelloWorld1.c'? y
cp: overwrite '/home/rudra/HelloWorld2.c'? y
cp: overwrite '/home/rudra/CombinedHelloWorld.c'? y
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$
```

6. Create a copy of the C file in `TestA-1`.

```
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$ cp HelloWorld1.c TestA-1
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$
```

7. Copy the file to the home directory in an interactive manner.

```
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13/TestA-1$ cp -i HelloWorld1.c ~
cp: overwrite '/home/rudra/HelloWorld1.c'? y
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13/TestA-1$ ls HelloWorld1.c
HelloWorld1.c
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13/TestA-1$
```

8. Remove the directories `TestC` & `TestC-1`.

```
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$ rmdir TestC TestC-1
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$ ls
CombinedHelloWorld.c  HelloWorld1.c  HelloWorld2.c  TestA-1  Unix_File_System
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$
```

9. Delete the file C file from TestA-1.

```
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13/TestA-1$ ls
HelloWorld1.c  TestC  TestC-1
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13/TestA-1$ rm HelloWorld1.c
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13/TestA-1$ ls
TestC  TestC-1
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13/TestA-1$
```

10. Rename the text file in the home directory.

```
rudra@DESKTOP-40986GA:~$ vim a.txt
rudra@DESKTOP-40986GA:~$ mv a.txt new_a.txt
```

11. Create a C file for a menu driven calculator.

```c
#include <stdio.h>
int main() {

    char op;
    double first, second;
    printf("Enter an operator (+, -, *, /): ");
    scanf("%c", &op);
    printf("Enter two operands: ");
    scanf("%lf %lf", &first, &second);

    switch (op) {
        case '+':
            printf("%.1lf + %.1lf = %.1lf", first, second, first + second);
            break;
        case '-':
            printf("%.1lf - %.1lf = %.1lf", first, second, first - second);
            break;
        case '*':
            printf("%.1lf * %.1lf = %.1lf", first, second, first * second);
            break;
        case '/':
            printf("%.1lf / %.1lf = %.1lf", first, second, first / second);
            break;

        default:
            printf("Error! operator is not correct");
    }

    return 0;
}
```

"calculator.c" 31L, 987C   31,0-1   All

12. Show the C file in the paged manner using **more** and **less** commands.

```
rudra@DESKTOP-4098DGA:~/MCA2023/Rudradeep_A_13$ more calculator.c
#include <stdio.h>
int main() {

    char op;
    double first, second;
    printf("Enter an operator (+, -, *, /): ");
    scanf("%c", &op);
    printf("Enter two operands: ");
    scanf("%lf %lf", &first, &second);

    switch (op) {
        case '+':
            printf("%.1lf + %.1lf = %.1lf", first, second, first + second);
            break;
        case '-':
            printf("%.1lf - %.1lf = %.1lf", first, second, first - second);
            break;
        case '*':
            printf("%.1lf * %.1lf = %.1lf", first, second, first * second);
            break;
        case '/':
            printf("%.1lf / %.1lf = %.1lf", first, second, first / second);
            break;

        default:
            printf("Error! operator is not correct");
    }

    return 0;
}
rudra@DESKTOP-4098DGA:~/MCA2023/Rudradeep_A_13$
#include <stdio.h>
int main() {

    char op;
    double first, second;
    printf("Enter an operator (+, -, *, /): ");
    scanf("%c", &op);
    printf("Enter two operands: ");
    scanf("%lf %lf", &first, &second);

    switch (op) {
        case '+':
            printf("%.1lf + %.1lf = %.1lf", first, second, first + second);
            break;
        case '-':
            printf("%.1lf - %.1lf = %.1lf", first, second, first - second);
            break;
        case '*':
            printf("%.1lf * %.1lf = %.1lf", first, second, first * second);
            break;
        case '/':
            printf("%.1lf / %.1lf = %.1lf", first, second, first / second);
            break;

        default:
            printf("Error! operator is not correct");
    }

    return 0;
}
calculator.c (END)
```

13. Count the number of lines, words and characters separately.

```
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$ wc -l calculator.c
31 calculator.c
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$
```

```
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$ wc -w calculator.c
93 calculator.c
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$
```

```
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$ wc -c calculator.c
987 calculator.c
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$
```

14. Compare the two C files.

```
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$ diff HelloWorld1.c HelloWorld2.c
1c1
< #include <stdio.h>
---
> include <stdio.h>
4,5c4,5
<         printf("Hello World!\n");
<             return 0;
---
>         printf("Hello World!\n")
>             return 0
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$
```

15. Find what is common in two C files.

```
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$ comm -12 <(sort HelloWorld1.c) <(sort HelloWorld2.c)

int main() {
}
```

16. Find the difference in two C files.

```
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$ diff HelloWorld1.c HelloWorld2.c
1c1
< #include <stdio.h>
---
> include <stdio.h>
4,5c4,5
<         printf("Hello World!\n");
<             return 0;
---
>         printf("Hello World!\n")
>             return 0
rudra@DESKTOP-40986GA:~/MCA2023/Rudradeep_A_13$
```