21BAI1217
MAINAK CHATTOPADHYAY
Operating Systems Lab 3

1. C program to implement ls command

CODE -

```
//Used for basic input/output stream
#include <stdio.h>
//Used for handling directory files
#include <dirent.h>
//For EXIT codes and error handling
#include <errno.h>
#include <stdlib.h>

void _ls(const char *dir,int op_a,int op_l)
{
	//Here we will list the directory
	struct dirent *d;
	DIR *dh = opendir(dir);
	if (!dh)
	{
		if (errno = ENOENT)
		{
			//If the directory is not found
			perror("Directory doesn't exist");
		}
		else
		{
			//If the directory is not readable then throw error and exit
			perror("Unable to read directory");
		}
		exit(EXIT_FAILURE);
	}
	//While the next entry is not readable we will print directory files
	while ((d = readdir(dh)) != NULL)
	{
		//If hidden files are found we continue
		if (!op_a && d->d_name[0] == '.')
			continue;
		printf("%s  ", d->d_name);
		if(op_l) printf("\n");
	}
```

```
        if(!op_l)
        printf("\n");
}
int main(int argc, const char *argv[])
{
        if (argc == 1)
        {
                _ls(".",0,0);
        }
        else if (argc == 2)
        {
                if (argv[1][0] == '-')
                {
                        //Checking if option is passed
                        //Options supporting: a, l
                        int op_a = 0, op_l = 0;
                        char *p = (char*)(argv[1] + 1);
                        while(*p){
                                if(*p == 'a') op_a = 1;
                                else if(*p == 'l') op_l = 1;
                                else{
                                        perror("Option not available");
                                        exit(EXIT_FAILURE);
                                }
                                p++;
                        }
                        _ls(".",op_a,op_l);
                }
        }
        return 0;
}
```

OUTPUT

2. C program to implement cat command

CODE-

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>

// Driver code

void GetStr(char *str,char **P_strp)
{
  printf("%s",str);
  for(int i=0 ; 1 ; i++)
    {
     if(i)
       *P_strp = (char*)realloc((*P_strp) , i+1);
      else
       *P_strp = (char*)malloc(i+1);
     (*P_strp)[i]=getchar();
     if((*P_strp)[i] == '\n')
       {
        (*P_strp)[i]= '\0';
        break;
       }
     }
}

int main()
{
    char *Str =NULL;
    GetStr("Enter File name:- ",&Str);
    FILE* ptr;
    char ch;

    // Opening file in reading mode
    ptr = fopen(Str, "r");

    if (NULL == ptr) {
        printf("file can't be opened \n");
    }

    printf("content of this file are \n");
```

```
    // Printing what is written in file
    // character by character using loop.
    do {
        ch = fgetc(ptr);
        printf("%c", ch);

        // Checking if character is not EOF.
        // If it is EOF stop reading.
    } while (ch != EOF);

    // Closing the file
    fclose(ptr);
    return 0;
    free(Str);
}
```

OUTPUT

```
ex2@AB1205BSCS013:~/Desktop/21BAI1217$ gedit cat.c
ex2@AB1205BSCS013:~/Desktop/21BAI1217$ gcc cat.c
ex2@AB1205BSCS013:~/Desktop/21BAI1217$ ./a.out
Enter File name:- hello.txt
content of this file are
hello
 os lab 3
Mainak
Chattopadhyay
21BAI1217
@ex2@AB1205BSCS013:~/Desktop/21BAI1217$
```

3. C program to implement grep command

CODE

```
#include <stdio.h>
#include <string.h>

int main(int argc, char *argv[]){
	if(argc != 3){

		printf("Usage: grep pattern file\n");
		return 1;
	}
	char *pattern = argv[1];
	char *filename = argv[2];
	FILE *file = fopen(filename,"r");
	if(!file) {
		printf("Error: Could not open file %s\n",filename);
		return 1;
	}
	char line[256];
	int line_number = 1;

	while(fgets(line, sizeof(line), file)){

	if(strstr(line, pattern)){
	printf("%s:%d:%s", filename, line_number, line);


	}
	line_number++;
	}
	fclose(file);
	return 0;
}
```

OUTPUT

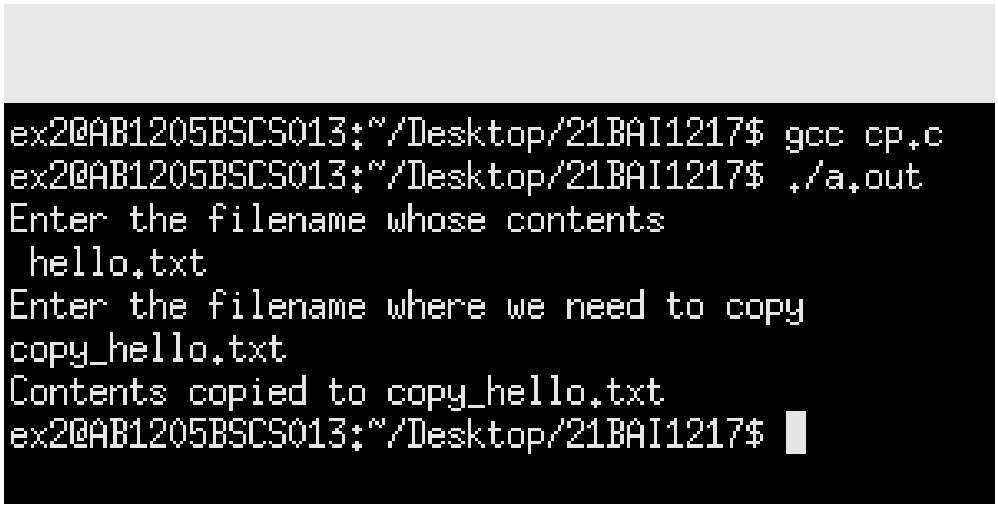
```
ex20AB1205BSCS013:~/Desktop/21BAI1217$ ./a.out Mainak hello.txt
hello.txt:3:Mainak
ex20AB1205BSCS013:~/Desktop/21BAI1217$ ./a.out os  hello.txt
hello.txt:2: os lab 3
ex20AB1205BSCS013:~/Desktop/21BAI1217$
```

4. C program to implement cp command

CODE

```
#include <stdio.h>
#include <stdlib.h> // For exit()
int main(){
   FILE *fptr1, *fptr2;
   char filename[100], c;
   printf("Enter the filename whose contents\n ");
   scanf("%s",filename);
   // Open one file for reading
   fptr1 = fopen(filename, "r");
   if (fptr1 == NULL){
      printf("Cannot open file %s \n", filename);
      exit(0);
   }
   printf("Enter the filename where we need to copy \n");
   scanf("%s", filename);
   // Open another file for writing
   fptr2 = fopen(filename, "w");
   if (fptr2 == NULL){
      printf("Cannot open file %s \n", filename);
      exit(0);
   }
   // Read contents from file
   c = fgetc(fptr1);
   while (c != EOF){
      fputc(c, fptr2);
      c = fgetc(fptr1);
   }
   printf("Contents copied to %s \n", filename);
   fclose(fptr1);
   fclose(fptr2);
   return 0;
}
```

OUTPUT


ex2@AB1205BSCS013:~/Desktop/21BAI1217$ gcc cp.c
ex2@AB1205BSCS013:~/Desktop/21BAI1217$ ./a.out
Enter the filename whose contents
hello.txt
Enter the filename where we need to copy
copy_hello.txt
Contents copied to copy_hello.txt
ex2@AB1205BSCS013:~/Desktop/21BAI1217$