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BATCH : B10

Software Development Fundamentals – I(15B11CI111)

ODD 2021

Tutorial Sheet – 12

Q1. Write a program in C to create and store information in a text file.

Solution :

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

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

```
int main()
```

```
{
```

```
    char str[100];
```

```
    FILE *fp;
```

```
    printf("Create a file (test.text) and input text :\n");
```

```
    fp=fopen("test.text","w");
```

```
    if(fp==NULL)
```

```
    {
```

```
        printf(" Error in opening file!");
```

```
        exit(1);
```

```
    }
```

```
    printf("Input a sentence for the file : ");
```

```
    gets(str);
```

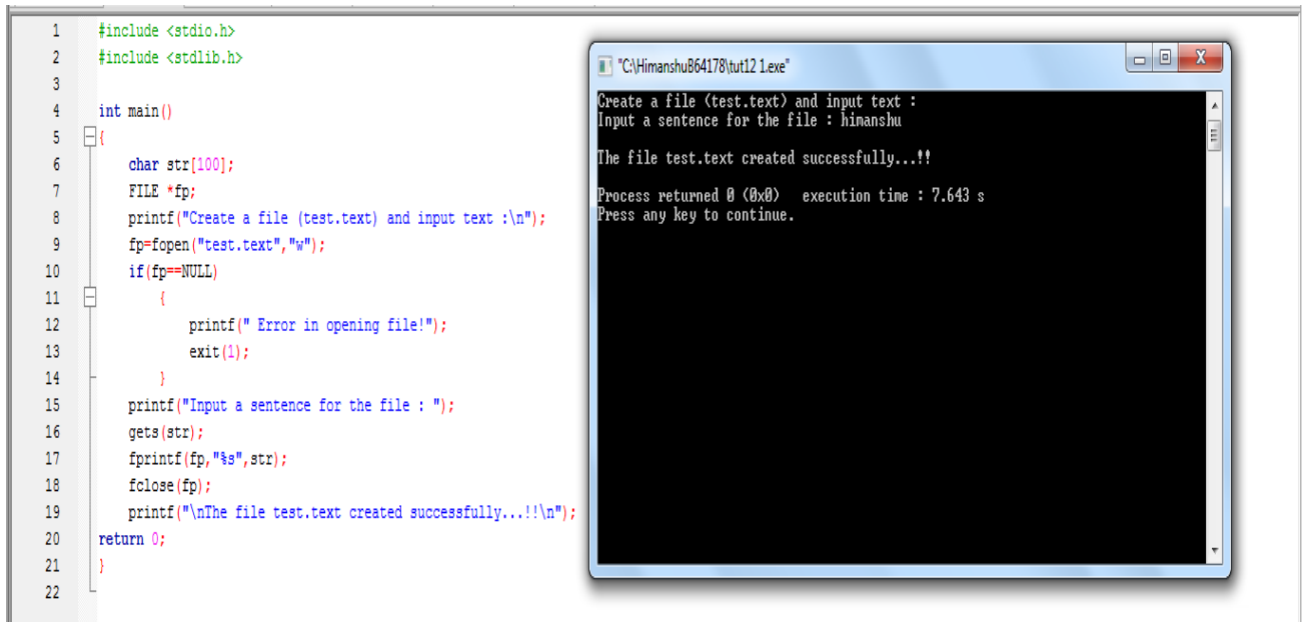
```
    fprintf(fp,"%s",str);
```

```
    fclose(fp);
```

```
    printf("\nThe file test.text created successfully...!!\n");
```

```
return 0;
```

```
}
```



The image shows a C program in a text editor on the left and its execution output in a console window on the right. The program is designed to create a file named 'test.text', prompt the user for a sentence, write it to the file, and then print a success message. The console window shows the program's execution, including the prompts, the user input 'himanshu', the success message, and the execution time of 7.643 seconds.

```
1 #include <stdio.h>
2 #include <stdlib.h>
3
4 int main()
5 {
6     char str[100];
7     FILE *fp;
8     printf("Create a file (test.text) and input text : \n");
9     fp=fopen("test.text", "w");
10    if(fp==NULL)
11    {
12        printf(" Error in opening file!");
13        exit(1);
14    }
15    printf("Input a sentence for the file : ");
16    gets(str);
17    fprintf(fp, "%s", str);
18    fclose(fp);
19    printf("\nThe file test.text created successfully...!!\n");
20    return 0;
21 }
22
```

Output of the program:

```
"C:\Himanshu864178\tut12\exe"
Create a file (test.text) and input text :
Input a sentence for the file : himanshu

The file test.text created successfully...!!

Process returned 0 (0x0)   execution time : 7.643 s
Press any key to continue.
```

Q2. Write a program in C to write multiple lines in a text file.

Test Data :

Input the number of lines to be written : 3

The lines are

I am at IIIT.

Enrolled in SDF1.

I am in Noida.

Expected Output :

The content of the file test.txt is :

I am at IIIT.

Enrolled in SDF1.

I am in Noida.

Solution :

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

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

```
int main()
```

```
{
```

```
    char str[100],ch;
```

```
    int n;
```

```
    FILE *fp;
```

```
    printf("Enter no. of lines : \n");
```

```
scanf("%d",&n);
fflush(stdin);
fp=fopen("test.text","w");
if(fp==NULL)
{
    printf(" Error in opening file!");
    exit(1);
}
printf("Enter the lines : \n");
for(int i=0;i<n;i++){
    gets(str);
    fprintf(fp,"%s\n",str);
}
fclose(fp);
printf("\nThe file test.text created successfully...!!\n\n\n");
fp=fopen("test.text","r");
if(fp==NULL)
{
    printf(" Error in opening file!");
    exit(1);
}
printf("The content of the file test.txt is : \n");
ch=fgetc(fp);
while(ch != EOF){
    printf("%c",ch);
    ch=fgetc(fp);
}
fclose(fp);
return 0;
}
```

```
1 #include <stdio.h>
2 #include <stdlib.h>
3
4 int main()
5 {
6     char str[100],ch;
7     int n;
8     FILE *fp;
9     printf("Enter no. of lines : \n");
10    scanf("%d",&n);
11    fflush(stdin);
12    fp=fopen("test.text","w");
13    if(fp==NULL)
14    {
15        printf(" Error in opening file!");
16        exit(1);
17    }
18    printf("Enter the lines : \n");
19    for(int i=0;i<n;i++){
20        gets(str);
21        fprintf(fp,"%s\n",str);
22    }
23    fclose(fp);
24    printf("\nThe file test.text created successfully...!!\n\n");
25    fp=fopen("test.text","r");
26    if(fp==NULL)
27    {
28        printf(" Error in opening file!");
29        exit(1);
30    }
31    printf("The content of the file test.txt is : \n");
32    ch=fgetc(fp);
33    while(ch != EOF){
34        printf("%c",ch);
35        ch=fgetc(fp);
36    }
```

Q3. Write a program in C to count a number of words and characters in a file.

Solution :

```
#include <stdio.h>
#include <stdlib.h>
void main()
{
    FILE *fptr;
    char ch;
    int wrd=1,charctr=1;
    printf("Count the number of words and characters in a file :\n");
    fptr=fopen("test.text","r");
    if(fptr==NULL){
        printf("File does not exist or can not be opened.");
        exit(1);
    }
    ch=fgetc(fptr);
    printf("The content of the file test.text are :\n");
    while(ch!=EOF){
        printf("%c",ch);
        if(ch==' ' || ch=='\n'){
```

```

        wrd++;
    }
    else{
        charctr++;
    }
    ch=fgetc(fptr);
}
printf("\nThe number of words in the file test.text are : %d\n",wrd-1);
printf("The number of characters in the file test.text are :%d\n\n",charctr-1);
fclose(fptr);
}

```

The image shows a C program on the left and its execution output on the right. The program counts the number of words and characters in a file named 'test.text'. The output window shows the file content and the calculated word and character counts.

```

1  #include <stdio.h>
2  #include <stdlib.h>
3  void main()
4  {
5      FILE *fptr;
6      char ch;
7      int wrd=1,charctr=1;
8      printf("Count the number of words and characters in a file :\n");
9      fptr=fopen("test.text","r");
10     if(fptr==NULL){
11         printf("File does not exist or can not be opened.");
12         exit(1);
13     }
14     ch=fgetc(fptr);
15     printf("The content of the file test.text are :\n");
16     while(ch!=EOF){
17         printf("%c",ch);
18         if(ch==' '||ch=='\n'){
19             wrd++;
20         }
21         else{
22             charctr++;
23         }
24         ch=fgetc(fptr);
25     }
26     printf("\nThe number of words in the file test.text are : %d\n",wrd-1);
27     printf("The number of characters in the file test.text are :%d\n\n",charctr-1);
28     fclose(fptr);
29 }
30

```

Execution Output:

```

"C:\Himanshu\B64178\tut12\3.exe"
Count the number of words and characters in a file :
The content of the file test.text are :
I am at JIIT
Enrolled in SDF1
I am in Noida

The number of words in the file test.text are : 11
The number of characters in the file test.text are :33

Process returned 0 (0x0)   execution time : 0.042 s
Press any key to continue.

```

Q4. Write a program in C to merge two files and write it in a new file.

Solution :

```

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

```

```

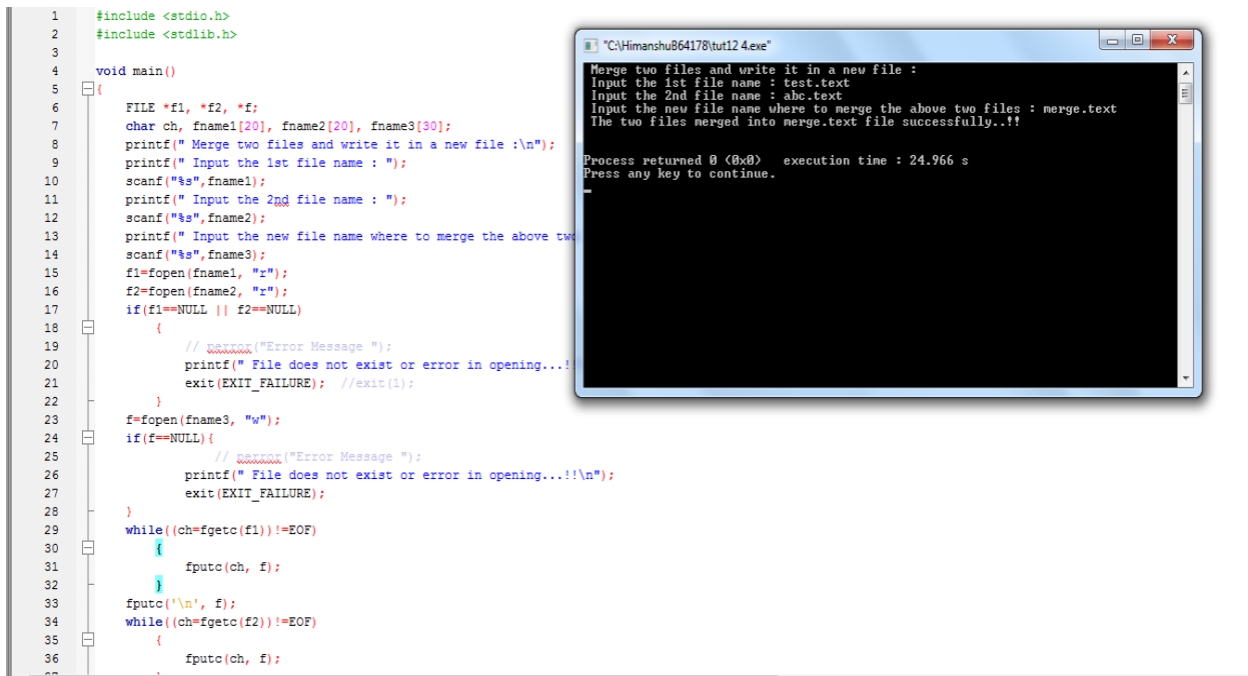
void main()
{
    FILE *f1, *f2, *f;
    char ch, fname1[20], fname2[20], fname3[30];
    printf(" Merge two files and write it in a new file :\n");
}

```

```

printf(" Input the 1st file name : ");
scanf("%s",fname1);
printf(" Input the 2nd file name : ");
scanf("%s",fname2);
printf(" Input the new file name where to merge the above two files : ");
scanf("%s",fname3);
f1=fopen(fname1, "r");
f2=fopen(fname2, "r");
if(f1==NULL || f2==NULL)
{
    // perror("Error Message ");
    printf(" File does not exist or error in opening...!!\n");
    exit(EXIT_FAILURE); //exit(1);
}
f=fopen(fname3, "w");
if(f==NULL){
    // perror("Error Message ");
    printf(" File does not exist or error in opening...!!\n");
    exit(EXIT_FAILURE);
}
while((ch=fgetc(f1))!=EOF)
{
    fputc(ch, f);
}
fputc('\n', f);
while((ch=fgetc(f2))!=EOF)
{
    fputc(ch, f);
}
printf(" The two files merged into %s file successfully..!!\n\n", fname3);
fclose(f1);
fclose(f2);
fclose(f);
}

```



Q5. Convert All Characters in Upper Case of a File using C Program

Solution :

```
#include <stdio.h>
#include <stdlib.h>
#include <ctype.h>
int main(){
    FILE *fp,*fp1;
    char ch;
    fp=fopen("test.text","r");
    if(fp==NULL){
        printf("Error in opening file.\n");
        exit(1);
    }
    fp1=fopen("temp.txt","w");
    if(fp1==NULL){
        printf("Error in creating temp file.\n");
        exit(1);
    }
    while((ch=fgetc(fp))!=EOF){
        if(islower(ch)){
```

```

        ch=toupper(ch); //ch-32
    }
    putc(ch,fp1);
}
fclose(fp);
fclose(fp1);
fp=fopen("temp.txt","r");
if(fp==NULL){
    printf("Error in opening file.\n");
    exit(1);
}
printf("Content of file\n");
while((ch=getc(fp))!=EOF){
    printf("%c",ch);
}
printf("\n");
fclose(fp);
return 0;
}

```

The image shows a C program in a text editor on the left and its execution output in a console window on the right.

Code Editor (Left):

```

1  #include <stdio.h>
2  #include <stdlib.h>
3  #include <ctype.h>
4  int main() {
5      FILE *fp,*fp1;
6      char ch;
7      fp=fopen("test.txt","r");
8      if(fp==NULL){
9          printf("Error in opening file.\n");
10         exit(1);
11     }
12     fp1=fopen("temp.txt","w");
13     if(fp1==NULL){
14         printf("Error in creating temp file.\n");
15         exit(1);
16     }
17     while((ch=fgetc(fp))!=EOF){
18         if(islower(ch)){
19             ch=toupper(ch); //ch-32
20         }
21         putc(ch,fp1);
22     }
23     fclose(fp);
24     fclose(fp1);
25     fp=fopen("temp.txt","r");
26     if(fp==NULL){
27         printf("Error in opening file.\n");
28         exit(1);
29     }
30     printf("Content of file\n");
31     while((ch=getc(fp))!=EOF){
32         printf("%c",ch);
33     }
34     printf("\n");
35     fclose(fp);
36     return 0;
37 }

```

Console Window (Right):

```

"C:\Himanshu\B64178\tut12 5.exe"
Content of file
I AM AT JIIT
ENROLLED IN SDE1
I AM IN NOIDA

Process returned 0 (0x0)   execution time : 0.067 s
Press any key to continue.

```

Q6. Write a program to print reverse content of file. [using command line arguments].

Actual file contents:

This is line1.

This is line2.

This is line3.

This is line4.

This is line5.

This is line6.

Output:

```
Terminal command: ./prg2 file1.txt
```

```
.6enil si sihT
```

```
.5enil si sihT
```

```
.4enil si sihT
```

```
.3enil si sihT
```

```
.2enil si sihT
```

```
.1enil si sihT
```

Solution :

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

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

```
int main(int argc, char *argv[])
```

```
{
```

```
    FILE *fp1;
```

```
    int cnt = 0;
```

```
    int i = 0;
```

```
    if( argc < 2 )
```

```
    {
```

```
        printf("Insufficient Arguments!!!\n");
```

```
        printf("Please use \"program-name file-name\"format.\n");
```

```
        return -1;
```

```
    }
```

```
    fp1 = fopen(argv[1], "r");
```

```
    if( fp1 == NULL )
```

```
    {
```

```
        printf("\n%s File can not be opened : \n", argv[1]);
```

```
        return -1;
```

```
    }
```

```
    //moves the file pointer to the end.
```

```
    fseek(fp1, 0, SEEK_END);
```

```
    //get the position of file pointer.
```

```

cnt = ftell(fp1);
while( i<=cnt )
{
    i++;
    fseek(fp1,-i,SEEK_END);
    printf("%c",fgetc(fp1));
}
fclose(fp1);
return 0;
}

```

```

C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\Home>C:\HimanshuB64178
'C:\HimanshuB64178' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Home>cd C:\HimanshuB64178
C:\HimanshuB64178>tut126 test.text

.6enil si sihT
.5enil si sihT
.4enil si sihT
.3enil si sihT
.2enil si sihT
.1enil si sihT
C:\HimanshuB64178>_

```

Q7. Point out the error/warning in the program if any?

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

```
int main()
```

```
{
```

```
    unsigned char ch;           //error 1 ch should not be unsigned
```

```
    FILE *fp;
```

```
    fp=fopen("trial", "r");     //error 2 not giving address of file properly
```

```
    while((ch = getc(fp))!=EOF)
```

```
        printf("%c", ch);
```

```
    fclose(fp);
```

```
    return 0;
```

```
}
```

Solution :

Q8. Write to a binary file using `fwrite()` using following structure:

`struct threeNum { int n1, n2, n3; };`

Solution :

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

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

```
struct threeNum{  
int n1, n2, n3;  
};
```

```
int main()
```

```
{
```

```
    int n;
```

```
    struct threeNum num;
```

```
    FILE *fptr;
```

```
    fptr = fopen("program.bin","wb");
```

```
    if(fptr==NULL)
```

```
    {
```

```
        printf("cannot open file");
```

```
        exit(1);
```

```
    }
```

```
    for(n=1;n<5;n++)
```

```
    {
```

```
        num.n1=n;
```

```
        num.n2=5*n;
```

```
        num.n3=5*n+1;
```

```
        fwrite(&num, sizeof(num), 1, fptr);
```

```
    }
```

```
    fclose(fptr);
```

```
    fptr = fopen("program.bin","rb");
```

```
    if(fptr==NULL)
```

```

{
    printf("cannot open file");
    exit(1);
}

for(n=1;n<5;n++)
{
    fread(&num, sizeof(num), 1, fptr);
    printf("n1=%d\nn2=%d\nn3=%d\n\n", num.n1, num.n2, num.n3);
}
fclose(fptr);
return 0;
}

```

The image shows a C program on the left and its execution output in a terminal window on the right.

Program Code:

```

1  #include <stdio.h>
2  #include <stdlib.h>
3
4  struct threeNum{
5      int n1, n2, n3;
6  };
7
8  int main()
9  {
10     int n;
11     struct threeNum num;
12     FILE *fptr;
13     fptr = fopen("program.bin", "wb");
14
15     if(fptr==NULL)
16     {
17         printf("cannot open file");
18         exit(1);
19     }
20
21     for(n=1;n<5;n++)
22     {
23         num.n1=n;
24         num.n2=5*n;
25         num.n3=5*n+1;
26         fwrite(&num, sizeof(num), 1, fptr);
27     }
28     fclose(fptr);
29
30
31     fptr = fopen("program.bin", "rb");
32
33     if(fptr==NULL)
34     {
35         printf("cannot open file");
36         exit(1);
37     }
38

```

Terminal Output:

```

"C:\Himanshu\864178\tut12 8.exe"
n1=1
n2=5
n3=6

n1=2
n2=10
n3=11

n1=3
n2=15
n3=16

n1=4
n2=20
n3=21

Process returned 0 (0x0)   execution time : 0.048 s
Press any key to continue.

```