ADVANCE – C PROGRAMMING

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ASSIGNMENT - 5

File Handling

Question 1: Write a program in C to create and store information in a text file.

Code:

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

int main()
{
    FILE *fp;
    fp = fopen("q1sample.txt","w");
    if(fp == NULL)
    {
        printf("\nFile Can't be Created.");
    }
    else{
        char str[200];
```

```
        printf("Enter the data you want to enter in the text file: \n");
        gets(str);
        fputs(str,fp);
        printf("\n\nThe data is successfully written in the file.");
        fclose(fp);
    }
}
```

Output:

```
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs> cd "d:\VIT ACADEM
Advance C\Lab Class C Programs\File Handling\" ; if ($?) { gcc q1.c -o q1 } ; if ($?) { .\q1
Enter the data you want to enter in the text file:
I AM LEARNING ADVANCE C THIS SEMESTER.


The data is successfully written in the file.
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs\File Handling>
```

q1sample.txt

Lab Class C Programs > File Handling > q1sample.txt

```
1    I AM LEARNING ADVANCE C THIS SEMESTER.
```

Question 2: Write a program in C to read an existing file.

Code:

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

int main()
{
    FILE *fp;
    fp = fopen("q1sample.txt","r");
    char ch;
    printf("The File is being read.\n\n");
    while((ch = getc(fp))!= EOF)
    {
```

```
        printf("%c",ch);
    }
    printf("\n\nThe File is completely read.");

}
```

Output:

```
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs> cd "d:\VIT ACADEMI
Advance C\Lab Class C Programs\File Handling\" ; if ($?) { gcc q2.c -o q2 } ; if ($?) { .\q2 }
The File is being read.

I AM LEARNING ADVANCE C THIS SEMESTER.

The File is completely read.
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs\File Handling>
```

Question 3: Write a program in C to find the number of lines, characters and blank spaces in a Text File.

Code:

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

int main()
{
    FILE *fp;
    fp = fopen("q1sample.txt","r");
    char ch;
    int bs=0,ca=0,nl=1;
    printf("The File is being read.\n\n");
    while((ch = getc(fp))!= EOF)
    {
        if(ch==' ')
        {
```

```
            bs++;
        }
        else if(ch=='\n')
        {
            nl++;
        }
        else{
            ca++;
        }
    }
    printf("\n\nThe File is completely read.");
    printf("\nThere are %d Characters %d Blank Spaces and %d Lines.",ca,bs,nl);

}
```

Output:

q1sample.txt

Lab Class C Programs > File Handling > q1sample.txt

```
1   I AM LEARNING ADVANCE C THIS SEMESTER.
2   I WILL BE LEARNING PYTHON NEXT SEMESTER.
```

```
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs\File Handling> cd "
ESTER 2021-22\Advance C\Lab Class C Programs\File Handling\" ; if ($?) { gcc q3.c -o q3 } ; if
The File is being read.



The File is completely read.
There are 66 Characters 12 Blank Spaces and 2 Lines.
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs\File Handling>
```

Question 4: Write a program in C to merge two files and write it in a new file.

Code:

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

```c
int main()
{
    FILE *fp1,*fp2,*fp3;
    fp1 = fopen("q1sample.txt","r");
    fp2 = fopen("q4sample.txt","r");
    fp3 = fopen("merged.txt","w");
    char ch;
    while((ch=fgetc(fp1))!=EOF)
    {
        fputc(ch,fp3);
    }
    fputc('\n',fp3);
     while((ch=fgetc(fp2))!=EOF)
    {
        fputc(ch,fp3);
    }
    printf("\n\nThe content of the two files has been successfully merged in the third file");

}
```

Output:

```
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs> cd "d:\VIT ACADE
Advance C\Lab Class C Programs\File Handling\" ; if ($?) { gcc q4.c -o q4 } ; if ($?) { .\q4


The content of the two files has been successfully merged in the third file
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs\File Handling>
```

q1sample.txt

Lab Class C Programs > File Handling > q1sample.txt

```
1   I AM LEARNING ADVANCE C THIS SEMESTER.
2   I WILL BE LEARNING PYTHON NEXT SEMESTER.
```

q4sample.txt

Lab Class C Programs > File Handling > q4sample.txt

```
1   I WILL GET INTERNSHIP IN NEXT MONTH.
2   I WILL TRY TO DO MY BEST.
```

merged.txt

Lab Class C Programs > File Handling > merged.txt

```
I AM LEARNING ADVANCE C THIS SEMESTER.
I WILL BE LEARNING PYTHON NEXT SEMESTER.
I WILL GET INTERNSHIP IN NEXT MONTH.
I WILL TRY TO DO MY BEST.
```

Question 5: Write a program to read a file and display its contents along with line numbers before each line.

Code:

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

int main()
{
    FILE *fp;
    fp = fopen("merged.txt","r");
    int a = 1;
    char ch;
    printf("The Content of the File is: \n\n1 -> ");
    while((ch = fgetc(fp))!=EOF)
    {
        if(ch!='\n')
        {
            printf("%c",ch);
        }
        else
        {
            a++;
            printf("\n%d -> ",a);
        }
    }
    fclose(fp);
}
```

Output:

```
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs> cd "d:\VIT ACADE
Advance C\Lab Class C Programs\File Handling\" ; if ($?) { gcc q5.c -o q5 } ; if ($?) { .\q5
The Content of the File is:

1 -> I AM LEARNING ADVANCE C THIS SEMESTER.
2 -> I WILL BE LEARNING PYTHON NEXT SEMESTER.
3 -> I WILL GET INTERNSHIP IN NEXT MONTH.
4 -> I WILL TRY TO DO MY BEST.
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs\File Handling>
```

Question 6: Write a program to copy contents of one file to another, while doing so replace all lowercase characters to their equivalent uppercase characters.

Code:

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

int main()
{
    FILE *fp,*tp;
    fp = fopen("merged.txt","r");
    tp = fopen("Changed.txt","w");

    printf("The Content of File is being read and copied to a new file.");
    char ch;
    while((ch=fgetc(fp))!=EOF)
    {

        if((ch>='a')&&(ch<='z'))
        {
           fputc(toupper(ch),tp);
        }
        else
        {
```

```
            fputc(ch,tp);
        }
    }

    printf("\n\nThe content has been successfully copied.");
}
```

Output:

```
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs> cd "d:\VIT ACADEM
Advance C\Lab Class C Programs\File Handling\" ; if ($?) { gcc q6.c -o q6 } ; if ($?) { .\q6
The Content of File is being read and copied to a new file.

The content has been successfully copied.
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs\File Handling>
```

merged.txt

Lab Class C Programs > File Handling > merged.txt

```
1   I am learning advance c this semester.
2   I will be learning python next semester.
3   I will get internship in next month.
4   I will try to do my best.
```

Changed.txt

Lab Class C Programs > File Handling > Changed.txt

```
1   I AM LEARNING ADVANCE C THIS SEMESTER.
2   I WILL BE LEARNING PYTHON NEXT SEMESTER.
3   I WILL GET INTERNSHIP IN NEXT MONTH.
4   I WILL TRY TO DO MY BEST.
```

Question 7: Write a program to encrypt/decrypt a file using a substitution ciper: in this each character read from the source file is substituted by a corresponding predetermined character and this character is written to the target file.For example, if character 'A'is read from the source file, and if we have decided that every 'A' is to be substituted by '!', then a '!' would be written to the target file in place of every 'A'.

Code:

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

int main()
{
    FILE *fp;
    FILE *pp;
    fp = fopen("Changed.txt","r");
    pp = fopen("cipher.txt","w");

    printf("Reading the Text from the File");
    char ch,sh;
    while((ch=fgetc(fp))!=EOF)
    {
        if((ch!='\n')&&(ch!=' '))
        {
            sh = ch + 10;
            fputc(sh,pp);
        }
        else
        {
            fputc(ch,pp);
        }
    }
    fclose(pp);
    printf("\n\nText is successfully Encrypted");
    printf("\n\nDecrypting the Content of the File and Displaying,\n\n");

    pp = fopen("cipher.txt","r");
    while((ch=fgetc(pp))!=EOF)
    {
        sh = ch - 10;
        if((ch!='\n')&&(ch!=' '))
        {
            printf("%c",sh);
        }
        else
        {
            printf("%c",ch);
        }
    }
}
```

Output:

```
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs> cd "d:\VIT ACAD
Advance C\Lab Class C Programs\File Handling\" ; if ($?) { gcc q7.c -o q7 } ; if ($?) { .\q
Reading the Text from the File

Text is successfully Encrypted

Decrypting the Content of the File and Displaying,

I AM LEARNING ADVANCE C THIS SEMESTER.
I WILL BE LEARNING PYTHON NEXT SEMESTER.
I WILL GET INTERNSHIP IN NEXT MONTH.
I WILL TRY TO DO MY BEST.
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs\File Handling>
```

cipher.txt

Lab Class C Programs > File Handling > cipher.txt

```
1   S KW VOK\XSXQ KN`KXMO M ^RS] ]OWO]^O\8
2   S aSVV LO VOK\XSXQ Zc^RYX XOb^ ]OWO]^O\8
3   S aSVV QO^ SX^O\X]RSZ SX XOb^ WYX^R8
4   S aSVV ^\c ^Y NY Wc LO]^8
```

Question 8: Given a text file, write a program to create another text file deleting the words 'a', 'the', 'an' and replacing each one of them with a blank space.

Code:

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

int main()
{
    FILE *fp,*pp;
    fp = fopen("merged.txt","r");
    pp = fopen("removed.txt","w");

    char str[20];
    printf("The File is Being Read.");
```

```c
    while(fscanf(fp,"%s ",str)==1)
    {
        if((strcmp(str,"a")==0)||(strcmp(str,"an")==0)||(strcmp(str,"the")==0))
        {
            fputc(' ',pp);
        }
        else
        {
            fputs(str,pp);
            fputc(' ',pp);
        }
    }

    printf("\n\nThe Content of the file ha sbeen successfully copied after inserting the blank spaces.");
}
```

Output:

```
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs> cd "d:\VIT ACADEMICS\WINTER SE
ing\" ; if ($?) { gcc q8.c -o q8 } ; if ($?) { .\q8 }
The File is Being Read.

The Content of the file ha sbeen successfully copied after inserting the blank spaces.
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs\File Handling>
```

Lab Class C Programs > File Handling > merged.txt

```
1   I am learning an advance c this semester.
2   I will be an learning python next semester.
3   I will get the internship in next a month.
4   I will try to the do my best.
```

Lab Class C Programs > File Handling > removed.txt

```
1   I am learning  advance c this semester.
2   I will be  learning python next semester.
3   I will get  internship in next  month.
4   I will try to  do my best.
```

Question 9: Write a program to carry out the following:

a. Read a text file ‘Input.Txt’

b. Print each word in reverse order

Code:

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

int main()
{
    FILE *fp;
    fp = fopen("input.txt","r");

    char tony[20];
    printf("The File is successfully Read.");

    printf("\n\nThe Strings of the file in the reverse order is:\n\n");
    while(fscanf(fp,"%s ",tony)==1)
    {
        printf("%s ",strrev(tony));
    }

    fclose(fp);
}
```

Output:

```
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs> cd "d:\VIT ACADEMICS\W
ing\" ; if ($?) { gcc q9.c -o q9 } ; if ($?) { .\q9 }
The File is successfully Read.

The Strings of the file in the reverse order is:

emocleW sdneirF
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs\File Handling>
```

Lab Class C Programs > File Handling > input.txt

```
1   Welcome Friends
```

Question 10: Create a enumerated datatype for 12 months and display the values in integer.

Code:

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

enum month
{
    jan = 1,feb,mar,apr,may,jun,jul,aug,sep,oct,nov,dec
};

int main()
{
    enum month cmonth;
    printf("The integer value for the months of the year is:\n");
    for(int i=jan;i<=dec;i++)
    {
        cmonth = i;
        printf(" %d\n",cmonth);
    }
}
```

Output:

```
The integer value for the months of the year is:
 1
 2
 3
 4
 5
 6
 7
 8
 9
 10
 11
 12

Process returned 0 (0x0)   execution time : 1.126 s
Press any key to continue.
```

Question 11: Create a enumerated data type logical with TRUE and FALSE values. write a program to check whether the entered number is prime or not prime. if the number is prime display 0 otherwise, 1. use enumerated datatype.

Code:

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

enum check
{
    TRUE,FALSE
};

int main()
{
    enum check flag;

    printf("Enter a Number: ");
    int n;
    scanf("%d",&n);
    flag = TRUE;

    for(int i=2 ; i < n/2 ; i++)
    {
        if(n%i == 0)
        {
            flag = FALSE;
            break;
        }
    }

    printf("\n\nResult: %d",flag);
}
```

Output:

```
Enter a Number: 73


Result: 0
Process returned 0 (0x0)   execution time : 8.453 s
Press any key to continue.
```

Question 12: Create user defined datatype from structure . The structure should contain the variables such as name, regno, cgpa and age of students. use array of structures.

Code:

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

struct student
{
    char name[20];
    char reg[20];
    int age;
    float cgpa;
};

int main()
{
    struct student stud[20];

    printf("Enter the Number of Students: ");
    int n;
    scanf("%d",&n);

    printf("\nEnter the details below,\n");
    for(int i=0;i<n;i++)
    {
        printf("Student %d:\n",i+1);
        printf("Name: ");
        scanf("%s",stud[i].name);
        printf("Registeration No.: ");
        scanf("%s",stud[i].reg);
        printf("Age: ");
        scanf("%d",&stud[i].age);
        printf("CGPA: ");
        scanf("%f",&stud[i].cgpa);
    }

    printf("The List of Students is :\n");
    for(int i=0;i<n;i++)
    {
     printf("Student %d:\n",i+1);
     printf("Name: %s\nRegisteration No.: %s\nAge: %d\nCGPA:
%f\n",stud[i].name,stud[i].reg,stud[i].age,stud[i].cgpa);
```

```
    }
}
```

Output:

```
Enter the Number of Students: 3

Enter the details below,
Student 1:
Name: Arayan
Registeration No.: 0658
Age: 18
CGPA: 9.6
Student 2:
Name: Angad
Registeration No.: 0130
Age: 19
CGPA: 9.3
Student 3:
Name: Aayushi
Registeration No.: 0697
Age: 20
CGPA: 9.0
The List of Students is :
Student 1:
Name: Arayan
Registeration No.: 0658
Age: 18
CGPA: 9.600000
Student 2:
Name: Angad
Registeration No.: 0130
Age: 19
CGPA: 9.300000
Student 3:
Name: Aayushi
Registeration No.: 0697
Age: 20
CGPA: 9.000000

Process returned 0 (0x0)   execution time : 52.272 s
Press any key to continue.
```

Question 13: Write down macro definitions for the following:

a. To find the arithmetic mean of two numbers.

b. To find the absolute value of a number.

c. To convert an uppercase alphabet to lowercase.

d. To obtain the bigger of two numbers.

Solution

a.

Code:

```
#include<stdio.h>
#include<math.h>
#include<string.h>
#define a 10
#define b 20
int main()
{
    #ifdef a
    #ifdef b
    printf("The airthmatic mean of %d and %d is %d",a,b,(a+b)/2);
    #endif
    #endif
}
```

Output:

```
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab
) { gcc March23.c -o March23 } ; if ($?) { .\March23 }
The airthmatic mean of 10 and 20 is 15
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab
```

b.

Code:

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

```c
#include<string.h>
#define a -12
int main()
{
    #if (a>=0)
    printf("\nThe Absolute Value is: %d",a);
    #else
    printf("\nThe Absolute Value is: %d",a*(-1));
    #endif
}
```

Output:

```
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs> cd "d:\V
) { gcc March23.c -o March23 } ; if ($?) { .\March23 }

The Absolute Value is: 12
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs>
```

C.

Code:

```c
#include<stdio.h>
#include<math.h>
#include<string.h>
#define ch 'A'
int main()
{
    #ifdef ch
    int r;
    r = ch+32;
    printf("The Lowercase Alphabet is: %c",r);
    #endif
}
```

Output:

```
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs> cd "d:\
) { gcc March23.c -o March23 } ; if ($?) { .\March23 }
The Lowercase Alphabet is: a
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs>
```

d.

Code:

```c
#include<stdio.h>
#include<math.h>
#include<string.h>
#define a 10
#define b 20
int main()
{
    #if(a>b)
    printf("\n%d is Greater than %d",a,b);
    #elif(a==b)
    printf("\nBoth the Numebrs are Equal");
    #else
    printf("\n%d is Lesser than %d",a,b);
    #endif
}
```

Output:

```
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs> cd "d:\VIT A
) { gcc March23.c -o March23 } ; if ($?) { .\March23 }

10 is Lesser than 20
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs>
```

Question 14: Write down macro definitions for the following:

a. To test whether a character entered is a small case letter or not.

b. To test whether a character entered is an upper case letter or not.

c. To test whether a character is an alphabet or not. Make use of the macros you defined in (1) and (2) above.

Solution

Code:

```c
#include<stdio.h>
#include<math.h>
#include<string.h>
#define ch 'd'
int main()
{
    #ifdef ch
    #if (ch>='A'&&ch <='Z')
    printf("The Character is in Upper Case");
    #elif (ch >='a' && ch<='z')
    printf("The Character is in Lower Case");
    #else
    printf("The Character is Not AN Alphabet");
    #endif
    #else
    printf("The Character is not defined");
    #endif
}
```

Output:

```
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs> cd "d:\VIT A
) { gcc March23.c -o March23 } ; if ($?) { .\March23 }
The Character is in Lower Case
PS D:\VIT ACADEMICS\WINTER SEMESTER 2021-22\Advance C\Lab Class C Programs>
```