Data Structures With C Lab

Course Code : 18CSL37

Year : 2020-21

Course Learning Objectives

1.) Demonstrate abstract properties of various data structures such as stacks, queues etc.
2.) Compare different implementations of Datastructures
3.) Demonstrate features of different data structures to solve real world problems.

Course Outcomes.

1.) Demonstrate understanding of structured programming.
2.) Analyze problem statement & able to choose right data structure for implementation.
3.) Develop an ability to construct robust, maintainable programs which satisfy requirements of user.

Term Work - 1

Problem Definition:

Write a C program to merge contents of a file containing USN's of students in a sorted order in to the 3rd file such that 3rd file contains Unique USN's. Program should also display common USN's in both files.

Aim:

The purpose of this TW is to learn the concept of File handling in C. Basic operations using files & implementation of this concept in solving problems

Theory.

In software industry, most of the programs are written to store info. fetched from programs. One such way is to store fetched info in a file. Different operations that can be performed on a file are:

→ Creation of a new file (fopen with attributes)
→ Opening an existing file (fopen)
→ Reading from file (fscanf or fgets)
→ Writing to a file (fprintf)
→ Closing a file (fclose).

Program:

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

int main (int argc, char *argv[]) {
  FILE *f1, *f2, *f3;
   f1 = fopen ("usnfile1.txt", "r");
   f2 = fopen ("usnfile2.txt", "r");
   if (f1 == NULL)
       printf ("\n File 1 cannot be found");
   if (f2 == NULL)
       printf ("\n File 2 cannot be found");
  f3 = fopen ("usnfile3.txt", "w");
 int maxchar = 15;
 char us1[maxchar], usn2[maxchar];
 fgets (usn1, maxchar, f1);
 fgets (usn2, maxchar, f2);
 while (! feof (f1) && ! feof (f2)) {
      if (( strcmp (usn1, usn2)) < 0) {
            fprintf (f3, "\n %s\n", usn1);
             fprintf (f3, "\n %s \n", usn2);
    }
    else {
        fprintf (f3, "\n %s" \n", usn2);

        fprintf (f3, "\n %s \n", usn1);
    }
    fgets (usn1, maxchar, f1);
    fgets (usn2, maxchar, f2);
```

```
if (feof (f2)){
        while (!feof (f1)) {
            fgets (usn1, maxchar, f1);
            fprintf (f3, "%s\n", usn1);
        }
}
else {
    while (!feof (f2)){
        fgets (usn2, maxchar, f2);
        fprintf (usn f3, "\n%s\n", usn2);
    }
}

fclose (f1);
fclose (f2);
fclose (f3);
printf ("Done");

return 0;
}
```

```
Done
Process returned 0 (0x0)   execution time : 1.812 s
Press any key to continue.
```

```
Done
Process returned 0 (0x0)   execution time : 1.812 s
Press any key to continue.
```

References:

Books:

* Richard F Gilberg, Behrouz A Fourouzan, Data Structures: A Pseudo Code Approach with C, Cengage 2007.

* Horowitz, Sahni, Anderson-Freed, Fundamentals of Data Structures in C, Universe Press 2nd Edition.

E-Resources:

* https://geeksforgeeks.org/

Conclusion

In this TW, we learnt about files, basic operations of files & their implementation to solve problems. We also learned basic problem solving techniques & programming paradigms.