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Course : Data Structures And Algorithms

Course Code : 2CS301

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Definition :

A hierarchical filesystem is present, where each directory consist of other directories, which subsequently can contain other directories or file. Uptil level n, such hierarchy is present. In order to search a particular file, directories needs to be traversed. Starting at an some randon directory, you can find all of the elements in the directory. In a recursive algorithm if, upon find a subdirectory element, you descend to that subdirectory immediately to continue the search rather or you finding all elements at each directory before descending to any subdirectory. In order to design this model what can be efficient and how. Implement the given model.

Name of Code File : DSA_19BCE233_COMPREHENSIVE.c

File Purpose :

In This I made A two level Directories System Using two Structures And 2D Array to Store both Level information Like Matrix And Search Any Directories And Display All the levels And I attach the Output Console Screenshots With it.

Code:

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

struct mfd
{
    char Na_U[10];
    int Num_d;

    struct ufd
    {
```

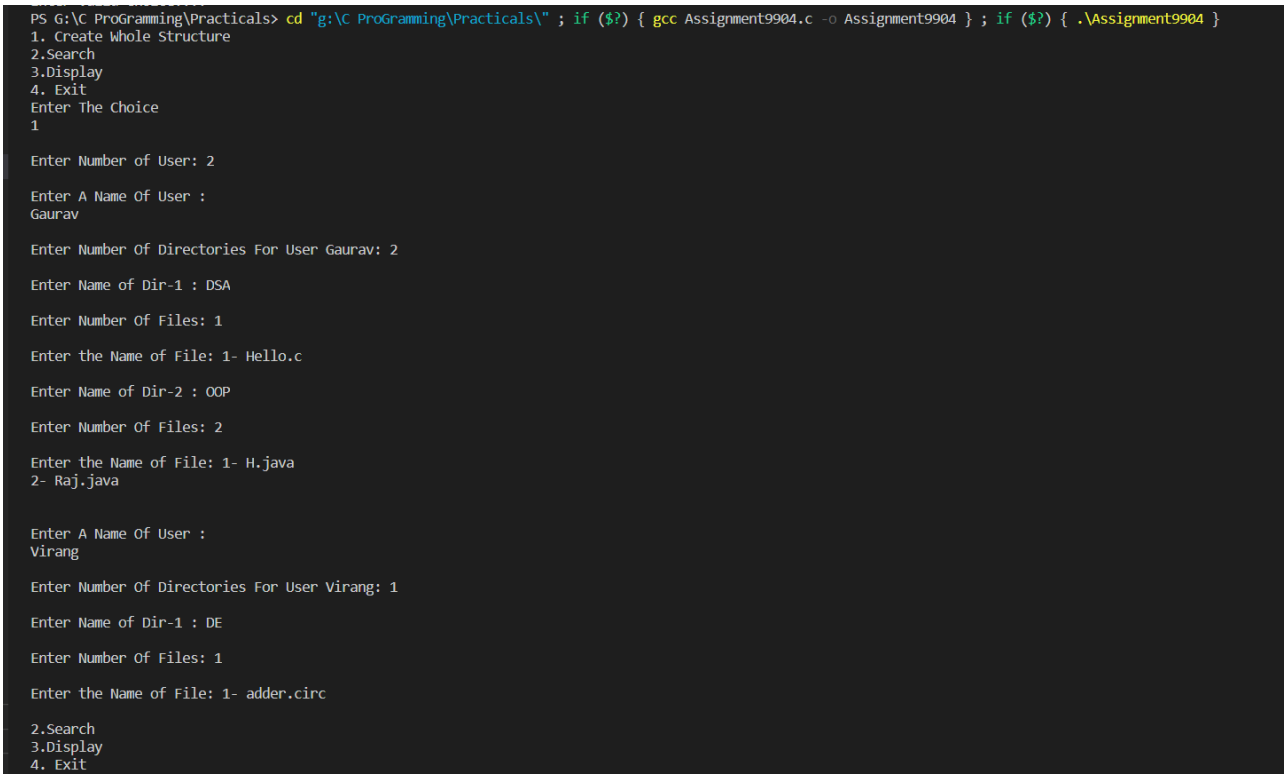
```
        char Na_d[10];
        int Num_f;
        char p[10][10];
    }d[10];

}Usr[10];

int Num_U;

void create(int n)
{
    int i,j;
    printf("\nEnter A Name Of User :\n");
    fflush(stdin);
    scanf("%s",Usr[n].Na_U);

    printf("\nEnter Number Of Directories For User %s: ",Usr[n].Na_U);
    scanf("%d",&Usr[n].Num_d);

    for(i=0;i<Usr[n].Num_d;i++)
    {
        printf("\nEnter Name of Dir-%d : ",i+1);
        fflush(stdin);
        scanf("%s",Usr[n].d[i].Na_d);

        printf("\nEnter Number Of Files: ");
        scanf("%d",&Usr[n].d[i].Num_f);

        printf("\nEnter the Name of File: ");
        for(j=0;j<Usr[n].d[i].Num_f;j++)
        {
            printf("%d- ",j+1);
            fflush(stdin);
            scanf("%s",Usr[n].d[i].p[j]);
        }
    }
    printf("\n");
}

void display(int N)
{
   int i,j,k;

   for(i=0;i<N;i++)
   {
```

```
        printf("\n<User>%s",Usr[i].Na_U);
        for(j=0;j<Usr[i].Num_d;j++)
        {
            printf("\n\t<Dir> %s \n\t Files : ",Usr[i].d[j].Na_d);

            for(k=0;k<Usr[i].d[j].Num_f;k++)
            {
                printf("%d - %s",k+1,Usr[i].d[j].p[k]);
            }
        }
    }
    printf("\n\n");
}

void Search()
{
    char s[100];
    printf("Enter The Name You Want to Find\n");
    scanf("%s",s);
    int i,j,k;
    for(i=0;i<Num_U;i++)
    {
        for(j=0;j<Usr[i].Num_d;j++)
        {
            if(strcmp(Usr[i].d[j].Na_d,s))
            {
                for(k=0;k<Usr[i].d[j].Num_f;k++)
                {
                    if(!strcmp(Usr[i].d[j].p[k],s))
                    {
                        printf("\n<User>%s",Usr[i].Na_U);
                        printf("\n\t<Dir> %s \n\t Files : ",Usr[i].d[j].Na_d);
                        printf("%d - %s\n",k+1,Usr[i].d[j].p[k]);
                    }

                }
            }
            else
            {
                printf("\n<User>%s",Usr[i].Na_U);
                printf("\n\t<Dir> %s \n\t Files : ",Usr[i].d[j].Na_d);
            }

        }
    }
```

```
}
void main()
{
    int i;
    int c=0;
    start:
    if(c==0)
    {

    printf("1. Create Whole Structure\n");
    printf("2.Search\n");
    printf("3.Display\n");
    printf("4. Exit\n");

    }
    else if (c==1)
    {
        printf("2.Search\n");
        printf("3.Display\n");
        printf("4. Exit\n");
    }

    int choice=0;
    printf("Enter The Choice\n");
    scanf("%d",&choice);

    switch (choice)
    {
    case 1:
    {
        printf("\nEnter Number of User: ");
        scanf("%d",&Num_U);

        for(i=0;i<Num_U;i++)
        {
        create(i);
        }
        c=1;
        goto start;
        break;
    }
    case 2:
    {
        Search();
        goto start;
```

```
        break;
    }
    case 3:
    {
        display(Num_U);
        goto start;
        break;
    }
    case 4:
    {
        exit(0);
        break;
    }
    default:
        {
            printf("Enter Valid Choice!!!!");
            goto start;
        }
    }

}
```

Output Screenshots:



```
2.Search
3.Display
4. Exit
Enter The Choice
2
Enter The Name You Want to Find
Hello.c

<User>Gaurav
        <Dir> DSA
         Files : 1 - Hello.c
2.Search
3.Display
4. Exit
Enter The Choice
2
Enter The Name You Want to Find
adder.circ

<User>Virang
        <Dir> DE
         Files : 1 - adder.circ
2.Search
3.Display
4. Exit
Enter The Choice
3

<User>Gaurav
        <Dir> DSA
         Files : 1 - Hello.c
        <Dir> OOP
         Files : 1 - H.java2 - Raj.java
<User>Virang
        <Dir> DE
         Files : 1 - adder.circ

2.Search
3.Display
4. Exit
Enter The Choice
4
```

THANK YOU !!!!!

Gaurav Sakariya

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