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CSE-AI

DAY1: 24/07/2024

1. Write a C Program to implement following operations

a) traverse

b) search

c) delete

d) insert

e) update

a) Traverse

```
include<stdio.h>
int main()
{
   int a[10]={1,2,3,4,5},i;
   for (i=0;i<5;i++)
   {
            printf("%d",a[i]);
            }
}
```

OUTPUT:12345

b) Search

```
#include <stdio.h>
int main() {
   int arr[] = {2, 4, 6, 8, 10, 12, 14, 16, 18, 20};
   int target = 12;
   for(i=0;i<n;i++)
   {
       if(arr[i]==value)
        printf("element is present in array")
        else
      printf("number is not present in array")
   }
}
```

OUTPUT: element is present in array

c) Delete

```
#include<stdio.h>
int main()
{
   int a[10]={2,4,5,9,7},i,pos=5;
   for(i=pos;i<5;i++)
   {
      a[i]=a[i+1];
   }
   for(i=0;i<4;i++)
   {
   printf("%d",a[i]);
   }
}
```

```
OUTPUT:2459
```

d) Insert

```
#include<stdio.h>
int main()
{
   int a[10]={2,4,5,9,7},i,pos=3,ele=10;
   for(i=4;i<pos;i--)
   {
      a[i+1]=a[i];
   }
   a[pos]=ele;
   for(i=0;i<5;i++)
   {
   printf("%d",a[i]);
   }
}
```

```
OUTPUT: 245107
```

e) Update

```
#include<stdio.h>
int main()
{
   int a[10]={1,2,3,4,5},i,index=2,value=10;
   a[index]=value;
   printf("update an array\n");
   for (i=0;i<5;i++)
   {
          printf("%d",a[i]);
    }
```

```
        }
        OUTPUT: update an array
                    12745
```

2. Writing a recursive function to calculate the factorial of a number.

```
#include <stdio.h>

int factorial(int n) {

    if (n == 0 || n == 1) {

        return 1;

    } else {

        return n * factorial(n - 1);

    }

}

int main() {

    int num = 5;

    printf("Factorial of %d: %d\n", num, factorial(num));

    return 0;

}
```

OUTPUT:

```
Factorial of 5: 120
```

3. Write a C Program to find duplicate element in an array

```
#include<stdio.h>

int main()

{

        int a[10]={1,2,3,4,2,2},i,j;

        int n=sizeof(a)/sizeof(a[0]);

        for(i=0;i<n;i++)

        {

                for(j=i+1;j<n;j++)
        {
            if(a[i]==a[j])
            {
                printf("%d",a[i]);
                break;
            }
        }
    }
}
```

OUTPUT: 2

4. Write a C Program to find Max and Min from an array elements

```
#include<stdio.h>
int main()
{
    int a[10]={1,2,3,4,10},i,min=0,max=0;
    for(i=0;i<5;i++)
    {
        min=a[0];
        max=a[0];
        if(a[i]<min)
        min=a[i];
    }
        printf("min number is %d\n",min);
    for(i=0;i<5;i++)
    {
        if(a[i]>max)
        max=a[i];
    }
        printf("max number is %d\n",max);
}
```

```
OUTPUT: max number is 10
             Min number is 1
```

5. Given a number n. the task is to print the Fibonacci series and the sum of the series using recursion.

input: n=10

output: Fibonacci series

0, 1, 1, 2, 3, 5, 8, 13, 21, 34

Sum: 88

```
#include<stdio.h>
int fibonacci(int n)
{
        if(n==0||n==1)
        return n;
        else
        return fibonacci(n-1)+fibonacci(n-2);
}
int main()
{
        int n=10,i;
        printf("fibonacci series\n");
        for(i=0;i<n;i++)
        {
                  sum=sum+i
                printf("%d\t",fibonnaci(i));
        }
}
```

```
OUTPUT:
fibonacci series
0        1        1        2        3        5        8        13        21        34
Sum=88
```

6. You are given an array arr in increasing order. Find the element x from arr using binary search.
Example 1: arr={ 1,5,6,7,9,10},X=6
Output : Element found at location 2
Example 2: arr={ 1,5,6,7,9,10},X=11
Output : Element not found at location 2

```
#include <stdio.h>
int main() {
   int arr[] = {2, 4, 6, 8, 10, 12, 14, 16, 18, 20};
   int target = 12;
   int left = 0;
   int right = sizeof(arr) / sizeof(arr[0]) - 1;
   int mid;

   while (left <= right)
{
      mid = left + (right - left) / 2;

      if (arr[mid] == target)
     {
         printf("Element %d found at index %d\n", target, mid);
         break;
      }

      if (arr[mid] < target) {
         left = mid + 1;
      } else {
         right = mid - 1;
      }
   }
}
```

```
OUTPUT: element 12 found at index 5
```