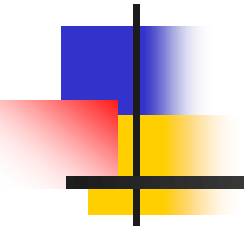

OPERATIONS OF ARRAYS

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Polynomials

The operations of arrays are such as:

- **Traversing :** Processing each and every element in the array sequentially.
- **Searching :** Searching an element is present or not in an given array.
- **Sorting :** Arranging the elements in the array in a particular order.
- **Inserting :**Insert an element in the array , in a specified position .
- **Deletion :** Deleting an element from the array in a particular position.
- **Merging:** Merging two sorted array into a single sorted array .

Traversing

```
#include<stdio.h>
#include<conio.h>
void main()
{
     int a[100],i,n;
     clrscr();
     printf("Enter the number of
element to be insert in the array
:");
  scanf("%d",&n);
 printf("\nEnter the array element
\n");
for(i=0;i<n;i++)
{
   scanf("%d",&a[i]);
}
/* traversing block */
for(i=0;i<n;i++)
{
    a[i]=a[i]+2;
}

printf("After traversing the array
is :\n");
for(i=0;i<n;i++)
{
   printf("%d\t",a[i]);
}
}
```

Searching: Linear Search

- **Write a program to search an element is present or not in a given array using linear search**

```
#include<stdio.h>
#include<conio.h>
void main()
{
   int num[10],n,i,item;
   clrscr();
   printf("Enter the array size :");
   scanf("%d",&n);
   printf("\nEnter the searching element to be search :");
  scanf("%d",&item);
  printf("\nEnter the array element\n");
for(i=0;i<n;i++)
{
   scanf("%d",&num[i]);
}
```

Searching: Linear Search

```
/* searching block */
for(i=0;i<n; i++)
{
    if(num[i]== item)
    {
    printf("\n The element is found at position : %d",i+1);
    break;
    }
}
if(i==n)
{
        printf(" \n The element is not found ");
}
 }
```

Binary Search

```
  #include<stdio.h>
#include<conio.h>
void main()
{
   int num[20],n, i, item,mid,lb,ub ;
   clrscr();
   printf("Enter the array size :");
   scanf("%d",&n);
   printf("\nEnter the searching element to be search :");
   scanf("%d",&item);
   printf("\nEnter the array elements\n");
   for(i=0;i<n;i++)
   {
       scanf("%d",&num[i]);
  }
lb=0 , ub=n-1;
mid=(lb+ub)/2;
```

Binary Search cont..

```
/* searching block */
while(lb<ub && num[mid] !=item)
{
          if(num[mid]> item)
          {
               ub=mid-1;
          }
          else
          {
             lb=mid+1;
          }
    mid=(lb+ub)/2;
}
if(num[mid]== item)
{
  printf("\n The element is
found at position %d ", mid+1);
}
else
{
    printf("\n The element is not
found");
}

}
```

Inserting

```
 #include<stdio.h>
void main()
{
int a[5], n , p, i, ub=4 ;
printf("Enter the elements of the array
:\n");
for(i=0;i<5 ;i++)
{
            scanf("%d",&a[i]);
}
printf("\nEnter the inserting
element:");
scanf("%d",&n);
printf("\nEnter the position where the
element to be entered :");
scanf("%d",&p);
p--;
while(ub>=p)
{
        a[ub+1]=a[ub];
         ub--;

}
a[p]=n;
printf("After insertion the array
is:\n");
for(i=0;i<6;i++)
{
         printf("%d\t",a[i]);
}

}
```

Deletion

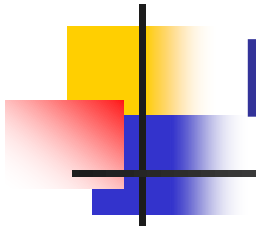
```
#include<stdio.h>
void main()
{
int a[100], n , p, i, j,temp ;
printf("How many elements in the array \n");
scanf("%d",&n);
printf("Enter the elements of the array :\n");
for(i=0;i<n ;i++)
{
        scanf("%d",&a[i]);
}
printf("Enter the position where the element to be delete :\n");
scanf("%d",&p);
temp=a[p];
p--;
for(j=p;j<n;j++)
{
  a[j]=a[j+1];
}
n=n-1;
printf("After deletion the new array is :\n");
for(i=0;i<n;i++)
{
    printf("%d", a[i]);
}
}
```

Merging

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a[7] ,b[8] , c[12] , la=1,lb=1,lc=1,i ,n,m;
clrscr();
printf("Enter the size of first array a :\n");
scanf("%d",&n);
printf("Enter the size of second array b :\n");
scanf("%d",&m);
printf("Enter the first array element\n");
for(i=1;i<=n; i++)
{
        scanf("%d",&a[i]);
}
printf("Enter the second
array element\n");
for(i=1;i<=m;i++)
{
        scanf("%d",&b[i]);
}
```

Merging

```
/* merging block */
while(la<=n && lb<=m)
{
        if(a[la] <b[lb])
        {
                c[lc]=a[la] ;
                lc++;
                la++;
        }
        else
        {
                 c[lc]=b[lb];
                lc++;
                lb++;
        }
}
if(la>n)
{
        for(k=0;k<=m-lb;k++)
        {
                c[lc+k]=b[lb+k];
        }
}
else
{
        for(k=0;k<=n-la;k++)
        {
                c[lc+k]=a[la+k];
        }
}
```



Merging

```
printf("After merge the final array is \n");
for(i=1 ;i<=12;i++)
{
        printf("%d\t"c[i]);
}
getch();

}
```

Sorting: Selection Sort

```
#include<stdio.h>
#include<conio.h>
void main()
{
        int a[100],i,j,temp,n;
        clrscr();
        printf("Enter the number of element to be insert in the
array  :");
        scanf("%d",&n);
        printf("\nEnter the array element \n");
        for(i=0;i<n;i++)
        {
                scanf("%d",&a[i]);
        }
```

Sorting: Selection Sort

```
/* sorting  block*/
for(i=0;i<n;i++)
{
        for(j=i+1;j<n-1; j++)
        {
                if(a[i]>a[j])
                {
                        temp=a[i];
                        a[i]=a[j];
                        a[j]=temp;
                }
        }
}
```

```
printf("After sorting the array  is
:\n");
for(i=0;i<n;i++)
{
        printf("%d\t",a[i]);
}
```

Matrix Multipication

```
 #include<stdio.h>
#include<conio.h>
void main()
{
        int a[3][3],b[3][3],c[3][3],i,j,k;
        clrscr();
        for (i=0;i<3;i++)
        {
                for (j=0;j<3;j++)
                {
                        printf("\n Enter a no. for a :");
                        scanf("%d%d",&a[i][j], ",&b[i][j]);
                }
        }
```

Matrix Multiplication

```
 for (i=0;i<3;i++)
{
        for (j=0;j<3;j++)
        {
                c[i][j]=0;
                for (k=0;k<3;j++)
                {
                        c[i][j]=c[i][j]+(a[i][k]*b[k][j]);
                }
        }
}
```

```
printf(" \nOutput \n") ;

for (i=0;i<3;i++)
{
 for (j=0;j<3;j++)
{
   printf("%d\t",c[i][j]);
}
printf("\n");
}
}
```