**PRACTICAL – 1**

**Write a program to implement Linear Search using Array**.

#include <stdio.h>

int main() {

int s,num,i,flag=0;

printf("Enter number of elements in array");

scanf("%d",&s);

int arr[s];

printf("Enter the elements of Array");

for(i=0;i<s;i++){

scanf("%d",&arr[i]);

}

printf("Enter the element to be searched");

scanf("%d",&num);

for(i=0;i<s;i++){

if(arr[i]==num){

flag=1;

break;

}

}

if(flag==1){

printf("Element found in the array at postition %d",i+1);

}

else{

printf("Element is not present in the array \n");

}

return 0;

}

**OUTPUT :**

**Case 1:** Element is not found.

**Case 2:** Element is found.

**PRACTICAL – 2**

**Write a program to implement Binary Search using Array**.

#include <stdio.h>

int main()

{

int i,j,low,high,middle,n,search,arr[200];

printf("Enter no. of elements");

scanf("%d",&n);

printf("Enter elements of array in sorted form :");

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

scanf("%d",&arr[i]);

}

printf("Enter value to be searched :");

scanf("%d",&search);

low=0;

high=n-1;

middle=(low+high)/2;

while(low<=high){

if(search==arr[middle]){

printf("%d is found at location %d ",search,middle+1);

break;

}

else if(search>arr[middle]){

low=middle+1;

}

else{

high = middle-1;

middle=(low+high)/2;

}

}

if(low>high){

printf("%d is not present in the array ",search);

}

return 0;

}

**PRACTICAL – 3**

**Write a program to implement Bubble Sort using Array**.

#include<stdio.h>

#include<conio.h>

void bubblesort();

int a[100],n,i,j,temp;

void main()

{

printf("Input the number of elements in the array :\n");

scanf("%d",&n);

printf("Input %d elements in the array \n",n);

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

{

scanf("%d",&a[i]);

}

bubblesort();

getch();

}

void bubblesort()

{

for(i=1;i<n;i++)

{

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

{

if(a[j]>a[j+1])

{

temp=a[j];

a[j] = a[j+1];

a[j+1]=temp;

}

}

}

printf("\n Array after sorting is : \n\n");

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

{

printf("%d\n",a[i]);

}

}

**PRACTICAL – 4**

**Write a program to implement Insertion Sort using Array**.

#include<stdio.h>

#include<conio.h>

void isort();

int a[100],n,i,j,temp;

void main()

{

clrscr();

printf("Input number of elements of array :\n");

scanf("%d",&n);

printf("Input %d elements in the array : \n\n");

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

{

scanf("%d",&a[i]);

}

isort();

getch();

}

void isort()

{

for(i=1;i<n;i++)

{

temp=a[i];

j=i-1;

while(j>=0&&a[j]>temp)

{

a[j+1]=a[j];

j--;

}

a[j+1]=temp;

}

printf("Your array after sorting :\n\n");

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

{

printf("%d\n",a[i]);

}

}

**PRACTICAL – 5**

**Write a program for implementation of stack functions :push,pop,display**.

#include <stdio.h>

int stack[100],choice,n,top,x,i;

void push(void);

void pop(void);

void display(void);

int main()

{

top=-1;

printf("\n Enter the size of STACK[MAX=100] :");

scanf("%d",&n);

printf("Stack operation using array");

printf("\n\t 1.push \n 2.pop \n 3.display \n4.exit");

do{

printf("\n Enter the choice");

scanf("%d",&choice);

switch(choice){

case 1:{

push();

break;

}

case 2:{

pop();

break;

}

case 3:{

display();

break;

}

case 4:{

printf("\n\t Exit points");

break;

}

default:

{

printf("Enter a valid choice");

}

}

}

while(choice!=4);

return 0;

}

void push()

{

if(top>=n-1)

{

printf("Stack is overflow");

}

else

{

printf("Enter a value to be pushed");

scanf("%d",&x);

top++;

stack[top]=x;

}

}

void pop()

{

if(top<=-1){

printf("Stack is under flow");

}

else

{

printf("The poped element is %d ",stack[top]);

top--;

}

}

void display()

{

if(top>=0)

{

printf("The element in STACK\n");

for(i=top;i>=0;i--)

{

printf("\n%d",stack[i]);

}

}

else

{

printf("The stack is Empty");

}

}

**PRACTICAL – 6(a)**

**Write a program to find factorial of a number using recursion.**

#include <stdio.h>

int factorial(int n)

{

if(n>=1){

return n\*factorial(n-1);

}

else

{

return 1;

}

}

int main(){

int n;

printf("Enter the number to find facorial");

scanf("%d",&n);

printf("The factorial of %d is %d ",n,factorial(n));

return 0;

}

**PRACTICAL – 6(b)**

**Write a program to make Fibonacci series of n terms using recursion.**

#include <stdio.h>

void fib(int n,int a,int b)

{

if(n-2!=0)

{

int c;

c=a+b;

a=b;

b=c;

n--;

printf("%d \t",c);

fib(n,a,b);

}

}

int main()

{

int a=0,b=1,n;

printf("Enter the number of terms required in the series : \n");

scanf("%d",&n);

printf("0 1");

fib(n,a,b);

return 0;

}

**PRACTICAL – 6(c)**

**Write a program for Tower of Hanoi using recursion.**

#include <stdio.h>

void TOH(int n,char A,char B,char C)

{

if(n==1)

{

printf("Move Disk 1 from peg %c to peg %c \n",A,B);

}

else

{

TOH(n-1,A,C,B);

printf("Move Disk %d from peg %c to peg %c \n",n,A,B);

TOH(n-1,C,B,A);

}

}

int main()

{

int n;

printf("Enter no. of Disk");

scanf("%d",&n);

printf("\n");

TOH(n,'A','B','C');

return 0;

}

**PRACTICAL – 7**

**Write a program to implement Queue using Array.**

**…………………………..Pending………………………**

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**Online C Compiler.**

**Code, Compile, Run and Debug C program online.**

**Write your code in this editor and press "Run" button to compile and execute it.**

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**#include <stdio.h>**

**#include<stdlib.h>**

**#define MAX 100**

**int queue[MAX],choice;**

**void enqueue();**

**void dequeue();**

**void display();**

**int front=-1;**

**int rear =-1;**

**int main()**

**{**

**while(1){**

**printf("\n\t 1.Enqueue \n\t 2.Dequeue \n\t 3.Display \n\t 4.Quit");**

**printf("\n\t Enter Your Choice :\n");**

**scanf("%d",&choice);**

**switch(choice)**

**{**

**case 1:**

**enqueue();**

**break;**

**case 2:**

**dequeue();**

**break;**

**case 3:**

**display();**

**break;**

**case 4:**

**exit();**

**default :**

**printf("Wrong Choice");**

**}**

**}**

**return 0;**

**}**

**void enqueue()**

**{**

**int item;**

**if(rear==MAX-1)**

**{**

**printf("Queue Overflow\n");**

**}**

**else**

**{**

**if(front==-1)**

**{**

**front=0;**

**}**

**printf("Enter the value to be added :\n");**

**scanf("%d",&item);**

**rear=rear+1;**

**queue[rear]=item;**

**}**

**}**

**void display()**

**{**

**int i;**

**if(front==-1)**

**{**

**printf("Queue is empty");**

**}**

**else**

**{**

**printf("Queue is :\n");**

**for(i=front;i<=rear;i++)**

**{**

**printf("%d",queue[i]);**

**printf("\n");**

**}**

**}**

**}**