Week 9:

Write a program that use recursive functions to perform the following searching operations for a key value in a given list of integers:

i) Linear search ii) Binary search

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//Program to implement Linear search using recursion
#include<stdio.h>
int lsearch_recursion(int a[],int n,int key);
int main(){
int a[10],i,key,n,l;
printf("Enter number of elements\n");
scanf("%d",&n);
printf("Enterelements into an array\n"); for(i=0;i<n;i++)
scanf("%d",&a[i]);
printf("Enter key to search\n");
scanf("%d",&key);
l=lsearch_recursion(a,n,key);
printf("Elementfound at location %d",l+1); return 0;
}
int lsearch_recursion(int a[],int n,int key){
if(n<0)
return -1;
if(key==a[n-1])
return n-1;
```

```
lsearch_recursion(a,n-1,key);
 }
//Program to implement Binary search using recursion
#include<stdio.h>
int binsearch(int a[], int x, int low, int high)
{
int mid;
if (low > high)
return -1;
mid = (low + high) / 2;
 if (x == a[mid]) {
 return (mid);
}
else if (x < a[mid]){
binsearch(a, x, low, mid - 1);
} else {
binsearch(a, x, mid + 1, high);
} }
int main()
{
int a[10],i,n,key,pos;
printf("Enter number of elements\n");
scanf("%d",&n);
printf("Enterelements into an array\n"); for(i=0;i<n;i++)
```

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scanf("%d",&a[i]);
printf("Enter key element to be search\n");
 scanf("%d",&key);
 pos=binsearch(a,key,0,n-1);
printf("Key is found at position %d \n",pos+1);
 return 0;
}
```