**LAB Week 10**

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**Reg#:Sp21-bse-008**

**Exercise 1.**

Implement the array linear search algorithm in a function called linearSearchUsingPointer using pointer/offset notation, i.e. the function should print whether a key value is found inside the array or not, but this should be done using pointer/offset notation.

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| **Solution 1:**  **#include<stdio.h>**  **#define MAX 100**  **int linearSearchUsingPointer(int \*p, int size, int tosearch);**  **int main()**  **{**  **int array[MAX], tosearch, i,size,searchindex;**  **printf("Enter the size of array:\n");**  **scanf("%d", &size);**    **printf("Elements in array:\n");**  **for (i = 0; i < size; i++)**  **{**  **printf("array elements is %d:",i+1);**  **scanf("%d", &array[i]);**  **}**    **printf("Enter the number you want to search:\n");**  **scanf("%d", &tosearch);**    **searchindex = linearSearchUsingPointer(array, size,tosearch);**  **if (searchindex == 0)**  **{**  **printf("%d is not present in the given array.\n", tosearch);**  **}**  **else{**  **printf("%d is present at location %d.\n", tosearch, searchindex+1);**  **}**  **}**  **int linearSearchUsingPointer(int \*p, int size, int tosearch)**  **{**  **int i;**  **for (i = 0; i < size; i++)**  **{**  **if (\*(p+i) == tosearch)**  **return i;**  **}**  **return 0;**  **}** |

**Exercise 2.**

Implement the 2D array linear search algorithm in a function called linearSearch2dUsingPointer by using pointer to an integer array and pointer/offset notation.

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| **Solution 2:**  **#include<stdio.h>**  **void linearSearch2dUsingPointer(int\* arr ,int\* fnd,int\* rw,int\* cl);**  **int main()**  **{**  **int row ,colum,i,search,j;**  **printf("Enter the number of rows: ");**  **scanf("%d", &row);**  **printf("Enter the number of colum: ");**  **scanf("%d", &colum);**  **int array[row][colum];**  **printf("Enter the %d elements: ",row\*colum);**  **for ( i = 0; i < row; i++)**  **{**  **for ( j = 0; j < colum; j++)**  **{**  **scanf("%d",&array[i][j]);**  **}**  **}**  **printf("Enter the searching element: ");**  **scanf("%d",&search);**  **linearSearch2dUsingPointer(&array[row][colum],&search,&row,&colum);**  **}**  **void linearSearch2dUsingPointer(int\* arr ,int\* fnd,int\* rw,int\* cl)**  **{**  **int i,j,cou=0;**  **for ( i = 0; i < \*rw; i++)**  **{**  **for ( j = 0; j < \*cl; j++)**  **{**  **if(\*((arr + i) + j) == \*fnd)**  **{**  **printf("The position of search element is {%d, %d}",i,j);**  **cou++;**  **}**  **}**  **}**  **if(cou==0)**  **{**  **printf("The searching element does not exist");**  **}**  **}** |