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Exp No: 07 Experiment Name: POINTERS

DAY TO DAY EVALUATION:

	Preparation	Algorithm Performance in the Lab	Source Code Calculations and Graphs	Program Execution Results and Error Analysis	Viva	Total
Max. Marks	4	4	4	4	4	20
Obtained	4	4	4	4	4	20

Signature of Lab I/C

START WRITING FROM HERE:

1. Develop a C program using pointers to compute the sum, mean & standard deviation of all elements stored in an array of n real numbers.

PROGRAM:

```c
#include <stdio.h>
main(){
int arr[10], n,i, sum=0, mean;
int* ptr = arr;
printf("Enter the number of elements (<=10):");
scanf("%d", &n);
printf("\n Enter %d elements :",n);
for(i=0; i<n; i++){
scanf("%d", &arr[i]);
for (i=0; i<d
sum + = *ptr;
*ptr++;
}
mean = sum/n;
printf("\n sum =%d\n mean =%d", sum, mean);
}
```

INPUT:

Enter the number of elements (<=10): 5   sum = 178

Enter 5 elements : 3 4   mean = 35
                  23
                  12
                  65
                  44

b) Develop a C program to read a list of integers and store it in an array. Then read the array elements using a pointers and print the value along with the memory addresses.

```c
#include <stdio.h>
int main() {
int *p, i;
int val[7] = {11, 22, 33, 44, 55, 66, 77};
p = val;
for (i=0; i<7; i++) {
printf("val[i-d] : value is-I-d and address -/.p \n", i, *(p+i),
(p+i));
}
return 0;
}
```

OUTPUT:

val [0] : value is 11 and address 0000000000024FE20

val [1] : value is 22 and address 0000000000024FE24

val [2] : value is 33 and address 0000000000024FE28

val [3] : value is 44 and address 0000000000024FE2C

val [4] : value is 55 and address 0000000000024FE30

val [5] : value is 66 and address 0000000000024FE34

val [6] : value is 77 and address 0000000000024FE38

c) Design and develop non-recursive functions input_matrix (matrix, rows, cols) and print_matrix (matrix, rows, cols), that stores integers into a two-dimensional array & display the integer in matrix form. Write a C program to input and print elements of a 2D array using pointers & functions

PROGRAM:

```c
#include <stdio.h>
#define rows 3
#define cols 3
void inputMatrix(int matrix[][cols], int rows, int cols);
void printMatrix(int matrix[][cols], int rows, int cols);
int main() {
int matrix[rows][cols];
int i,j;
printf("Enter element in %d x %d matrix.\n", rows, cols);
inputmatrix(matrix, rows, cols)
printf("Enter element in %d x %d matrix.\n", rows, cols);
printf matrix(matrix, rows, cols)
return 0;
}
void inputmatrix(int matrix[][cols], int rows, int cols) {
int i,j;
for(i=0; i<rows; i++) {
for(j=0; j<cols; j++) {
scanf("%d", (*(matrix+i)+j));
}
}
}
void printmatrix(int (*matrix)[cols], int rows, int cols) {
int i,j;
for(i=0; i<rows; i++) {
for(j=0; j<cols; j++) {
printf("%d ", *(*(matrix+i)+j));
}
printf("\n");
}
}
```

INPUT:

Enter elements in 3x3 matrix

```
    1  2  3
    4  5  6
    7  8  9
```

Elements of 3x3 matrix

```
    1  2  3
    4  5  6
    7  8  9
```

4] Develop a c program to store a list of integers in a single dimensional array using dynamic memory allocation (limit will be run time) using malloc() function. Write a c program to read the element and print the sum of all elements along with the entered elements. Also use free() function to release the memory.

```c
#include <stdio.h>
#include <string.h>
int main(){
int *ptr;
int limit;
int i;
int sum;
printf("Enter limit of the array:");
scanf("%d", &limit);
ptr = (int*) malloc(limit*size of (int));
for(i=0; i<limit; i++){
printf("Enter element %d : ", i+1);
scanf("%d", (ptr+i));
}
printf("Enter array elements are :\n");
for(i=0; i<limit ;i++){
sum=0;
for(i=0 ;i<limit ; i++){
sum += *(ptr+i);
}
printf("Sum of array elements : %d\n",sum);
free(ptr);
return 0;
}
```

INPUT: Enter limit of the array :5

Enter element 01 : 100
Enter element 02 :
Enter element 03 :