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| **Experiment No.** | 9 |

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| **AIM:** | Demonstrate the use of pointers to solve a given problem. |
| **Program 1** | |
| **PROBLEM STATEMENT:** | Write a program to swap smallest and largest element in an array using pointers |
| **ALGORITHM:** | START  2. Define void function swap with a integer n and integer array  arr[n] as parameter  3. I=0, min\_index=0, max\_index = 0  4. Loop from i=0 to n-1  A. If \*(arr+i) < \*(arr+min index)  min index = i  B. If \*(arr + i) > \*(arr + max\_index)  max\_index = i  5. Temp = \*(arr + max\_index)  6. \*(arr + max\_index) = \*(arr + min\_index)  7. \*(arr + min\_index) = temp  8. Define main function  9. Input number of elements n  10. Input array arr[n]  11. Call function swap(n, arr)  12. Print array arr[n]  13. STOP |
| **PROGRAM:** | #include<stdio.h>  void swap(int n,int arr[n])  {      int min=0,max=0,i,temp;      for(i=0;i<n;i++)      {          if(\*(arr+i)>\*(arr+max))              max=i;          if(\*(arr+i)<\*(arr+min))              min=i;      }      temp = \*(arr+max);      \*(arr+max) = \*(arr+min);      \*(arr+min) = temp;  }  int main()  {      int n,i;      printf("Enter no. of elements: ");      scanf("%d",&n);      int arr[n];      printf("Enter %d elements: ",n);      for(i=0;i<n;i++)      {          scanf("%d",&arr[i]);      }      swap(n,arr);      printf("After swapping min and max elements:");      for(i=0;i<n;i++)          printf("%d ",arr[i]);      return 0;  } |
| **RESULT:** | |
| **Program 2** | |
| **PROBLEM STATEMENT:** | Write a program to reverse the position of all elements in the array using pointers. |
| **ALGORITHM:** | START  2. Define void function reverse with integer n and integer array  arr[n] as parameters.  3. Loop from I = 0 to n/2-1  A. temp = \*(arr + i)  B. \*(arr + i) = \*(arr + n-1 –i)  C. \*(arr + n-1 – i) = temp  4. Define main function  5. Input no of elements of array n  6. Input array arr[n]  7. Call function reverse(n, arr)  8. Print arr[n]  9. STOP |
| **PROGRAM:** | #include<stdio.h>  void reverse(int n,int arr[n])  {      int i,temp;      for(i=0;i<n/2;i++)      {          temp = \*(arr+i);          \*(arr+i) = \*(arr+n-1-i);          \*(arr+n-1-i) = temp;      }  }  int main()  {      int n,i;      printf("Enter no. of elements: ");      scanf("%d",&n);      int arr[n];      printf("Enter %d elemets: ");      for(i=0;i<n;i++)          scanf("%d",(arr+i));      reverse(n,arr);      printf("After reversing elements: ");      for(i=0;i<n;i++)      {          printf("%d ",\*(arr+i));      }      return 0;  } |
| **RESULT:** | |
| **Program 3** | |
| **PROBLEM STATEMENT:** | Write a program to calculate the subtraction of matrices using pointers. Dimensions of the matrix will be decided by the user. |
| **PROGRAM:** | #include<stdio.h>  int main()  {      int m, n, a, b, i, j;      printf("Enter dimensions of Matrix 1:\n");      scanf("%d %d", &m, &n);      int mat1[m][n];      printf("Enter elements of Matrix 1:\n");      for (i = 0; i < m; i++)      {          for (j = 0; j < n; j++)              scanf("%d",&mat1[i][j]);      }      printf("Enter dimensions of Matrix 2:\n");      scanf("%d %d", &a, &b);      int mat2[a][b];      printf("Enter elements of Matrix 2:\n");      for (i = 0; i < a; i++)      {          for (j = 0; j < b; j++)              scanf("%d",&mat2[i][j]);      }      if(m==a && n==b)      {          printf("New Matrix:\n");          for (i = 0; i < m; i++)          {              for (j = 0; j < n; j++)              {                  printf("%d ", \*(\*(mat1 + i) + j) - \*(\*(mat2 + i) + j));              }              printf("\n");          }      }      else          printf("Matrices cannot be subtracted\n");      return 0;  } |
| **RESULT:** | |
| **CONCLUSION:** | In this experiment, we learnt how to use pointers in 2D arrays and 1D arrays and write basic functions of swapping, sorting and operations. |