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/*1. Design, Develop and Implement a menu driven Program in C for the
following Array operations
            a.Creating an Array of N Integer Elements
            b.Display of Array Elements with Suitable Headings
            c.Inserting an Element(ELEM) at a given valid Position(POS)
            d.Deleting an Element at a given valid Position(POS)
            e.Exit.
Support the program with functions for each of the above operations.*/

#define SIZE 10
#include<stdio.h>
#include<stdlib.h>

int array[SIZE], n, i;
void create_array()    /* Function for create array  */
{
      printf("Enter value for N integer element\n");
      scanf("%d", &n);
      printf("Enter %d array elements\n",n);
      for (i = 0;i < n;i++)
            scanf("%d", &array[i]);
}
void display_array()   /* Function for print array */
{
      if (n == 0)
      {
            printf("Array is Empty\n");
      }
      else
      {
            printf("Content of the array are\n");
            printf("Pos Elem\n");
            for (i = 0;i < n;i++)
            {           /* Print array position  and value  */
                  printf("%d  %d\n", i, array[i]);
            }
      }
}

void insert_array(int pos, int elem)    /* Function for insert array */
{
      if (n != SIZE)
      {
            for (i = n;i >= pos+1;i--)
            {  /*Push array elements from current pos to next one pos
down*/
                  array[i+1] = array[i];
            }
            n++;              /*Increase in the n size due to insert*/
            array[pos] = elem;     /*Then insert value to the array*/
      }
      else
            printf("Array size is FULL !!!\n");
}

void delete_array(int pos)        /* Function for delete array */
{
      printf(" The deleted element is %d\n\n", array[pos]);
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      for (i = pos;i < n;i++)
      {      /*Push array elements from current pos to one previous pos
up*/
            array[i] = array[i+1];
      }
      n--;              /*Decrease in the n size due to delete*/

}

int main()
{
      int pos, elem, ch;
      while (1)
      {
            printf("**********Array Operations Menu**********\n");
            printf("1. Create Array of N elements\n");
            printf("2. Display Array\n");
            printf("3. Insert Element To Specific Location\n");
            printf("4. Delete Element From Specific Location\n");
            printf("5. Exit\n");
            printf("Enter your choice:\n");
            scanf("%d", &ch);
            switch (ch)
            {
            case 1: create_array();
                  break;
            case 2: display_array();
                  break;
            case 3: printf("Enter the position to Insert an element into
an array\n");
                        scanf("%d", &pos);
                        if (pos <= n)
                        {
                              printf("Enter an element\n");
                              scanf("%d", &elem);
                              insert_array(pos, elem);
                        }
                        else
                              printf("Position entered is INVALID
!!!\n\n");
                  break;
            case 4: if (n != 0)
                  {
                        printf("Enter the position to Delete an element
from an array\n");
                        scanf("%d", &pos);
                        if (pos < n)
                        {
                              delete_array(pos);
                        }
                        else
                              printf("Position entered is INVALID
!!!\n\n");
                  }
                  else
                        printf("Array is Empty\n");
                  break;
            case 5: exit(0);
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            default: printf("Enter the valid choice\n\n");
                  break;
            }
      }

    return 0;
}
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