Lab Exercise Week- 6

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1. An outline of a C program for the following task is given below: a) taking a number $n \leq 20$ followed by a list of n numbers as input from the user and storing these n numbers in an array and then b) cyclically shifting elements of the array one position to the right and print the resultant array. (For example, if n is 5 and the elements entered are 1 2 3 4 5, in that order, after shifting, the list becomes 5 1 2 3 4.) Complete the program.

```
#include <stdio.h>
int main(void)
{
    int a[20], n, counter, temp;
    printf("enter n (<=20) \n");
    scanf("%d",&n);
    if(n>20)
    {
       printf("wrong input \n");
    }
    else
    {
        counter = 0;
        while (counter < ______)
        {  printf("enter the next element \n");
           scanf("%d",&a[counter]);
           counter = ____________;
        }
        temp=a[n-1];
        counter = ____________;
        while (counter >= 0)
        {  a[counter+1]=a[_____________];
           counter = _________________;
        }
        a[0]=____________;
        counter = 0;
        while (_____________)
        {
          printf("%d \n",_________________);
          counter = counter +1;
        }
     }
     return 0;
}
```

2. Suppose you want to cyclically left rotate the elements of the array, instead of right rotation given in the above program. Write a new C program for doing this.

3. Write C program for a) taking a number n followed by a list of $n \leq 20$ numbers as input from the user and storing these n numbers in an array and then b) find the maximum element in the array and exchange it with the last element in the array and print the resultant array. If the maximum element is repeated, you can choose its first occurance for swapping with the last element. (For example, if n is 5 and the elements entered are `8 9 9 2 1`, in that order, resultant array would be `8 1 9 2 9`).

4. An outline of a C program is given in the next page, which does the following: take a number $n <= 20$, followed by a list of n elements as input from the user, store them in an array and then search this array to see if a number entered by the user is in the list or not. Complete the program.

```
#include <stdio.h>
int main(void)
{
    int a[20], n, counter, num, posn, found;
    printf("enter n (<=20) \n");
    scanf("%d",&n);
    if(_______)
    {
       printf("wrong input \n");
    }
    else
    {
        counter = 0;
        while (_______________)
        {
          printf("enter the next element \n");
          scanf("%d",_____________;
          counter = _____________;
        }
        printf("enter the number to search \n");
        scanf("%d",&num);
        counter = 0;
        found=__________;
        while (counter<__________)
        {
          if(_____________)
          {
             found=1;
             posn=____________;
          }
          counter = counter + 1;
        }
        if (_____________)
          printf("searched number not found\n");
        else
          printf("searched number is the %dth item in the list\n", posn+1);

     }
     return 0;
}
```

5. Write a C program which does following: It takes a list of numbers given by the user and store it in an array. Then asks the user to give a lower and upper limit. The program then searches for the numbers which are in the range given by the user and print it out.