Array and Functions in C Language

Assignment:-15

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1.Write a function to find the greatest number from the given array of any size. (TSRS)

Ans:-

```
#include<stdio.h>
int greatest_number(int x[]);
int main()
{
    int a[5]={23,34,45,56,67};
    printf("Greatest number=%d",greatest_number(a));
    return 0;
}
int greatest_number(int x[])
{
   int y,i;
   y=x[0];
   for(i=0;i<5;i++)
      y=y>x[i]?y:x[i];
   return y;
}
```

2. Write a function to find the smallest number from the given array of any size. (TSRS)

Ans:-

```
#include<stdio.h>
int greatest_number(int x[]);
int main()
{
    int a[5]={23,34,45,56,67};
    printf("Smallest number=%d",greatest_number(a));
    return 0;
}
int greatest_number(int x[])
{
   int y,i;
   y=x[0];
   for(i=0;i<5;i++)
      y=y<x[i]?y:x[i];
   return y;
}
```

3. Write a function to sort an array of any size. (TSRS)

Ans:-

```
#include<stdio.h>
void* sort(int *,int);
int main()
{
```

```
    int a[10],x,i,j;
    printf("Enter 10 number ");
    for(i=0;i<10;i++)
      scanf("%d",&a[i]);
    sort(a,10);
    for(i=0;i<10;i++)
      printf("%d ",a[i]);
    return 0;
}
void* sort(int *p,int size)
{
   int i,j,x;
   for(i=0;i<size;i++)
    {
       x=*(p+i);
       for(j=i;j<size;j++)
         x=x<*(p+j)?x:*(p+j);
       for(j=i;j<size;j++)
         if(x==*(p+j))
         {
            *(p+j)=*(p+i);
           *(p+i)=x;
            break;
         }
    }
}
```

4. Write a function to rotate an array by n position in d direction. The d is an indicative value for left or right. (For example, if array of size 5 is [32, 29, 40, 12, 70]; n is 2 and d is left, then the resulting array after left rotation 2 times is [40, 12, 70, 32, 29])

Ans:-

```
#include<stdio.h>
void leftrotation(int b[],int);
void rightrotation(int b[],int);
int main()
{
   int n,b[]={32,29,40,12,70};
   int i,x;
   char c;
   printf("Enter 'L' or 'l' for left rotation and 'R'  or 'r' for right rotation\n ");
   scanf("%c",&c);
   printf("Enter the number of rotation ");
   scanf("%d",&n);
   if(c=='L' || c=='l')
     leftrotation(b,n);
   if(c=='r' || c=='R')
       rightrotation(b,n);
   return 0;
```

```
}
void leftrotation(int a[],int n)
{
   int i,x;
   for(;n;n--)
   {
      x=a[0];
      for(i=0;i<4;i++)
      {
         a[i]=a[i+1];
      }
      a[i]=x;
   }
   for(i=0;i<5;i++)
      printf("%d ",a[i]);
}
void rightrotation(int a[],int n)
{
   int i,x;
     for(;n;n--)
    {
      x=a[4];
      for(i=4;i>0;i--)
      {
         a[i]=a[i-1];
      }
      a[i]=x;
    }
    for(i=0;i<5;i++)
      printf("%d ",a[i]);
}
```

5. Write a function to find the first occurrence of adjacent duplicate values in the array. Function has to return the value of the element.

Ans:-

```
#include<stdio.h>
int find_aduplicate(int b[],int);
int main()
{
   int a[]={1,2,3,3,5,6,7,4};
   printf("Adjacent Duplicate value is =%d ",find_aduplicate(a,8));
   return 0;
}
find_aduplicate(int b[],int x)
{
   int i;
   for(i=0;i<x-1;i++)
   {
```

```
      if(b[i]==b[i+1])
         return b[i];
   }
}
```

6. Write a function in C to read n number of values in an array and display it in reverse order.

Ans:-

```
#include<stdio.h>
void display_reverse(int b[],int);
int main()
{
   int b[]={1,2,3,4,5,6,7,8,9};
   display_reverse(b,9);
   return 0;
}
void display_reverse(int a[],int x)
{
   int i,k;
   if(x%2)
      k=x/2+1;
   else
      k=x/2;
   for(i=0;i<k;i++)
   {
      a[i]=(a[i]+a[x-i-1])-(a[x-i-1]=a[i]);
   }
   for(i=0;i<x;i++)
      printf("%d ",a[i]);
}
```

7. Write a function in C to count a total number of duplicate elements in an array.

Ans:-

```
#include<stdio.h>
int duplicate_count(int b[],int);
int main()
{
   int a[]={1,2,3,4,5,6,7,3,2,1};
   printf("Total number of duplicate element is =%d ",duplicate_count(a,10));
   return 0;
}
int duplicate_count(int b[],int x)
{
   int i,j,count;
   for(i=0;i<x-1;i++)
   {
      for(j=i+1;j<x;j++)
         if(b[i]==b[j])
            count++;
```

```
    }
    return count;
}
```

8. Write a function in C to print all unique elements in an array.

Ans:-

```
#include<stdio.h>
void print_unique(int b[],int);
int main()
{
    int a[]={1,2,3,4,5,6,7,3,2,1};
    print_unique(a,10);
    return 0;
}
void print_unique(int b[],int x)
{
    int i,j,c[100]={0},k=0;
    for(i=0;i<x;i++)
    {
        for(j=i+1;j<x;j++)
        {
            if(b[i]==b[j])
                {
                    c[k]=b[i];
                    k++;
                }
        }
    }
    for(i=0;i<x;i++)
    {
        for(j=0;j<k;j++)
            if(b[i]==c[j])
              break;
        if(b[i]!=c[j])
            printf("%d ",b[i]);
    }
}
```

9. Write a function in C to merge two arrays of the same size sorted in descending order.

Ans:-

```
#include<stdio.h>
void merge_array(int x[],int y[],int);
int main()
{
    int a[5]={1,2,3,4,5};
    int b[5]={7,9,8,10,6};
    merge_array(a,b,5);
    return 0;
}
```

```
void merge_array(int x[],int y[],int z)
{
    int arr[100]={0},i,j,k;
    for(i=0,j=z;i<z;i++,j++)
    {
       arr[i]=x[i];
       arr[j]=y[i];
    }
    for(i=0;i<2*z;i++)
    {
       k=arr[i];
       for(j=i;j<2*z;j++)
         k=k>arr[j]?k:arr[j];
       for(j=i;j<2*z;j++)
         if(k==arr[j])
         {
            arr[j]=arr[i];
            arr[i]=k;
            break;
         }
    }
    for(i=0;i<2*z;i++)
      printf("%d ",arr[i]);

}
```

10. Write a function in C to count the frequency of each element of an array.

Ans:-

```
#include<stdio.h>
void* countfreq(int*,int*,int);
int findmax(int*,int);
int main()
{
    int a[10],i,freq[100]={0};
    printf("Enter 10 number ");
    for(i=0;i<10;i++)
      scanf("%d",&a[i]);
    countfreq(a,freq,10);
    for(i=0;i<100;i++)
      if(freq[i]!=0)
        printf("%d appear %d times\n",i,freq[i]);
    return 0;
}
void* countfreq(int *p,int *q,int size)
{
   int i;
   for(i=0;i<size;i++)
   {
```

```
        *(q+*(p+i))+=1;
    }
}
```