C Programming

Assignment 4

Pointers

1.   Write a C Program to demonstrate how to use a pointer to access and modify the value of a variable.

```c
#include<stdio.h>
int main()
{
   int n=5;
   printf("Original value of number is %d\n",n);
   int *ptr;
   ptr=&n;
   printf("Value of number accesesd through pointer is %d\n",*ptr);
   *ptr=20;
   printf("Modified value of number is %d\n",*ptr);
   return 0;
}
```

2.   Write a C Program to swap two numbers using pointers.

```c
void swap(int *a,int *b)
{
   int temp=*a;
   *a=*b;
   *b=temp;
   printf("After Swapping a=%d and b=%d\n",*a,*b);
}
int main()
{
    int a,b;
    printf("Enter two numbers: ");
    scanf("%d %d",&a,&b);
    printf("Before Swapping a=%d and b=%d\n",a,b);
    swap(&a,&b);
    return 0;
}
```

3.   Write a C Program to find the largest element in an array using pointers.

```c
#include<stdio.h>
int main()
{
   int a[]={10,20,30,40,50};
   int max=a[0];
```

```c
    for(int i=1;i<=4;i++)
    {
        if(a[i]>max)
        max=a[i];
    }
    printf("The Maximum element in the Array is %d\n",max);
    return 0;
}
```

4.   Write a C Program to reverse an array using pointers.

```c
#include<stdio.h>
void revarr(int *a,int n)
{
    int *start=a;
    int *end=a+(n-1);
    int temp;
    printf("The start element is %d and end element is %d of array
before reversal\n",*start,*end);
    while(start<end)
    {
        temp=*start;
        *start=*end;
        *end=temp;
        start++;
        end--;
    }
}




int main()
{
    int n,i;
    printf("Enter the number of  elements in array: ");
    scanf("%d",&n);
    int a[n];
    printf("Enter %d elements into array: ",n);
    for(i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
    }
    printf("Array before reversal :");
    for(i=0;i<n;i++)
    {
        printf("%d",a[i]);
    }
    printf("\n");
```

```
    revarr(a,n);
```

```
    printf("Array after reversing :");
    for(i=0;i<n;i++)
    {
        printf("%d",a[i]);
    }
    return 0;
}
```

Arrays

5.   Write a C Program to calculate the sum and average of elements in an array.

```c
#include<stdio.h>
int main()
{
    int n,i;
    printf("Enter the number of elements of Array: ");
    scanf("%d",&n);
    int a[n];
    printf("Enter %d elements in Array: ",n);
    for(i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
    }
    printf("\n");
    int sum=a[0];
    for(i=1;i<n;i++)
    {
        sum=sum+a[i];
    }
    float avg;
    avg=((sum)/n);
    printf("Sum of elements in the Array is %d.\n",sum);
    printf("Average of elements in Array is %0.3f\n",avg);
    return 0;

}
```

6.   Write a C Program to count the occurrence of a specific element in an array.

```c
#include<stdio.h>
int main()
{
    int n,i,count=0,ele;
    printf("Enter the number of elements of Array: ");
    scanf("%d",&n);
```

```c
    int a[n];
    printf("Enter %d elements in Array: ",n);
    for(i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
    }
    printf("\n");
    printf("Enter the element to count it's number of occurence in
array: ");
    scanf("%d",&ele);
    for(i=0;i<n;i++)
    {
        if(a[i]==ele)
        {
            count+=1;
        }
    }
    printf("The ocuurence of %d in array is %d.",ele,count);
    return 0;
}
```

7.   Write a C Program to find the smallest and largest elements in an array.

```c
#include<stdio.h>
int main()
{
  int n,i;
  printf("Enter the number of elements of Array: ");
  scanf("%d",&n);
  int a[n];
  printf("Enter %d elements in Array: ",n);
  for(i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
    }
  printf("\n");
  int min=a[0];
  int max=a[0];
  for(i=0;i<n;i++)
    {
        if(a[i]<min)
        {
            min=a[i];
        }
        if(a[i]>max)
        {
            max=a[i];
        }
```

```
    }
  printf("The Smallest Number in the Array is %d.\n",min);
  printf("The Largest Number in the Array is %d.\n",max);
  return 0;
}
```

Strings

8.   Write a C Program to find the length of a string without using the strlen() function.

```c
include<stdio.h>
int main()
{
    char str[100];
    int length=0;
    char *ptr=str;
    printf("Enter the string: ");
    scanf("%[^\n]s",&str);
    while(*ptr!='\0')
    {
        length+=1;
        ptr++;
    }
    printf("The Length of String %s is %d.\n",str,length);
    return 0;
}
```

9.   Write a C Program to reverse a string without using library functions.

```c
#include<stdio.h>
int main()
{
    int i,str[100],length=0,end;
    printf("Enter the String: ");
    scanf("%s",&str);
    int *ptr=str;
    while(*ptr!='\0')
    {
        length+=1;
        ptr++;
    }
    end=length-1;
    for(i=0;i<end;i++)


}
```