C Programming

Assignment 5

1. Write a C Program to create a function to reverse a string and use a loop in the main program to reverse multiple strings entered by the user.

```c
#include<stdio.h>
#include<string.h>
void revstring(char str[])
{
    int length;
    length=strlen(str);
    for(int i=0;i<length/2;i++)
    {
    char temp=str[i];
    str[i]=str[length-i-1];
    str[length-i-1]=temp;
    }
}
int main()
{
    int n;
    char str[100];
    printf("Enter the number of strings: ");
    scanf("%d",&n);
    for(int i=0;i<n;i++)
    {
        printf("Enter %d string: ",i+1);
        scanf("%s",str);

        revstring(str);
        printf("Reversal of string %d is %s: \n",i+1,str);
    }
    return 0;
}
```

2. Write a C Program to create a function to find the largest and smallest elements in an array, and use it in the main program to handle multiple arrays entered by the user.

```c
#include<stdio.h>
#include<string.h>
int max_min(int a[],int length,int *min,int *max)
{
    *min=a[0];
    *max=a[0];
    for(int i=1;i<length;i++)
    {
```

```
        if(a[i]<*min)
        {
            *min=a[i];
        }
        if(a[i]>*max)
        {
            *max=a[i];
        }
    }
}
int main()
{
    int n;
    printf("Enter the number of Arrays: ");
    scanf("%d",&n);

    for(int i=0;i<n;i++)
    {
        int length;
        printf("Enter the number of elements in %d Array: ",i+1);
        scanf("%d",&length);

        int a[100];
        printf("Enter the elements of %d Array: ",i+1);
        for(int j=0;j<length;j++)
        {
           scanf("%d",&a[j]);
        }
        int max,min;
        max_min(a,length,&min,&max);
        printf("The Minimum element element of %d Array
is %d.\n",i+1,min);
        printf("The Maximum element element of %d Array
is %d.\n",i+1,max);
        printf("\n");
    }
}
```

3. Write a C Program to create a function to check if a string is a palindrome, and use a loop in the main program to check multiple strings entered by the user.

```
#include<stdio.h>
#include<string.h>
int isPalindrome(char str[])
{
 int length=strlen(str);
 for(int i=0;i<length/2;i++)
```

```
  {
    if(str[i]!=str[length-i-1])
    {
       return 0;
    }
  }
  return 1;
}
int main()
{
    int n;
    printf("Enter the number of Strings: ");
    scanf("%d",&n);

    for(int i=0;i<n;i++)
    {
        char str[100];
        printf("Enter %d String: ",i+1);
        scanf("%s",str);

        if (isPalindrome(str))
        {
        printf("The string %d :  %s is a Palindrome.\n",i+1,str);}
        else{
        printf("The string %d : %s is not a Palindrome.\n",i+1,str);
        }
    }
return 0;
}
```

4. Write a C Program to create a function to count the frequency of a character in a string, and use a loop to find the frequency of different characters in multiple strings.

```
#include<stdio.h>
#include<string.h>
int countfrequency(char str[],char ch)
{   int count=0;
    for(int i=0;i<strlen(str);i++)
    {
        if(ch==str[i])
        {
            count+=1;
        }
    }
    return count;
}
int main()
```

```
{
    int n;
    printf("Enter the number of strings: ");
    scanf("%d",&n);
    for(int i=0;i<n;i++)
    {
      char str[100];
      printf("Enter %d String: ",i+1);
      scanf("%s",str);
      char ch;
      printf("Enter the character  to find it's frequency in
string %d :",i+1);
      scanf(" %c",&ch);
      int frequency=countfrequency(str,ch);
      printf("The character '%c' appears %d times in string %d :
\"%s\" .\n",ch,frequency,i+1,str);
    }
    return 0;
}
```

5. Write a C Program to create a function to concatenate two strings, and use it to merge a list of strings entered by the user into a single string using a loop.

```
#include<stdio.h>
#include<string.h>
char concatenate(char str1[],char str2[])
{
    int i=strlen(str1);
    for(int j=0;str2[j]!='\0';j++)
    {
        str1[i++]=str2[j];
    }
    str1[i]='\0';
}
int main()
{
    int n;
    printf("Enter the number of Strings: ");
    scanf("%d",&n);
    char str1[1000]="";
    for(int i=0;i<n;i++)
    {
        char str2[100];
        printf("Enter the %d string: ",i+1);
        scanf("%s",str2);
        concatenate(str1,str2);
    }
    printf("The Merged String is %s.",str1);
```

```
    return 0;
}
```

6. Write a C Program to create a function to calculate the sum of an array, and use a loop in the main program to compute the sum for multiple arrays entered by the user.

```
#include<stdio.h>
#include<string.h>
int sum(int a[],int length)
{
  int sum=0;
  for(int i=0;i<length;i++)
  {
    sum+=a[i];
  }
  return sum;
}

int main()
{
  int n;
  printf("Enter the number of Arrays: ");
  scanf("%d",&n);
  for(int i=0;i<n;i++)
  {
    int num;
    printf("Enter the number of elements in %d Array: ",i+1);
    scanf("%d",&num);
    int a[num];
    printf("Enter %d elements in %d Array: ",num,i+1);
    for(int j=0;j<num;j++)
    {
      scanf("%d",&a[j]);
    }
    printf("The Sum of Elements in %d Array is %d.\n",i+1,sum(a,num));
  }
  return 0;
}
```

7. Write a C Program to create a function to check if an array is sorted, and use it in the main program to verify multiple arrays entered by the user.

```
#include<stdio.h>
int issort(int a[],int length)
{
    for(int i=0;i<length-1;i++)
```

```
    {
        if(a[i]>a[i+1])
        {
          return 0;
        }

    }
    return 1;
}
int main()
{
    int n;
    printf("Enter the number of Arrays: ");
    scanf("%d",&n);

    for(int i=0;i<n;i++)
    {
      int num;
      printf("Enter the number of elements in %d Array: ",i+1);
      scanf("%d",&num);
      int a[num];
      printf("Enter %d elements in %d Array: ",num,i+1);
      for(int j=0;j<num;j++)
      {
       scanf("%d",&a[j]);
      }
      if(issort(a,num))
       printf("The Array %d is sorted.\n",i+1);
       else
       printf("The Array %d is unsorted.\n",i+1);
    }
    return 0;
}
```

8. Write a C Program to create a function to count the vowels in a string, and use a loop to count the vowels for multiple strings entered by the user.

```
#include<stdio.h>
#include<string.h>
#include<ctype.h>
int countvowels(char str[])
{
    int count=0;
    for(int i=0;str[i]!='\0';i++)
    {
        char ch= tolower(str[i]);
        if(ch=='a'||ch=='e'||ch=='i'||ch=='o'||ch=='u')
        {
```

```
            count+=1;
        }
    }
     return count;
}
int main()
{
    int n;
    printf("Enter the number of Strings: ");
    scanf("%d",&n);
    for(int i=0;i<n;i++)
    {
     char str[100];
     printf("Enter %d String: ",i+1);
     scanf("%99s",str);
     int vowels=countvowels(str);
     printf("String %s consists of %d vowels.\n",str,vowels);
    }
    return 0;
}
```

9. Write a C Program to create a function to sort an array in ascending order, and use a loop to sort multiple arrays entered by the user.

```
#include<stdio.h>
void sort(int a[],int size)
{
    for(int i=0;i<size;i++)
    {
        for(int j=0;j<size-i-1;j++)
        {
            if(a[j]>a[j+1])
            {
                int temp=a[j];
                a[j]=a[j+1];
                a[j+1]=temp;
            }
        }
    }
}
int main()
{
    int n,size;
    printf("Enter the number of Arrays: ");
    scanf("%d",&n);
    for(int k=0;k<n;k++)
    {
      printf("Enter the size of %d Array: ",k+1);
```

```
      scanf("%d",&size);
      int a[size];
      printf("Enter %d elements  in Array: ",size);
      for(int i=0;i<size;i++)
      {
        scanf("%d",&a[i]);
      }
      sort(a,size);
      printf("The Elements of the %d Array after sorting are : ",k+1);
      for(int j=0;j<size;j++)
      {
        printf("%d ",a[j]);
      }
      printf("\n");
    }
    return 0;
}
```

10. Write a C Program to create a function to find the maximum length among a list of strings, and use a loop to call the function for a series of strings entered by the user.

```
#include<stdio.h>
#include<string.h>
int findMaxlength(char String[][100],int n)
{
    int maxlength=0;
    for(int i=0;i<n;i++)
    {
      int length=strlen(String[i]);
      if(length>maxlength)
      {
        maxlength=length;

      }
    }
    return maxlength;
}
int main()
{
    int numSets;
    printf("Enter the number of Sets of Strings: ");
    scanf("%d",&numSets);
    for(int set=0;set<numSets;set++)
    {
       int numString;
       printf("Enter the number of Strings in Set %d: ",set+1);
       scanf("%d",&numString);
```

```
        char String[numString][100];
       for(int i=0;i<numString;i++)
       {
        printf("Enter the %d String: ",i+1);
        scanf("%s",String[i]);
       }
       int maxlength=findMaxlength(String,numString);
       printf("The Maximum Length of the Strings in Set %d
is : %d.\n",set+1,maxlength);
    }
    return 0;
}
```