Name: Khizar Ali

Roll No: 22P-9269

Subject: Programing Fundamentals LAB

Submitted to: Muhammad Usman

Problem 1:

```c
#include <stdio.h>
#include <string.h>

int isPalindrome(char *name)
{
    int l = 0;
    int h = strlen(name) - 1;

    while (h > l) {
        if (name[l++] != name[h--])
        {
            return 0;
        }
    }
    return 1;
}
int main()
{
    char name[100];

    printf("Enter a string: ");
    scanf("%s", name);

    if (isPalindrome(name)==1) {
        printf("%s is a palindrome.", name);
    } else {
        printf("%s is not a palindrome.", name);
    }

    return 0;
}
```

Output:

When string is a palindrome:

```
PS C:\Users\JUMBO COMPUTERS\Desktop\Khizar\EX 11> gcc 1.c
PS C:\Users\JUMBO COMPUTERS\Desktop\Khizar\EX 11> ./a.exe
Enter a string: pop
pop is a palindrome.
PS C:\Users\JUMBO COMPUTERS\Desktop\Khizar\EX 11>
```

When string is not palindrome:

```
PS C:\Users\JUMBO COMPUTERS\Desktop\Khizar\EX 11> ./a.exe
Enter a string: ALkihsa
ALkihsa is not a palindrome.
PS C:\Users\JUMBO COMPUTERS\Desktop\Khizar\EX 11>
```

Problem 2:

```
#include<stdio.h>
#include<string.h>
void A(char *Input)
{
 strlwr(Input);
 int len=strlen(Input);
 int count=0;
     for(int i=0;i<len-1;i++)
    {
            if(Input[i]=='a'|| Input[i]=='e'||Input[i]=='i'||Input[i]=='o'||Input[i]=='u')
            count++;

  }
         printf("The Array has %d vowles \n",count);
  }
void B(char *Input)
{
   int count=0,count1=0,len;
    strlwr(Input);
    len=strlen(Input);
    for(int i=0;i<len;i++)
    {
            if(Input[i]=='a'|| Input[i]=='e'||Input[i]=='i'||Input[i]=='o'||Input[i]=='u')
        {
                count++;
             }
             else
             {
             count1++;
             }
  }
 printf("The array has %d vowles and %d consonents \n",count,count1-1);
}
void C(char *Input)
{
          char ch;
            int max=0,count=0;
             int  len = strlen(Input);
           for(int j=0; j<len-1; j++)
           {
                 count = 1;
                  ch = Input[j];

                  for(int k=j+1;k<len-1; k++)
                  {
                 if(Input[k] == ch)
                    {
                      count++;
```

```c
                    }
                  }
               if(count > max)
               {
                 max = count;
                 ch = Input[j];
               }
             }
                 printf("The most frequent character is %c \n",ch);
  }
void D(char *Input , char *second)
{
   strcat(Input-1,second);
    puts(Input);
}

int main()
{      char Input[100];
       char input;
       char second[20]={"Alikhizar@142"};
    printf("Enter The string \n");
    fgets(Input,sizeof(Input),stdin);
    while (input!='E')
    {
         printf(" A) Count the number of vowels in the string. \n");
         printf("B) Count both the vowels and consonants in the string. \n");
         printf("C) Display the most frequent character in the string. \n");
         printf("D) Concatenate another string with the existing string. \n");
         printf("E) Exit the program. \n");
         printf(">>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
>>>>>>>>>>>>>>>>>>>>>>>>>");
         printf("\nEnter The Opeartion You want to Do \n");
         scanf("\n%c",&input);
       if(input=='A')
       {
          A(Input);
       }
        if(input=='B')
        {
            B(Input);
        }
        if(input=='C')
         {
            C(Input);
         }
          if(input=='D')
          {
            D(Input,second);
          }
     }
```

```
    return 0;
}
```

Output:

```
PS C:\Users\JUMBO COMPUTERS\Desktop\Khizar\EX 11> ./a.exe
Enter The string
KHIZARR
 A) Count the number of vowels in the string.
B) Count both the vowels and consonants in the string.
C) Display the most frequent character in the string.
D) Concatenate another string with the existing string.
E) Exit the program.
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
Enter The Opeartion You want to Do
A
The Array has 2 vowles
 A) Count the number of vowels in the string.
B) Count both the vowels and consonants in the string.
C) Display the most frequent character in the string.
D) Concatenate another string with the existing string.
E) Exit the program.
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
Enter The Opeartion You want to Do
B
The array has 2 vowles and 5 consonents
 A) Count the number of vowels in the string.
B) Count both the vowels and consonants in the string.
C) Display the most frequent character in the string.
D) Concatenate another string with the existing string.
E) Exit the program.
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
Enter The Opeartion You want to Do
C
The most frequent character is r
 A) Count the number of vowels in the string.
B) Count both the vowels and consonants in the string.
C) Display the most frequent character in the string.
D) Concatenate another string with the existing string.
E) Exit the program.
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
```

```
Enter The Opeartion You want to Do
C
The most frequent character is r
 A) Count the number of vowels in the string.
B) Count both the vowels and consonants in the string.
C) Display the most frequent character in the string.
D) Concatenate another string with the existing string.
E) Exit the program.
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
Enter The Opeartion You want to Do
D
khizarr
Alikhizar@142
 A) Count the number of vowels in the string.
B) Count both the vowels and consonants in the string.
C) Display the most frequent character in the string.
D) Concatenate another string with the existing string.
E) Exit the program.
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
Enter The Opeartion You want to Do
E
PS C:\Users\JUMBO COMPUTERS\Desktop\Khizar\EX 11>
```

Problem 3

```
#include <stdio.h>
#include <string.h>
void encrypt(char *input, int len)
{
   for(int i=0;i<len-1;i++)
   {
        if(input[i] == 'x' || input[i] == 'y' || input[i] == 'z'||input[i] == 'X' || input[i]
== 'Y' || input[i] == 'Z')
            input[i] =input[i] - 23;
            else
            input[i]=input[i]+3;
        }
   printf("Encrypted String is : %s",input);
}
void decrypt(char *input,int len)
{
     for(int i=0;i<len-1;i++)
   {
         if(input[i] == 'a' || input[i] == 'b' || input[i] == 'c'||input[i] == 'A' ||
input[i] == 'B' || input[i] == 'C')
            input[i] =input[i] + 23;
            else
            input[i]=input[i]-3;
     }
 printf("Decrypted String is : %s",input);
}
int main()
{
    char input[30];
    printf("Enter the string \n");
    fgets(input,sizeof(input),stdin);
    int len=strlen(input);
   int c;
   while(c!=3)
   {
     printf("Menu  \n");
    printf("1.Encrypt \n");
    printf("2.Decrypt \n");
    printf("3.Exit  \n");
    printf("Select the operation: \n");
    scanf("%d",&c);
    if(c==1)
    {
     encrypt(input,len);
    }
    if(c==2)
    {
     decrypt(input,len);
```

```
    }
   }
return 0;
}
```

Output:

```
PS C:\Users\JUMBO COMPUTERS\Desktop\Khizar\EX 11> gcc 3.c
PS C:\Users\JUMBO COMPUTERS\Desktop\Khizar\EX 11> ./a.exe
Enter the string
XYZ
Menu
1.Encrypt
2.Decrypt
3.Exit
Select the operation:
1
Encrypted String is : ABC
Menu
1.Encrypt
2.Decrypt
3.Exit
Select the operation:
2
Decrypted String is : XYZ
Menu
1.Encrypt
2.Decrypt
3.Exit
Select the operation:
3
PS C:\Users\JUMBO COMPUTERS\Desktop\Khizar\EX 11>
```