Assignment LAB 9

QNO.2 Create a C program that swaps the values of two integers using a user-defined function, swapIntegers. The user inputs two integer values, and the program uses the function to swap them. It should perform the swap and display the updated values.

PFlab > lab9 > C labq2.c > main()

```c
#include<stdio.h>
void Swap (int a,int b);
void Swap (int a,int b)
{
    int temp = a;
    a = b;
    b = temp;
    printf("The value of num1 is %d \n The value of num is %d  ",a,b);
    return;

}
int main()
{
    int num1,num2;
    printf("Enter 1st number: ");
    scanf("%d",&num1);
    printf("Enter 2nd number: ");
    scanf("%d",&num2);
    Swap(num1,num2);
    return 0;
}
```

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```
PS C:\UNI ASSIGNMENT\pflab\lab9> .\labq2
Enter 1st number: 7
Enter 2nd number: 6
The value of num1 is 6
 The value of num is 7
PS C:\UNI ASSIGNMENT\pflab\lab9>
```

QNO.3 Implement a function that checks if a given integer is a prime number. Use this function in the main program to check if numbers entered by the user are prime.

PFlab > lab9 > labq3.c > checkPrime(int)

```c
#include<stdio.h>
void checkPrime(int n);
void checkPrime(int n)
{
    int count =0;
    if(n> 1)
    {
        for(int i=1;i<=n;i++)
        {
            if(n % i == 0)
            {
                count++;
            }
        }
        if(count == 2)
        {
            printf("The number %d is PRIME",n);
        }
        else {
            printf("The number %d is  COMPOSITE",n);
        }
    }
    else {
        printf("The number is 0 or 1 i.e neither prime nor composite");
    }
}
int main()
{
    int num;
    printf("Enter the number: ");
    scanf("%d",&num);
    checkPrime(num);
    return 0;
}
```

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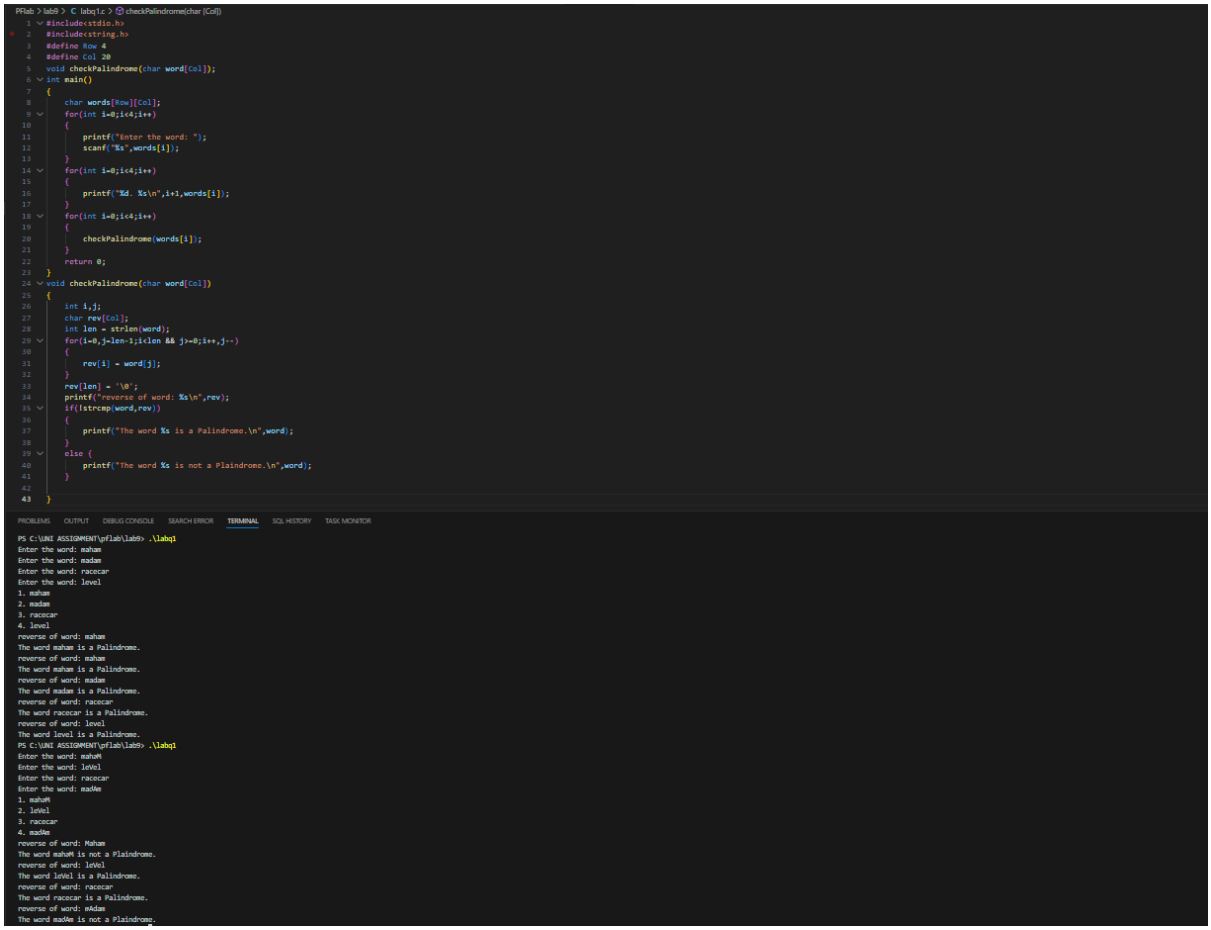
```
PS C:\UNI ASSIGNMENT\pflab\lab9> .\labq3
Enter the number: 8
The number 8 is  COMPOSITE
PS C:\UNI ASSIGNMENT\pflab\lab9> .\labq3
Enter the number: 3
The number 3 is PRIME
```

QNO.1 Create a program that accepts a 2D array of strings (e.g., 5 words with a max length of 20 characters each). Determines if each word (row) is a palindrome. Outputs “Palindrome” or “Not Palindrome” for each word. A palindrome is a word that reads the same forward and backward. For example: "madam", "racecar", "level", "radar".



```
PFlab > lab9 > C labq1.c > checkPalindrome(char [Col])
#include<stdio.h>
#include<string.h>
#define Row 4
#define Col 20
void checkPalindrome(char word[Col]);
int main()
{
    char words[Row][Col];
    for(int i=0;i<4;i++)
    {
        printf("Enter the word: ");
        scanf("%s",words[i]);
    }
    for(int i=0;i<4;i++)
    {
        printf("%d. %s\n",i+1,words[i]);
    }
    for(int i=0;i<4;i++)
    {
        checkPalindrome(words[i]);
    }
    return 0;
}
void checkPalindrome(char word[Col])
{
    int i,j;
    char rev[Col];
    int len = strlen(word);
    for(i=0,j=len-1;i<len && j>=0;i++,j--)
    {
        rev[i] = word[j];
    }
    rev[len] = '\0';
    printf("reverse of word: %s\n",rev);
    if(!strcmp(word,rev))
    {
        printf("The word %s is a Palindrome.\n",word);
    }
    else {
        printf("The word %s is not a Plaindrome.\n",word);
    }

}
```

```
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PS C:\UNI ASSIGNMENT\pflab\lab9> .\labq1
Enter the word: maham
Enter the word: madam
Enter the word: racecar
Enter the word: level
1. maham
2. madam
3. racecar
4. level
reverse of word: maham
The word maham is a Palindrome.
reverse of word: madam
The word madam is a Palindrome.
reverse of word: racecar
The word racecar is a Palindrome.
reverse of word: level
The word level is a Palindrome.
PS C:\UNI ASSIGNMENT\pflab\lab9> .\labq1
Enter the word: mahaM
Enter the word: leVel
Enter the word: racecar
Enter the word: madAm
1. mahaM
2. leVel
3. racecar
4. madAm
reverse of word: Maham
The word mahaM is not a Plaindrome.
reverse of word: leVel
The word leVel is a Palindrome.
reverse of word: racecar
The word racecar is a Palindrome.
reverse of word: mAdam
The word madAm is not a Plaindrome.
```

QNO.4 Write a C program with a user-defined function calculate to perform basic arithmetic operations such as addition, subtraction, multiplication, and division. The program should take two numbers and an operation choice as input, and then use the function to perform the operation.

PFlab > lab9 > C labq4.c > Subt(int, int)

```c
#include<stdio.h>
int Sum(int a,int b);
int Mult(int a,int b);
float Div(int a,int b);
int Subt(int a,int b);
int main()
{
    int num1,num2;
    char opt;
    printf("Enter number 1: ");
    scanf("%d",&num1);
    printf("Enter number 2: ");
    scanf("%d",&num2);
    printf("Enter the operator to perform: ");
    scanf(" %c",&opt);
    if(opt == '+')
    {
        printf("The sum is: %d",Sum(num1,num2));
    }
    else if(opt == '-')
    {
        printf("The diffrence is: %d",Subt(num1,num2));
    }
    else if(opt == '*')
    {
        printf("The product is: %d",Mult(num1,num2));
    }
    else if(opt == '/')
    {
        if(num2 != 0)
        {
            printf("The division is: %.2f",Div(num1,num2));
        }
        else {
            printf("Math Error!");
        }
    }
    else {
        printf("Enter the Valid operator.");
    }

    return 0;
}
int Sum(int a,int b)
{
    return a+b;
}
int Mult(int a,int b)
{
    return a*b;
}
float Div(int a,int b)
{
    return (float)a/b;
}
int Subt(int a, int b)
{
    return a-b;
}
```

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```
PS C:\UNI ASSIGNMENT\pflab\lab9> .\labq4
Enter number 1: 4
Enter number 2: 3
Enter the operator to perform: /
The division is: 1.33
PS C:\UNI ASSIGNMENT\pflab\lab9> .\labq4
Enter number 1: 4
Enter number 2: 0
Enter the operator to perform: /
Math Error!
```

QNO.5 Create a function that reverses a given string and returns the reversed string. Use this function in the main program to display the reversed string entered by the user.

PFlab > lab9 > C labq5.c > reversedString(char [size])

```c
#include<stdio.h>
#include<string.h>
#define size 20
void reversedString(char word[size]);
int main()
{
    char words[size];
    printf("Enter a word: ");
    scanf("%s",words);
    reversedString(words);

    return 0;
}
void reversedString(char word[size])
{
    int len = strlen(word);
    char rev[size];
    int i,j;
    for(i=0,j=len-1;i<len && j>=0;i++,j--)
    {
        rev[i] = word[j];
    }
    rev[len] = '\0';
    printf("the reversed string is: %s",rev);
}
```

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```
PS C:\UNI ASSIGNMENT\pflab\lab9> .\labq5
Enter a word: jawad
the reversed string is: dawaj
```

QNO.6 Create a function that returns the maximum and minimum element in an integer array. Use this function in the main program to find the maximum and minimum from an array entered by the user.

PFlab > lab9 > C labq6.c > MIN(int [], int)

```c
#include <stdio.h>
#include <limits.h>
#include <stdlib.h>
#include <time.h>
#define max 90
#define min 0
int MAX(int array[],int num);
int MIN(int array[],int num);
int main()
{
    srand(time(0));
    int n;
    printf("Enter the number of values: ");
    scanf("%d",&n);
    int arrays[n];
    for(int i=0;i<n;i++)
    {
        arrays[i] = rand()%(max - min +1)+min;
    }
    for(int i=0;i<n;i++)
    {
        printf("%d ",arrays[i]);
    }
    printf("\n");
    printf("The maximum number is: %d\n",MAX(arrays,n));
    printf("The minimum number is: %d\n",MIN(arrays,n));

    return 0;
}
int MAX(int array[],int num)
{
    int maximum = INT_MIN;
    for(int i=0;i<num;i++)
    {
        if(array[i] > maximum)
        {
            maximum = array[i];
        }
    }
    return maximum;
}
int MIN(int array[],int num)
{
    int minimum = INT_MAX;
    for(int i=0;i<num;i++)
    {
        if(array[i] < minimum)
        {
            minimum = array[i];
        }
    }
    return minimum;
}
```

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```
PS C:\UNI ASSIGNMENT\pflab\lab9> .\labq6
Enter the number of values: 10
66 70 54 70 63 11 65 28 28 84
The maximum number is: 84
The minimum number is: 11
```