



Graphic Era
HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011)

Term work

on

DSA

(PCS 302)

2021-22

Submitted to:

DR. RAKESH PATRA

Submitted by:

DIVYANSH JAISWAL

University Roll. No.: 2018328

Class Roll. No./Section: 22/C

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

GRAPHIC ERA HILL UNIVERSITY, DEHRADUN

PROBLEM 1

Q1. Write a the C program to create an array by inserting N elements in it then find second non repeating element from the array.

CODE-

```
#include<stdio.h>

#include<stdlib.h>

int main(){

    int *a,n,c,i,j,d=0;

    printf("\nEnter the size ");

    scanf("%d",&n);

    a=(int *)malloc(n*sizeof(int));

    printf("\nEnter the array elements \n");

    for( i=0;i<n;i++)

        scanf("%d",&a[i]);

    for(i=0;i<n;i++){

        for( j=0;j<n;j++){

            if(a[i]==a[j] && i!=j)

                break;

        }

        if(j==n)

            c++;

        if(c==2)

            break;

    }

    if(c==2)

        printf("\nThe second non repeating element is %d",a[i]);

    else
```

```
printf("\nNot found");  
  
return 0;  
  
}
```

OUTPUT 1



The screenshot shows a C program in a code editor and its execution output in a terminal window. The code defines an array and finds the second unique element. The output shows the program running with input values 5, 23, 23, 466, 423, 2, resulting in the second unique element being 423.

```
main.c  
1 #include<stdio.h>  
2 int main()  
3 {  
4  
5     printf("/t/tDivyansh Jaiswal/t/tC/t20011971")  
6     int n,i,j,c=0;  
7     printf("Enter size of array:");  
8     scanf("%d",&n);  
9     int arr[n];  
10    printf("Enter elements of array:");  
11    for(i=0;i<n;i++)  
12    {  
13        scanf("%d",&arr[i]);  
14    }  
15  
16    for(i=0;i<n;i++)  
17    {  
18        for(j=0;j<n;j++)  
19        {  
20            if(arr[i]==arr[j] && j!=i){break;}  
21        }  
22        if(j==n){c++;}  
23        if(c==2){break;}  
24    }  
25    if(c==2){printf("second unique element: %d\n",arr[i]);}  
26    else{printf("NOT FOUND\n");}  
27    return 0;  
28 }
```

Input

```
Enter size of array:5  
Enter elements of array::23 23 466 423 2  
second unique element: 423  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

PROBLEM 2

Q2. Write a the C program to create an array by inserting N elements in it then find third repeating element from the array.

CODE-

```
#include<stdio.h>

int main(){

    int n,c,d=0;

    printf("\nEnter the size ");

    scanf("%d",&n);

    int a[n];

    printf("\nEnter the elements \n");

    for(int i=0;i<n;i++)

        scanf("%d",&a[i]);

    for(int i=0;i<n;i++){

        c=0;

        for(int j=0;j<n;j++){

            if(a[i]==a[j] && a[i]!=-1)

                c++;

        }

        if(c>0)

            d++;

        if(d==3){

            printf("\nThe 3rd repeating number is %d ",a[i]);

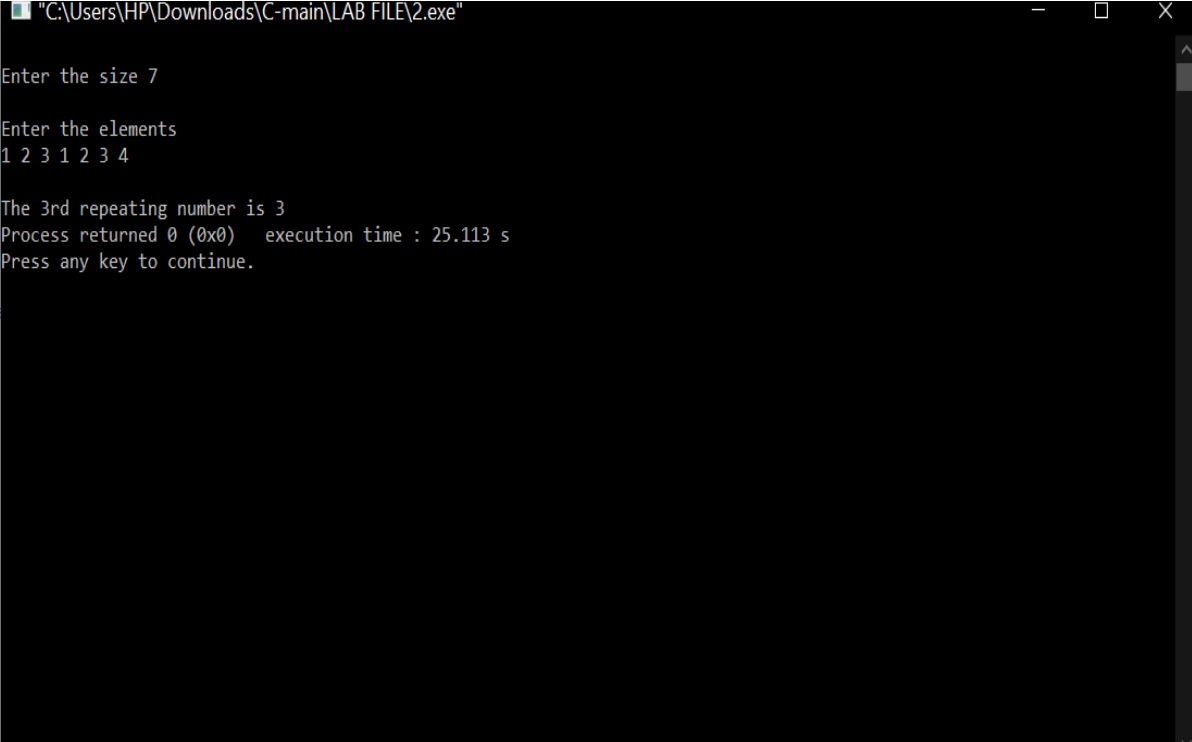
            break;

        }

    }

    return 0; }
```

OUTPUT 2



```
"C:\Users\HP\Downloads\C-main\LAB FILE\2.exe"

Enter the size 7

Enter the elements
1 2 3 1 2 3 4

The 3rd repeating number is 3
Process returned 0 (0x0) execution time : 25.113 s
Press any key to continue.
```

PROBLEM 3

Q3. Write a C program Create a Dynamic array and then Reverse the array using recursion and then finally print the array.

CODE-

```
#include<stdio.h>

#include<stdlib.h>

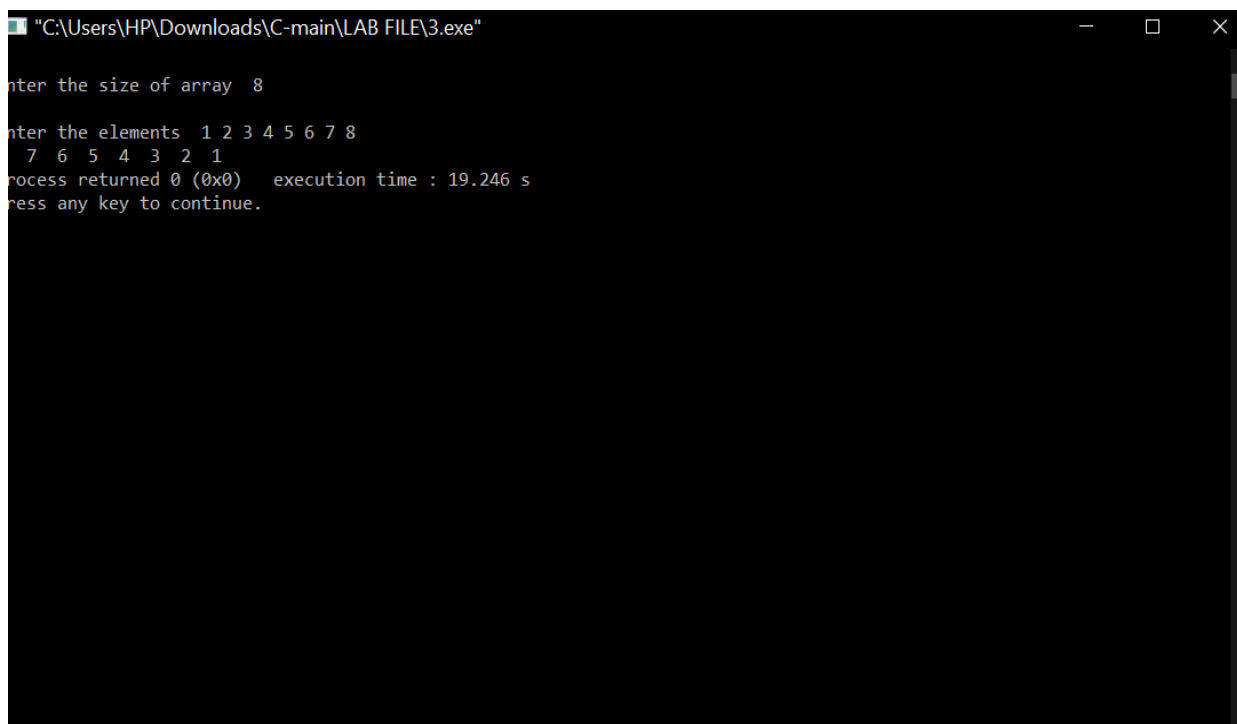
int rev(int a[],int n){
    int temp=0,end=n-1;
    for(int i=0;i<n/2;i++,end--){
        temp=a[i];
        a[i]=a[end];
        a[end]=temp;
    }
    return 0;
}

int disp(int a[],int s,int n){
    if(s>=n)
        return 0;
    printf("%d ",a[s]);
    disp(a,s+1,n);
}

int main(){
    int *a,n;
    printf("\nEnter the size of array ");
    scanf("%d",&n);
    a=(int *)malloc(n*sizeof(int));
```

```
printf("\nEnter the elements ");  
for(int i=0;i<n;i++)  
    scanf("%d",&a[i]);  
rev(a,n);  
disp(a,0,n);  
return 0;  
}
```

OUTPUT 3



```
"C:\Users\HP\Downloads\C-main\LAB FILE\3.exe"  
Enter the size of array 8  
Enter the elements 1 2 3 4 5 6 7 8  
7 6 5 4 3 2 1  
Process returned 0 (0x0)   execution time : 19.246 s  
Press any key to continue.
```

PROBLEM 4

Q4. Write a C Program implement STACK using array in menu driven form.

CODE-

```
#include<stdio.h>

#include<stdlib.h>

int push(int a[],int n,int *top){
    if(*top==n-1)
        printf("\nFULL ");
    else{
        printf("\nEnter element ");
        (*top)++;
        scanf("%d",&a[*top]);
    }
    return 0;
}

void pop(int a[],int *top){
    if(*top==0)
        printf("\nEmpty ");
    else{
        printf("\nThe popped element is %d ",a[*top]);
        (*top)--;
    }
}

void peek(int a[],int *top){
    if(*top==0)
```



```

        printf("\nEmpty ");
    else{
        printf("\nThe peeked element is  %d ",a[*top]);
    }
}

```

```

int disp(int a[],int top){
    int i=0;
    if(top==-1)
        printf("\nEmpty ");
    else{
        printf("\nThe elements are  ");
        for(int i=top;i>-1;i--)
            printf(" %d ",a[i]);
    }
    return top;
}

```

```

int main(){
    int c,n,*a,top=-1;
    printf("\nEnter the size of stack ");
    scanf("%d",&n);
    a=(int *)malloc(n*sizeof(int));
    printf("\nMENU\n1.PUSH\t2.POP\t3.PEEK\t4.DISPLAY\n");
    do{
        printf("\nEnter choice ");
        scanf("%d",&c);
    }
}

```

```
switch(c){  
    case 1:  
        push(a,n,&top);  
        break;  
    case 2:  
        pop(a,&top);  
        break;  
    case 3:  
        peek(a,&top);  
        break;  
    case 4:  
        disp(a,top);  
        break;  
    default:  
        printf("\nEXITING.....");  
        exit(0);  
}  
}while(c);  
free(a);  
return 0;  
}
```

OUTPUT 4

```
"C:\Users\HP\Downloads\C-main\LAB FILE\4.exe"
Enter the size of stack 5
MENU
1.PUSH 2.POP 3.PEEK 4.DISPLAY
Enter choice 1
Enter element 12
Enter choice 1
Enter element 543
Enter choice 1
Enter element 54
Enter choice 2
The popped element is 54
Enter choice 3
The peeked element is 543
Enter choice 4
The elements are 543 12
Enter choice 1
Enter element 423
Enter choice 1
Enter element 63
Enter choice 4
The elements are 63 423 543 12
Enter choice 0
EXITING.....
```

PROBLEM 5

Q5. Write a C Program to Convert Infix to Postfix Expression using Stack.

CODE-

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

```
#include<ctype.h>
```

```
char stack[100];
```

```
int top = -1;
```

```
void push(char x)
```

```
{
```

```
    stack[++top] = x;
```

```
}
```

```
char pop()
```

```
{
```

```
    if(top == -1)
```

```
        return -1;
```

```
    else
```

```
        return stack[top--];
```

```
}
```

```
int priority(char x)
```

```
{
```

```
    if(x == '(')
```

```
        return 0;
```

```
    if(x == '+' || x == '-')
```

```

        return 1;
    if(x == '*' || x == '/')
        return 2;
    return 0;
}

int main()
{
    char exp[100];
    char *ptr, x;
    printf("Enter the expression : ");
    scanf("%s",exp);
    printf("\n");
    ptr = exp;

    while(*ptr != '\0')
    {
        if(isalnum(*ptr))
            printf("%c ",*ptr);
        else if(*ptr == '(')
            push(*ptr);
        else if(*ptr == ')')
        {
            while((x = pop()) != '(')
                printf("%c ", x);
        }
        else

```

```
{  
    while(priority(stack[top]) >= priority(*ptr))  
        printf("%c ",pop());  
    push(*ptr);  
}  
ptr++;  
}  
  
while(top != -1)  
{  
    printf("%c ",pop());  
}  
return 0;  
}
```

OUTPUT 5

```
"C:\Users\HP\Downloads\C-main\LAB FILE\5.exe"  
Enter the expression : a+b/c*d-e  
a b c / d * + e -  
Process returned 0 (0x0)   execution time : 20.197 s  
Press any key to continue.
```

PROBLEM 6

Q6. Write a C Program to create singly linked list by adding nodes in the right hand side and delete alternate node from the list and then print the final list.

CODE-

```
#include<stdio.h>

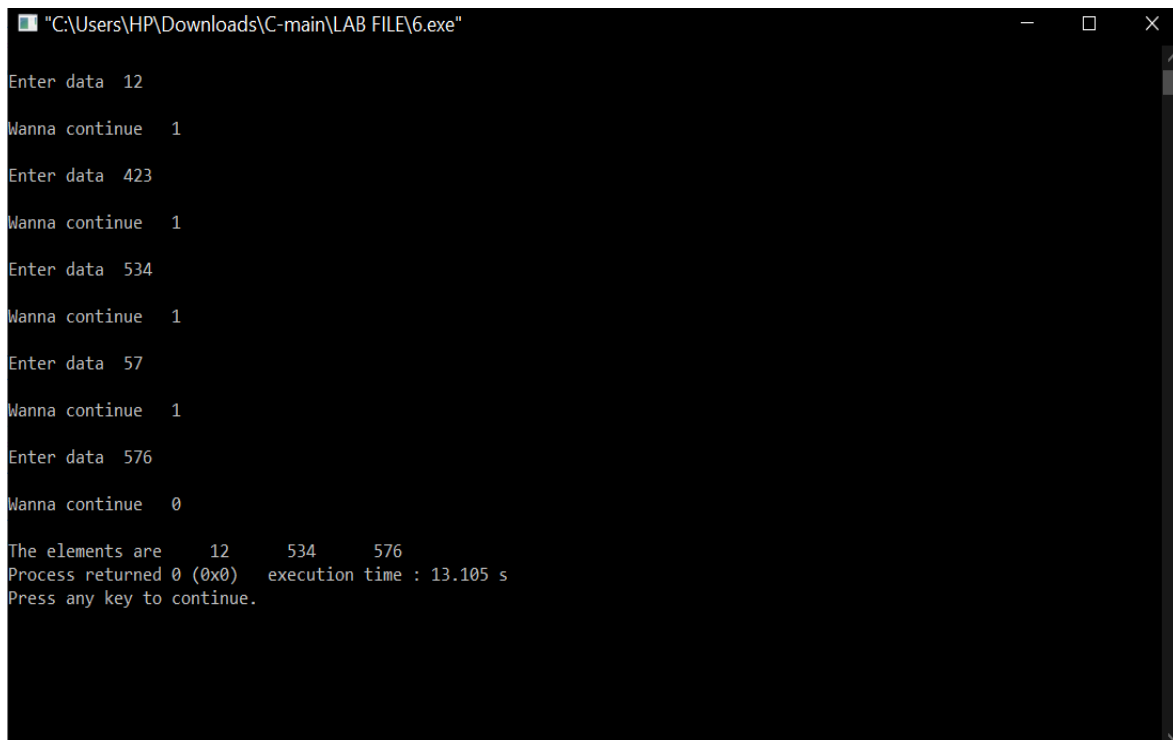
#include<stdlib.h>

struct node{
    int data;
    struct node *next;
};

int main(){
    struct node *head,*newnode,*temp;
    int c,l=0;
    head=NULL;
    do{
        newnode=(struct node*)malloc(sizeof(struct node));
        printf("\nEnter data ");
        scanf("%d",&newnode->data);
        newnode->next=NULL;
        if(head==NULL)
            head=temp=newnode;
        else{
            temp->next=newnode;
            temp=newnode;
        }
        printf("\nWanna continue ");
```

```
scanf("%d",&c);  
}while(c);  
temp=head;  
if(head==NULL)  
    printf("\nEmpty");  
else{  
    printf("\nThe elements are ");  
    while(temp!=NULL){  
        if(l%2==0)  
            printf(" %d ",temp->data);  
        l++;  
        temp=temp->next;  
    }  
}  
}
```


OUTPUT 6



```
"C:\Users\HP\Downloads\C-main\LAB FILE\6.exe"
Enter data 12
Wanna continue 1
Enter data 423
Wanna continue 1
Enter data 534
Wanna continue 1
Enter data 57
Wanna continue 1
Enter data 576
Wanna continue 0
The elements are 12 534 576
Process returned 0 (0x0) execution time : 13.105 s
Press any key to continue.
```

PROBLEM 7

Q7. Write a C Program implement STACK using Link List in menu driven form.

CODE-

```
#include<stdio.h>

#include<stdlib.h>

struct node{
    int data;
    struct node*link;
}*top;

void push(int x){
    struct node * newnode=(struct node*)malloc(sizeof(struct node));
    newnode->data=x;
    newnode->link=NULL;
    if(top==NULL)
        top=newnode;
    else{
        newnode->link=top;
        top=newnode;
    }
}

void pop(){
    struct node *temp=NULL;
    temp=top;
    if(top==NULL){
        printf("\nEmpty");
    }
}
```

```
else{
    printf(" %d ",top->data);
    top=top->link;
    free(temp);
}
}

int peek(){
    if(top==NULL){
        printf("\nEmpty");
        return 0;
    }
    else
        printf("\nThe peeked element is : %d",top->data);
    return 0;
}

void display(){
    struct node *temp=top;
    if(top==NULL){
        printf("\nEmpty");
    }
    else{
        printf("\nThe elements are ");
        while(temp!=NULL){
            printf(" %d ",temp->data);
            temp=temp->link;
        }
    }
}
```

```

    }
}
}

int main(){
    int c,x;

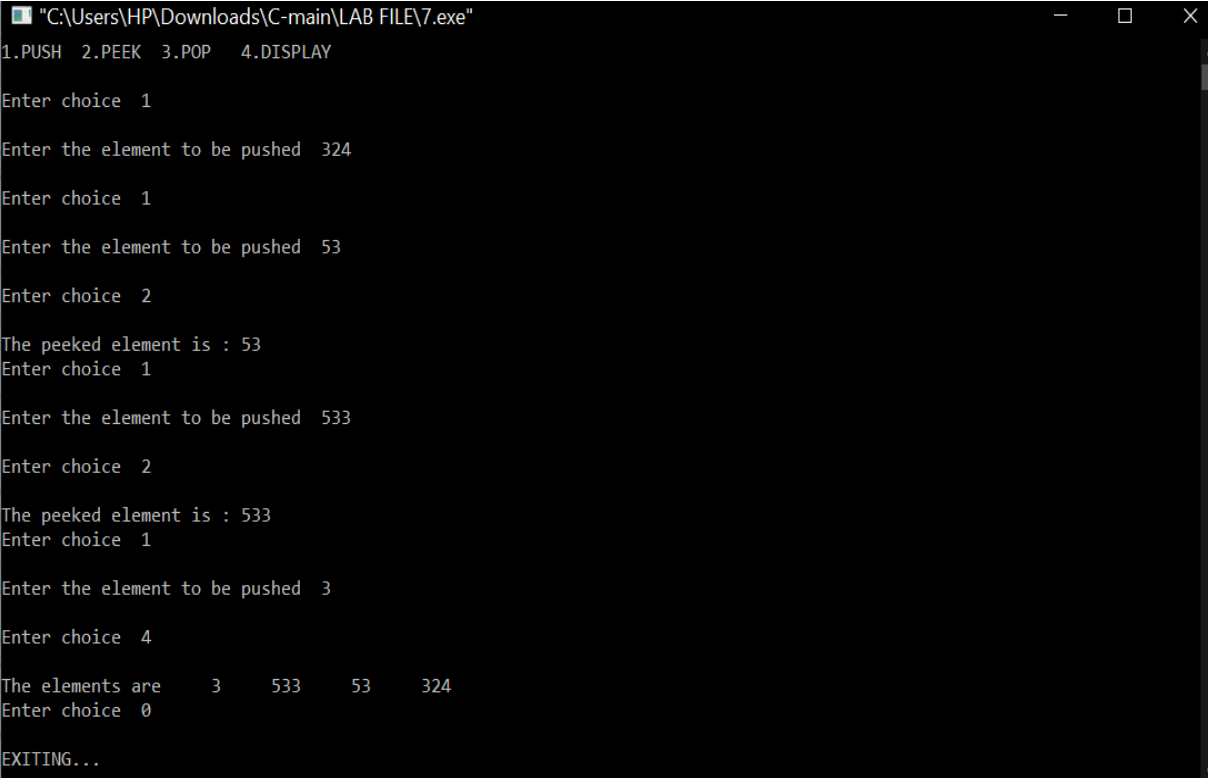
    printf("\nMENU\n1.PUSH\t2.PEEK\t3.POP\t4.DISPLAY\n");

    do{
        printf("\nEnter choice ");
        scanf("%d",&c);
        switch(c){
            case 1:
                printf("\nEnter the element to be pushed ");
                scanf("%d",&x);
                push(x);
                break;
            case 2:
                peek();
                break;
            case 3:
                pop();
                break;
            case 4:
                display();
                break;
            default :
                printf("\nEXITING...");

```

```
        exit(0);  
    }  
}while(c);  
return 0;  
}
```

OUTPUT 7



A screenshot of a Windows command prompt window titled "C:\Users\HP\Downloads\C-main\LAB FILE\7.exe". The window shows the execution of a C program that implements a stack using an array. The menu at the top lists four options: 1.PUSH, 2.PEEK, 3.POP, and 4.DISPLAY. The user interacts with the program as follows: they choose 1 (PUSH) and enter 324, then choose 1 again and enter 53. Next, they choose 2 (PEEK) and see the output "The peeked element is : 53". They then choose 1 (PUSH) and enter 533, choose 2 (PEEK) and see "The peeked element is : 533", and finally choose 1 (PUSH) and enter 3. When they choose 4 (DISPLAY), the program outputs "The elements are 3 533 53 324". After entering 0 to exit the loop, the program prints "EXITING..." and ends.

```
"C:\Users\HP\Downloads\C-main\LAB FILE\7.exe"  
1.PUSH 2.PEEK 3.POP 4.DISPLAY  
Enter choice 1  
Enter the element to be pushed 324  
Enter choice 1  
Enter the element to be pushed 53  
Enter choice 2  
The peeked element is : 53  
Enter choice 1  
Enter the element to be pushed 533  
Enter choice 2  
The peeked element is : 533  
Enter choice 1  
Enter the element to be pushed 3  
Enter choice 4  
The elements are 3 533 53 324  
Enter choice 0  
EXITING...
```

PROBLEM 8

Q8. Write a C Program implement QUEUE using Link List in menu driven form.

CODE-

```
#include<stdio.h>

#include<stdlib.h>

struct node{
    int data;
    struct node *next;
};

int main(){
    struct node *front,*rear,*newnode,*temp;
    front=rear=0;
    int c;
    printf("\nMENU\n1.Enqueue\n2.Dequeue\n3.Display");
    do{
        printf("\nEnter choice  ");
        scanf("%d",&c);
        switch(c){
            case 1:
                newnode=(struct node *)malloc(sizeof(struct node));
                printf("\nEnter element  ");
                scanf("%d",&newnode->data);
                newnode->next=NULL;
                if(front==0 && rear==0)
                    front=rear=newnode;
```

```

else{
    rear->next=newnode;
    rear=newnode;
}
break;

```

case 2:

```

temp=front;
if(front==0 && rear==0)
    printf("\nEmpty");
else{
    printf("\nThe deleted element is %d",front->data);
    front=front->next;
    free(temp);
}
break;

```

case 3:

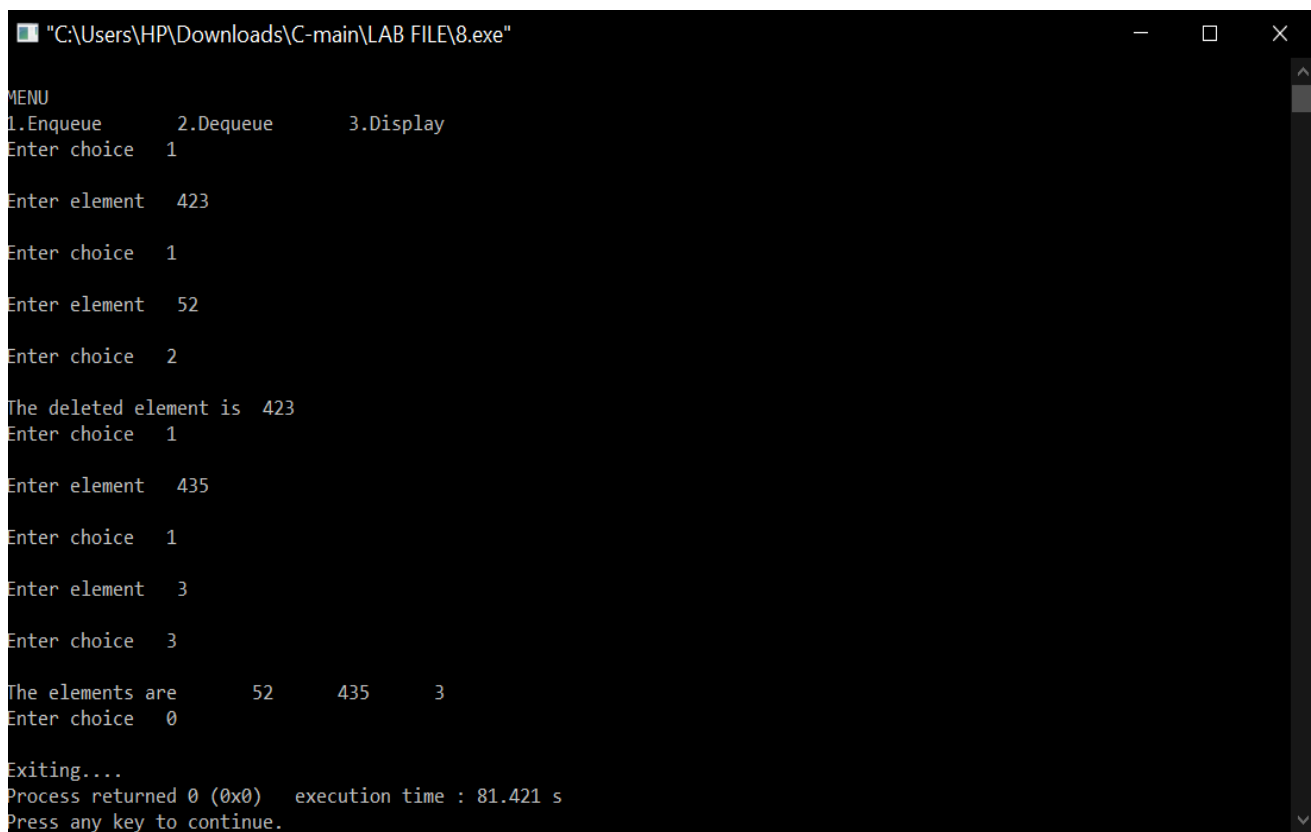
```

temp=front;
if(front==0 && rear==0)
    printf("\nEmpty");
else{
    printf("\nThe elements are ");
    while(temp!=NULL){
        printf(" %d ",temp->data);
        temp=temp->next;
    }
}
break;

```

```
        default:
            printf("\nExiting....");
            exit(0);
        }
    }while(c);
return 0;
}
```

OUTPUT 8



```
"C:\Users\HP\Downloads\C-main\LAB FILE\8.exe"
MENU
1.Enqueue      2.Dequeue      3.Display
Enter choice   1

Enter element  423

Enter choice   1

Enter element  52

Enter choice   2

The deleted element is 423
Enter choice   1

Enter element  435

Enter choice   1

Enter element  3

Enter choice   3

The elements are      52      435      3
Enter choice   0

Exiting...
Process returned 0 (0x0)   execution time : 81.421 s
Press any key to continue.
```


PROBLEM 9

Q9. Write a C Program implement priority QUEUE using array in menu driven form.

```
#include <stdio.h>

#include<stdlib.h>

#define MAX 5

void insert(int);

void delete(int);

void create();

void check(int);

void display();

int pri_que[MAX];

int front, rear;

void main()

{

    int n, ch;

    printf("\n1 - Insert an element into queue");

    printf("\n2 - Delete an element from queue");

    printf("\n3 - Display queue elements");

    printf("\n4 - Exit");

    create();

    while (1)

    {
```

```
printf("\nEnter your choice : ");
scanf("%d", &ch);

switch (ch)
{
case 1:
    printf("\nEnter value to be inserted : ");
    scanf("%d",&n);
    insert(n);
    break;
case 2:
    printf("\nEnter value to delete : ");
    scanf("%d",&n);
    delete(n);
    break;
case 3:
    display();
    break;
case 4:
    exit(0);
default:
    printf("\nChoice is incorrect, Enter a correct choice");
}
}

void create()
{
```

```
    front = rear = -1;
}

void insert(int data)
{
    if (rear >= MAX - 1)
    {
        printf("\nQueue overflow no more elements can be inserted");
        return;
    }
    if ((front == -1) && (rear == -1))
    {
        front++;
        rear++;
        pri_que[rear] = data;
        return;
    }
    else
        check(data);
    rear++;
}

void check(int data)
{
    int i,j;

    for (i = 0; i <= rear; i++)
    {
        if (data >= pri_que[i])
```

```

    {
        for (j = rear + 1; j > i; j--)
        {
            pri_que[j] = pri_que[j - 1];
        }
        pri_que[i] = data;
        return;
    }
}

pri_que[i] = data;
}

void delete(int data)
{
    int i;

    if ((front==-1) && (rear==-1))
    {
        printf("\nQueue is empty no elements to delete");
        return;
    }

    for (i = 0; i <= rear; i++)
    {
        if (data == pri_que[i])
        {
            for (; i < rear; i++)
            {

```

```

        pri_que[i] = pri_que[i + 1];
    }

    pri_que[i] = -99;
    rear--;

    if (rear == -1)
        front = -1;
    return;
}
}

printf("\n%d not found in queue to delete", data);
}

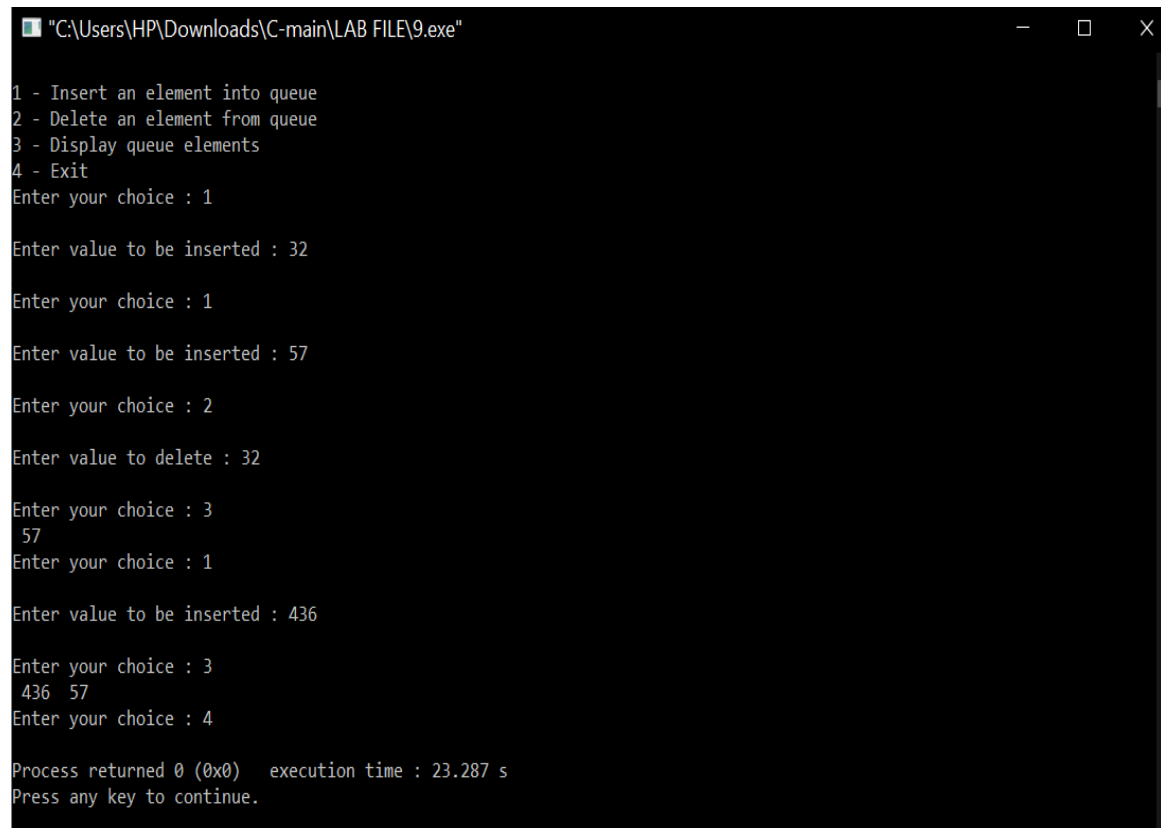
void display()
{
    if ((front == -1) && (rear == -1))
    {
        printf("\nQueue is empty");
        return;
    }

    for (; front <= rear; front++)
    {
        printf(" %d ", pri_que[front]);
    }

    front = 0; }

```

OUTPUT 9



```
"C:\Users\HP\Downloads\C-main\LAB FILE\9.exe"

1 - Insert an element into queue
2 - Delete an element from queue
3 - Display queue elements
4 - Exit
Enter your choice : 1

Enter value to be inserted : 32

Enter your choice : 1

Enter value to be inserted : 57

Enter your choice : 2

Enter value to delete : 32

Enter your choice : 3
57
Enter your choice : 1

Enter value to be inserted : 436

Enter your choice : 3
436 57
Enter your choice : 4

Process returned 0 (0x0)   execution time : 23.287 s
Press any key to continue.
```

PROBLEM 10

Q10. Write a C Program implement QUEUE using array in menu driven form.

CODE-

```
#include<stdio.h>

#include<stdlib.h>

int enqueue(int a[],int n,int f,int r){

    if(r==n-1)

        printf("\nFULL");

    else if(f==-1&& r==-1){

        f=r=0;

        printf("\nEnter data ");

        scanf("%d",&a[r]);

    }

    else{

        r++;

        printf("\nEnter data ");

        scanf("%d",&a[r]);

    }

    return r;

}

int dequeue(int a[],int n,int f,int r){

    if(f==-1)

        printf("\nEmpty");

    else if(f==r){

        printf("\nThe deleted element is %d",a[f]);

        f=r=-1;

    }

}
```

```

    }

    else{

        printf("\nThe deleted element is %d",a[f]);

        f++;

    }

    return f;

}

void display(int a[],int n,int f,int r){

    int i;

    if(f==-1)

        printf("\nEmpty");

    else{

        printf("\nThe elements are ");

        for(i=f;i<=(r);i++)

            printf(" %d ",a[i]);

    }

}

int main(){

    int c,n,*a,f=-1,r=-1;

    printf("\nEnter the size ");

    scanf("%d",&n);

    a=(int *)malloc(n*sizeof(int));

    printf("\nMENU\n1.Enqueue\t2.Dequeue\t3.Display\n");

    do{

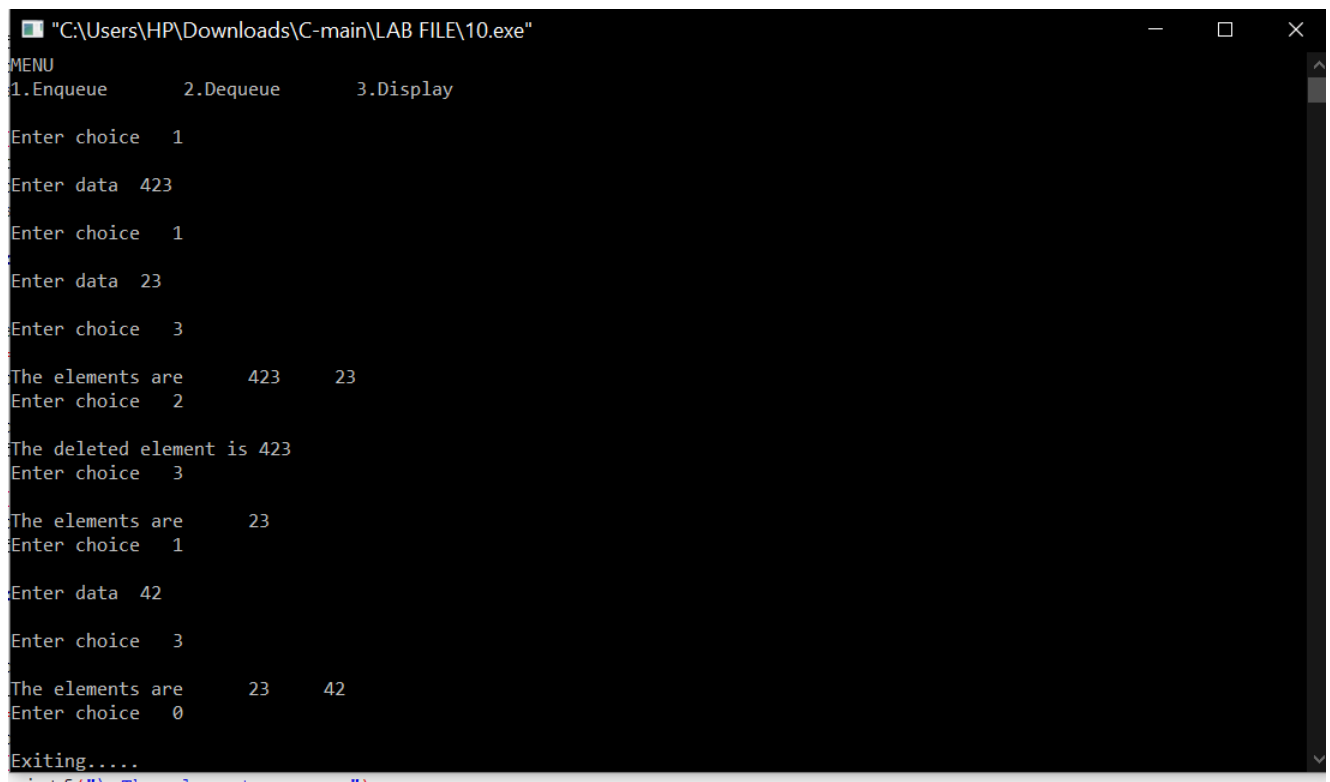
        printf("\nEnter choice ");

```



```
scanf("%d",&c);  
switch(c){  
    case 1:  
        r=enqueue(a,n,f,r);  
        if(r==0)  
            f=0;  
        break;  
    case 2:  
        f=dequeue(a,n,f,r);  
        if(f>r)  
            f=r--1;  
        break;  
    case 3:  
        display(a,n,f,r);  
        break;  
    default:  
        printf("\nExiting.....");  
        exit(0);  
}  
}while(c);  
return 0;  
}
```

OUTPUT 10



```
"C:\Users\HP\Downloads\C-main\LAB FILE\10.exe"
MENU
1.Enqueue      2.Dequeue      3.Display
Enter choice  1
Enter data  423
Enter choice  1
Enter data  23
Enter choice  3
The elements are      423      23
Enter choice  2
The deleted element is 423
Enter choice  3
The elements are      23
Enter choice  1
Enter data  42
Enter choice  3
The elements are      23      42
Enter choice  0
Exiting.....
```

PROBLEM 11

Q11. Write a C program to Evaluate Postfix Expression using Stack.

CODE-

```
#include<stdio.h>

#include<ctype.h>

void push(int x,int *stack,int *top)
{
    *top=*top+1;
    stack[*top] = x;
}

int pop(int *top,int *stack)
{
    return stack[(--)*top];
}

int main()
{
    int stack[100];
    int top=-1,n3,n,n1,n2;
    char exp[100];
    printf("enter postfix expression\n");
    fgets(exp,100,stdin);
    char *ptr;
    ptr=exp;
    while(*ptr != '\n')
    {
```

```
if(isdigit(*ptr))
{
    n = *ptr -48;
    push(n,stack,&top);
}
else
{
    n1=pop(&top,stack);
    n2=pop(&top,stack);
    switch(*ptr)
    {
        case '+':
        {
            n3=n1+n2;
            break;
        }
        case '-':
        {
            n3=n2-n1;
            break;
        }
        case '/':
        {
            n3=n2/n1;
            break;
        }
        case '*':
```

```
    {  
        n3=n1*n2;  
        break;  
    }  
}  
  
push(n3,stack,&top);  
  
}  
  
ptr++;  
  
}  
  
printf("result = %d",pop(&top,stack));  
}
```

OUTPUT 11



```
"C:\Users\HP\Downloads\C-main\LAB FILE\11.exe"  
enter postfix expression  
432*+5-  
result = 5  
Process returned 0 (0x0)   execution time : 45.794 s  
Press any key to continue.
```

PROBLEM 12

Q 12. Write a C program to create TWO singly linked list L1 and L2 and sort both the list and finally merge both the list such that L2 comes after L1.[use double pointer]

CODE-

```
#include <stdio.h>

#include <stdlib.h>

struct node
{
    int info;
    struct node *next;
};

void push(struct node **head, int val)
{
    struct node *newNode = malloc(sizeof(struct node));
    newNode->info = val;
    newNode->next = NULL;
    if (*head == NULL)
        *head = newNode;
    else
    {
        struct node *lastNode = *head;
        while (lastNode->next != NULL)
        {
            lastNode = lastNode->next;
        }
    }
}
```

```

    lastNode->next = newNode;
}
}
void sort(struct node *head)
{
    struct node *temp;
    while(head!=NULL)
    {
        temp=head->next;
        while(temp!=NULL)
        {
            if(head->info>temp->info)
            {
                int hold=head->info;
                head->info=temp->info;
                temp->info=hold;
            }
            temp=temp->next;
        }
        head=head->next;
    }
}
void merge(struct node *l1,struct node *l2)
{
    while(l1->next!=NULL)
    {
        l1=l1->next;
    }
}

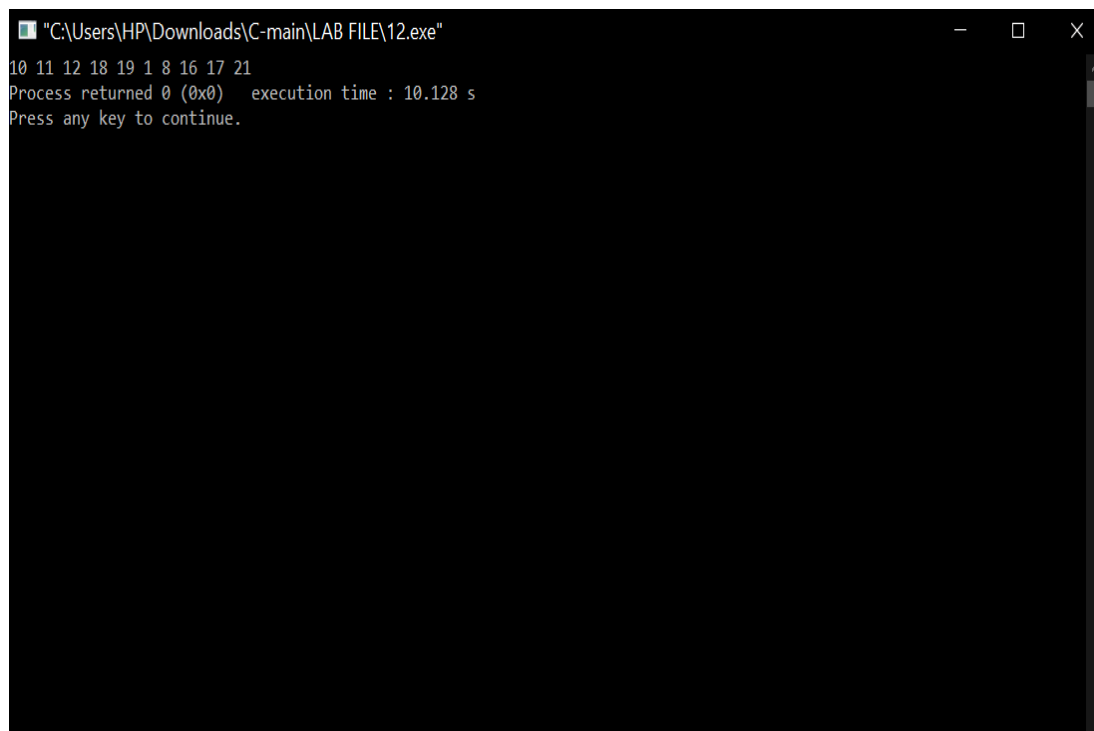
```

```
    }  
    l1->next=l2;  
}  
void print(struct node *ptr)  
{  
    struct node *temp = ptr;  
    while (temp != NULL)  
    {  
        printf("%d ", temp->info);  
        temp = temp->next;  
    }  
}  
int main()  
{  
    struct node *l1 = NULL,*l2 = NULL;  
    push(&l1,19);  
    push(&l1,18);  
    push(&l1,12);  
    push(&l1,11);  
    push(&l1,10);  
    sort(l1);  
    push(&l2,1);  
    push(&l2,21);  
    push(&l2,8);  
    push(&l2,17);  
    push(&l2,16);  
    sort(l2);
```



```
merge(l1,l2);  
print(l1);  
  
}
```

OUTPUT 12



```
"C:\Users\HP\Downloads\C-main\LAB FILE\12.exe"  
10 11 12 18 19 1 8 16 17 21  
Process returned 0 (0x0) execution time : 10.128 s  
Press any key to continue.
```

PROBLEM 13

Q 13. Write C program to create a doubly link list by adding the node right hand side and then check list is in palindrome form or not.

CODE-

```
#include<stdio.h>

#include<stdlib.h>

struct node{

    int data;

    struct node*next;

    struct node*prev;

};

int pal(struct node*head,struct node*tail){

    struct node*temp=head;

    while(temp!=tail){

        if(temp->data!=tail->data)

            return 0;

        temp=temp->next;

        tail=tail->prev;

    }

    return 1;

}

int main(){

    struct node*newnode,*tail,*head,*temp;

    int c=1,p;

    head=NULL;

    while(c){

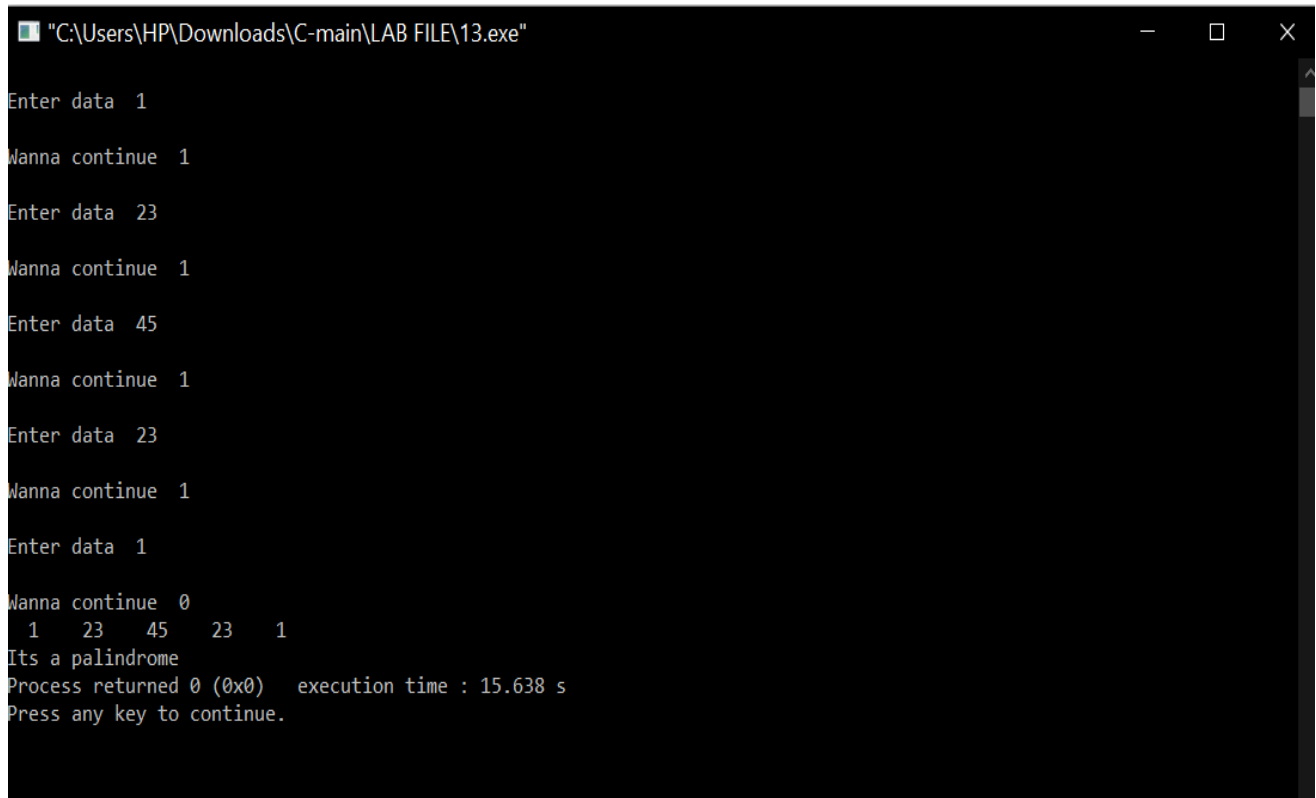
        newnode=(struct node*)malloc(sizeof(struct node));
```

```

printf("\nEnter data ");
scanf("%d",&newnode->data);
newnode->next=newnode->prev=NULL;
if(head==NULL)
    head=tail=temp=newnode;
else{
    tail=newnode;
    temp->next=newnode;
    newnode->prev=temp;
    temp=newnode;
}
printf("\nWanna continue ");
scanf("%d",&c);
};
temp=head;
while(temp!=NULL){
    printf(" %d ",temp->data);
    temp=temp->next;
};
p=pal(head,tail);
if(p==1)
    printf("\nIts a palindrome ");
else
    printf("\nNot a palindrome ");
}

```

OUTPUT 13



```
"C:\Users\HP\Downloads\C-main\LAB FILE\13.exe"

Enter data 1
Wanna continue 1
Enter data 23
Wanna continue 1
Enter data 45
Wanna continue 1
Enter data 23
Wanna continue 1
Enter data 1
Wanna continue 0
1 23 45 23 1
Its a palindrome
Process returned 0 (0x0)   execution time : 15.638 s
Press any key to continue.
```

PROBLEM 14

Q14. Write a C program to create a circular link list by adding the nodes in right hand side and then print the list.

CODE-

```
#include<stdio.h>

#include<stdlib.h>

struct node{

    int data;

    struct node *next;

};

int main(){

    struct node *tail,*temp,*newnode;

    tail=NULL;

    int c;

    do{

        newnode=(struct node*)malloc(sizeof(struct node));

        printf("\nEnter the data ");

        scanf("%d",&newnode->data);

        newnode->next=NULL;

        if(tail==NULL){

            tail=newnode;

            tail->next=newnode;

        }

        else{

            newnode->next=tail->next;

            tail->next=newnode;

        }

    }
```

```

        tail=newnode;

    }

    printf("\nWanna continue ");

    scanf("%d",&c);

}while(c);

if(tail==NULL)

    printf("Empty");

else{

    temp=tail->next;

    while(temp->next!=tail->next){

        printf("%d  ",temp->data);

        temp=temp->next;

    }


    printf("%d  ",temp->data);

}

}

```

OUTPUT 14



```

"C:\Users\HP\Downloads\C-main\LAB FILE\14.exe"
Enter the data 23
Wanna continue 1
Enter the data 432
Wanna continue 1
Enter the data 35
Wanna continue 1
Enter the data 64
Wanna continue 1
Enter the data 6
Wanna continue 0
23 432 35 64 6
Process returned 0 (0x0) execution time : 11.777 s
Press any key to continue.

```