

DATA STRUCTURES

LAB EXERCISE – 2

Implement linked list and its operations

Consider each node as structure representation of data for your domain. Perform all operations and implement different types of linked list.

SINGLY LINKED LIST

```
#include<stdio.h>
#include<conio.h>
#include<stdlib.h>
#include<string.h>

struct prop {
    char name[50]; // Increase the size of the name to accommodate prop names
    struct prop* next;
};

struct prop *newptr, *first, *last, *temp, *prev, *next;

int numberOfProps = 0;

// Function to create a new prop
int create() {
    char ch;
    while (1) {
        newptr = (struct prop*)malloc(sizeof(struct prop));
        if (newptr == NULL) {
            printf("Memory allocation error");
            return 0;
        }
        printf("\nEnter Name of the prop: ");
        scanf("%s", &newptr->name);
        numberOfProps++;
        newptr->next = NULL;
        if (first == NULL)
            first = temp = newptr;
        else {
            temp->next = newptr;
            temp = temp->next;
        }
        printf("Want to add more props (Y/N): ");
        ch = getch();
        if (ch == 'n' || ch == 'N')
            return 0;
    }
}
```

```

        temp = first;
        while (temp->next != NULL) {
            temp = temp->next;
            last = temp;
        }
    }
}

// Function to display all props
void display() {
    temp = first;
    if (temp == NULL) {
        printf("There are no props\n");
        return;
    }
    while (temp != NULL) {
        printf("[%s]--->", temp->name);
        temp = temp->next;
    }
    printf("NULL \n");
}

// Function to insert a new prop at the beginning
void insert_beginning() {
    newptr = (struct prop*)malloc(sizeof(struct prop));
    if (newptr == NULL) {
        printf("Memory allocation error");
        return;
    }
    printf("\nEnter Name of new Prop: ");
    scanf("%s", &newptr->name);
    numberOfProps++;
    newptr->next = NULL;
    if (first == NULL) {
        first = last = newptr;
    }
    else {
        newptr->next = first;
        first = newptr;
    }
}

// Function to insert a new prop at the end
void insert_end() {
    newptr = (struct prop*)malloc(sizeof(struct prop));
    if (newptr == NULL) {
        printf("Memory allocation error");
        return;
    }

```

```

    }
    printf("\nEnter Name of new Prop: ");
    scanf("%s", &newptr->name);
    numberOfProps++;
    newptr->next = NULL;
    temp = first;
    while (temp != NULL) {
        last = temp;
        temp = temp->next;
    }
    last->next = newptr;
    newptr->next = NULL;
}

// Function to insert a new prop in the middle
void insert_middle() {
    int pos, c;
    c = 0;
    newptr = (struct prop*)malloc(sizeof(struct prop));
    if (newptr == NULL) {
        printf("Memory allocation error");
        return;
    }
    printf("Enter Position for prop to be inserted: ");
    scanf("%d", &pos);
    printf("\nEnter Name of new Prop: ");
    scanf("%s", &newptr->name);
    numberOfProps++;
    temp = first;
    while (temp != NULL) {
        c++;
        if (c == pos - 1) {
            next = temp->next;
            newptr->next = next;
            temp->next = newptr;
            break;
        }
        temp = temp->next;
    }
}

// Function to delete the first prop
void delete_beginning() {
    if (first == NULL) {
        printf("\nThere are no Props");
    }
    else {
        temp = first;
    }
}

```

```

        first = first->next;
        free(temp);
        numberOfProps--;
        printf("\nFirst Prop deleted\n");
    }
}

// Function to delete the last prop
void delete_end() {
    if (first == NULL) {
        printf("\nThere are no Props");
        return;
    }
    temp = first;
    while (temp->next != NULL) {
        prev = temp;
        temp = temp->next;
        last = temp;
    }
    prev->next = NULL;
    last = prev;
    printf("\nLast Prop deleted\n");
    numberOfProps--;
    free(temp);
}

// Function to delete a prop from the middle
void delete_middle() {
    if (first == NULL) {
        printf("\nThere are no props");
    }
    else {
        int pos, c;
        c = 0;
        printf("Enter the position of the prop you want to delete: ");
        scanf("%d", &pos);

        temp = first;
        while (temp->next != NULL) {
            c++;
            if (c == pos - 1) {
                prev = temp;
                next = temp->next->next;
                free(temp->next);
                prev->next = next;
                printf("\nProp at position %d deleted\n", pos);
                numberOfProps--;
                break;
            }

```

```

        }
        temp = temp->next;
    }
}

// Function to search for a prop by name
void search() {
    char search_name[50];
    int pos, foundFlag = 0;
    pos = 0;
    temp = first;
    printf("\nEnter name of the prop you want to find: ");
    scanf("%s", &search_name);
    while (temp != NULL) {
        pos++;
        if (strcmpi(search_name, temp->name) == 0) {
            foundFlag = 1;
            printf("\nProp Found at %d", pos);
        }
        temp = temp->next;
    }
    if (foundFlag == 0) {
        printf("\nNo such prop found!");
    }
}

// Function to exit the program and free memory
void exit_program() {
    temp = first;
    while (temp != NULL) {
        struct prop* nextNode = temp->next;
        free(temp);
        temp = nextNode;
    }
    exit(0);
}

int main() {
    int opt;
    opt = 0;
    first = temp = NULL;
    while (1) {
        printf("\n");
        printf("+-----Photography-Prop-Store-Menu-----+\n");
        printf("| 1. Create Props | \n");
        printf("| 2. Display Props | \n");
        printf("| 3. Insert Prop at Beginning | \n");
    }
}

```

```

printf("| 4. Insert Prop in the Middle      |\n");
printf("| 5. Insert Prop at End              |\n");
printf("| 6. Delete Prop at Beginning          |\n");
printf("| 7. Delete Prop in the Middle          |\n");
printf("| 8. Delete Prop at End                |\n");
printf("| 9. Search for Prop                    |\n");
printf("| 10. Exit                             |\n");
printf("+-----+\n");
printf("Enter your option: ");
scanf("%d", &opt);
switch (opt) {
case 1:
    create();
    break;
case 2:
    display();
    break;
case 3:
    insert_beginning();
    break;
case 4:
    numberOfProps >= 2 ? insert_middle() : printf("\nNeed More Than 1
Prop\n");
    break;
case 5:
    insert_end();
    break;
case 6:
    delete_beginning();
    break;
case 7:
    numberOfProps >= 2 ? delete_middle() : printf("\nNeed More Than 1
Prop\n");
    break;
case 8:
    delete_end();
    break;
case 9:
    search();
    break;
case 10:
    exit_program();
}
getch();
}
}

```

OUTPUT

```
PS C:\Users\vpdpr\Desktop\2ND TRIMESTER\CPROGRAMMING\LABWORKS\LAB2> .\singlylinkedlist.exe
+-----Photography-Prop-Store-Menu-----+
| 1. Create Props                          |
| 2. Display Props                        |
| 3. Insert Prop at Beginning             |
| 4. Insert Prop in the Middle            |
| 5. Insert Prop at End                   |
| 6. Delete Prop at Beginning              |
| 7. Delete Prop in the Middle            |
| 8. Delete Prop at End                   |
| 9. Search for Prop                      |
| 10. Exit                               |
+-----+
Enter your option: 1

Enter Name of the prop: BACKDROP
Want to add more props (Y/N):
Enter Name of the prop:
WRAPS
Want to add more props (Y/N):
Enter Name of the prop: BASKET
Want to add more props (Y/N):
+-----Photography-Prop-Store-Menu-----+
| 1. Create Props                          |
| 2. Display Props                        |
| 3. Insert Prop at Beginning             |
| 4. Insert Prop in the Middle            |
| 5. Insert Prop at End                   |
| 6. Delete Prop at Beginning              |
| 7. Delete Prop in the Middle            |
| 8. Delete Prop at End                   |
| 9. Search for Prop                      |
| 10. Exit                               |
+-----+
Enter your option: 2
[BACKDROP]-->[WRAPS]-->[BASKET]-->NULL

+-----Photography-Prop-Store-Menu-----+
| 1. Create Props                          |
| 2. Display Props                        |
| 3. Insert Prop at Beginning             |
| 4. Insert Prop in the Middle            |
| 5. Insert Prop at End                   |
| 6. Delete Prop at Beginning              |
| 7. Delete Prop in the Middle            |
| 8. Delete Prop at End                   |
| 9. Search for Prop                      |
| 10. Exit                               |
+-----+
Enter your option: 3

Enter Name of new Prop: VINTAGECAMERA

+-----Photography-Prop-Store-Menu-----+
| 1. Create Props                          |
| 2. Display Props                        |
| 3. Insert Prop at Beginning             |
| 4. Insert Prop in the Middle            |
| 5. Insert Prop at End                   |
| 6. Delete Prop at Beginning              |
| 7. Delete Prop in the Middle            |
| 8. Delete Prop at End                   |
| 9. Search for Prop                      |
| 10. Exit                               |
+-----+
Enter your option: 2
[VINTAGECAMERA]-->[BACKDROP]-->[WRAPS]-->[BASKET]-->NULL

+-----Photography-Prop-Store-Menu-----+
| 1. Create Props                          |
| 2. Display Props                        |
| 3. Insert Prop at Beginning             |
| 4. Insert Prop in the Middle            |
| 5. Insert Prop at End                   |
| 6. Delete Prop at Beginning              |
| 7. Delete Prop in the Middle            |
| 8. Delete Prop at End                   |
| 9. Search for Prop                      |
| 10. Exit                               |
+-----+
Enter your option: 5

Enter Name of new Prop: CAP

+-----Photography-Prop-Store-Menu-----+
| 1. Create Props                          |
| 2. Display Props                        |
| 3. Insert Prop at Beginning             |
| 4. Insert Prop in the Middle            |
| 5. Insert Prop at End                   |
| 6. Delete Prop at Beginning              |
| 7. Delete Prop in the Middle            |
| 8. Delete Prop at End                   |
| 9. Search for Prop                      |
| 10. Exit                               |
+-----+
Enter your option: 2
[VINTAGECAMERA]-->[BACKDROP]-->[WRAPS]-->[BASKET]-->[CAP]-->NULL

+-----Photography-Prop-Store-Menu-----+
| 1. Create Props                          |
| 2. Display Props                        |
| 3. Insert Prop at Beginning             |
| 4. Insert Prop in the Middle            |
| 5. Insert Prop at End                   |
| 6. Delete Prop at Beginning              |
| 7. Delete Prop in the Middle            |
| 8. Delete Prop at End                   |
| 9. Search for Prop                      |
| 10. Exit                               |
+-----+
Enter your option: 4
Enter Position for prop to be inserted: 3

Enter Name of new Prop: HARRYPOTTERSET

+-----Photography-Prop-Store-Menu-----+
| 1. Create Props                          |
| 2. Display Props                        |
| 3. Insert Prop at Beginning             |
| 4. Insert Prop in the Middle            |
| 5. Insert Prop at End                   |
| 6. Delete Prop at Beginning              |
| 7. Delete Prop in the Middle            |
| 8. Delete Prop at End                   |
| 9. Search for Prop                      |
| 10. Exit                               |
+-----+
Enter your option: 2
[VINTAGECAMERA]-->[BACKDROP]-->[HARRYPOTTERSET]-->[WRAPS]-->[BASKET]-->[CAP]-->NULL
```

```

+-----Photography-Prop-Store-Menu-----+
| 1. Create Props                               |
| 2. Display Props                             |
| 3. Insert Prop at Beginning                   |
| 4. Insert Prop in the Middle                 |
| 5. Insert Prop at End                       |
| 6. Delete Prop at Beginning                  |
| 7. Delete Prop in the Middle                |
| 8. Delete Prop at End                      |
| 9. Search for Prop                         |
| 10. Exit                                   |
+-----+
Enter your option: 6

First Prop deleted

+-----Photography-Prop-Store-Menu-----+
| 1. Create Props                               |
| 2. Display Props                             |
| 3. Insert Prop at Beginning                   |
| 4. Insert Prop in the Middle                 |
| 5. Insert Prop at End                       |
| 6. Delete Prop at Beginning                  |
| 7. Delete Prop in the Middle                |
| 8. Delete Prop at End                      |
| 9. Search for Prop                         |
| 10. Exit                                   |
+-----+
Enter your option: 2
[BACKDROP]-->[HARRYPOTTERSET]-->[WRAPS]-->[BASKET]-->[CAP]-->NULL

+-----Photography-Prop-Store-Menu-----+
| 1. Create Props                               |
| 2. Display Props                             |
| 3. Insert Prop at Beginning                   |
| 4. Insert Prop in the Middle                 |
| 5. Insert Prop at End                       |
| 6. Delete Prop at Beginning                  |
| 7. Delete Prop in the Middle                |
| 8. Delete Prop at End                      |
| 9. Search for Prop                         |
| 10. Exit                                   |
+-----+
Enter your option: 8

```

```

Last Prop deleted

+-----Photography-Prop-Store-Menu-----+
| 1. Create Props                               |
| 2. Display Props                             |
| 3. Insert Prop at Beginning                   |
| 4. Insert Prop in the Middle                 |
| 5. Insert Prop at End                       |
| 6. Delete Prop at Beginning                  |
| 7. Delete Prop in the Middle                |
| 8. Delete Prop at End                      |
| 9. Search for Prop                         |
| 10. Exit                                   |
+-----+
Enter your option: 2
[BACKDROP]-->[HARRYPOTTERSET]-->[WRAPS]-->[BASKET]-->NULL

+-----Photography-Prop-Store-Menu-----+
| 1. Create Props                               |
| 2. Display Props                             |
| 3. Insert Prop at Beginning                   |
| 4. Insert Prop in the Middle                 |
| 5. Insert Prop at End                       |
| 6. Delete Prop at Beginning                  |
| 7. Delete Prop in the Middle                |
| 8. Delete Prop at End                      |
| 9. Search for Prop                         |
| 10. Exit                                   |
+-----+
Enter your option: 7
Enter the position of the prop you want to delete: 2

Prop at position 2 deleted

```

```

+-----Photography-Prop-Store-Menu-----+
| 1. Create Props                               |
| 2. Display Props                             |
| 3. Insert Prop at Beginning                   |
| 4. Insert Prop in the Middle                 |
| 5. Insert Prop at End                       |
| 6. Delete Prop at Beginning                  |
| 7. Delete Prop in the Middle                |
| 8. Delete Prop at End                      |
| 9. Search for Prop                         |
| 10. Exit                                   |
+-----+
Enter your option: 2
[BACKDROP]-->[WRAPS]-->[BASKET]-->NULL

+-----Photography-Prop-Store-Menu-----+
| 1. Create Props                               |
| 2. Display Props                             |
| 3. Insert Prop at Beginning                   |
| 4. Insert Prop in the Middle                 |
| 5. Insert Prop at End                       |
| 6. Delete Prop at Beginning                  |
| 7. Delete Prop in the Middle                |
| 8. Delete Prop at End                      |
| 9. Search for Prop                         |
| 10. Exit                                   |
+-----+
Enter your option: 9

Enter name of the prop you want to find: BASKET

Prop Found at 3

+-----Photography-Prop-Store-Menu-----+
| 1. Create Props                               |
| 2. Display Props                             |
| 3. Insert Prop at Beginning                   |
| 4. Insert Prop in the Middle                 |
| 5. Insert Prop at End                       |
| 6. Delete Prop at Beginning                  |
| 7. Delete Prop in the Middle                |
| 8. Delete Prop at End                      |
| 9. Search for Prop                         |
| 10. Exit                                   |
+-----+
Enter your option: 10

```

PS C:\Users\rpdp\Desktop\2ND TRIMESTER\CPROGRAMMING\LABWORKS\LAB2>

SINGLY CIRCULAR LINKED LIST

```
#include<stdio.h>
#include<conio.h>
#include<stdlib.h>
#include<string.h>

struct prop{
    char name[10];
    struct prop *right;
}*newptr,*first,*last,*temp,*prev,*next;

int create(){
    char ch;
    while(1)
    {
        newptr=(struct prop*) malloc(sizeof(struct prop));
        if(newptr==NULL){
            printf("Memory allocation error");
            return 0;
        }
        printf("\nEnter Name of prop");
        scanf("%s",&newptr->name);
        newptr->right=NULL;
        if(first==NULL)
            first=temp=last=newptr;
        else
        {
            temp->right=newptr;
            temp=temp->right;
        }
        printf("want to add more props(Y/N)");
        ch=getch();
        if(ch=='n' || ch=='N')
        {
            temp=first;
            while(temp->right!=NULL)
            {
                temp=temp->right;
                last=temp;
            }
            last->right= first;
            return(0);
        }
    }
}
```

```

void display(){
    temp= first;
    if(temp==NULL){
        printf("There are no props\n");
        return;
    }
    do{
        printf("[%s]--->",temp -> name );
        temp = temp-> right ;
    }while(temp!=first);
    printf("(%s)",last->right->name);
}

void insert_begining(){
    newptr = (struct prop *)malloc( sizeof( struct prop ) );
    if(newptr==NULL){
        printf("Memory allocation error");
        return;
    }
    printf("\nEnter Name of new prop : ");
    scanf("%s",&newptr->name);
    newptr->right=NULL;
    if(first == NULL)
    {
        first=last=newptr;
    }
    else
    {
        newptr->right=first;
        first=newptr;
    }
    last->right= first;
}

void insert_end(){
    newptr=(struct prop*)malloc(sizeof(struct prop));
    if(newptr==NULL){
        printf("Memory allocation error");
        return;
    }
    printf("\nEnter Name of new prop : ");
    scanf("%s",&newptr->name);
    newptr->right=NULL;
    last->right=newptr;
    last=newptr;
    last->right=first;
}

```

```

void insert_middle(){
    int pos,c;c=0;
    newptr=(struct prop*)malloc(sizeof(struct prop));
    printf("Enter Postion for prop to be inserted : ");
    scanf("%d",&pos);
    printf("\nEnter Name of new prop : ");
    scanf("%s",&newptr->name);
    temp= first;
    while (temp!=NULL)
    {
        c++;
        if(c==pos-1){
            next=temp->right;
            newptr->right=next;
            temp->right=newptr;
            break;
        }
        temp=temp->right;
    }
}

```

```

void delete_begining(){
    if(first==NULL){
        printf("\nThere are no props");
    }
    else{
        temp = first;
        first = first -> right;
        last->right=first;
        free(temp);
        printf("\nFirst prop deleted\n");
    }
}

```

```

void delete_end(){
    if(first==NULL){
        printf("\nThere are no props");
        return;
    }
    temp=first;
    while(temp!=last){
        prev=temp;
        temp=temp->right;
    }
    prev->right=NULL;
    last=prev;
}

```

```

    last->right=first;
    printf("\nLast prop deleted\n");
    free(temp);
}

void delete_middle(){
    if(first==NULL){
        printf("\nThere are no props");
    }
    else{
        int pos, c; c = 0;
        printf("Enter the position of the prop you want to delete: ");
        scanf("%d", &pos);

        temp = first;
        while(temp->right != NULL){
            c++;
            if(c == pos - 1){
                prev = temp;
                next = temp->right->right;
                free(temp->right);
                prev->right = next;
                printf("\nprop at position %d deleted\n", pos);
                break;
            }
            temp = temp->right;
        }
    }
}

void search(){
    char search_name[25];
    int pos ,foundFlag=0;pos=0;
    temp = first;
    printf("\nEnter name of the prop you want to find : ");
    scanf("%s",&search_name);

    do{
        pos++;
        if(strcmpi(search_name,temp->name)==0){
            foundFlag =1;
            printf("\nprop Found at %d",pos);
            break;
        }
        temp= temp->right;
    }while(temp!=first);
}

```

```

        if(foundFlag==0){
            printf("\n\tNo such prop found!");
        }
    }

void exit_program(){
    temp = first;
    while (temp != NULL) {
        struct prop* nextNode = temp->right;
        free(temp);
        temp = nextNode;
    }
    exit(0);
}

void main()
{
    int opt;
    opt=0;
    first=temp=NULL;
    while(1)
    {
        printf("\n");
        printf(" +-----prop-Menu-----+\n");
        printf(" | 1.Create props           |\n");
        printf(" | 2.Display props          |\n");
        printf(" | 3.Insert prop Begining   |\n");
        printf(" | 4.Insert prop Middle     |\n");
        printf(" | 5.Insert prop End        |\n");
        printf(" | 6.Delete prop Begining   |\n");
        printf(" | 7.Delete prop Middle     |\n");
        printf(" | 8.Delete prop End        |\n");
        printf(" | 9.Search prop           |\n");
        printf(" | 10.Exit                  |\n");
        printf(" +-----+\n");
        printf("enter your option");
        scanf("%d",&opt);
        switch(opt)
        {
            case 1:create();break;
            case 2:display();break;
            case 3:insert_begining();break;
            case 4:insert_middle();break;
            case 5:insert_end();break;
            case 6:delete_begining();break;
            case 7:delete_middle();break;
            case 8:delete_end();break;
            case 9:search();break;

```

```

        case 10:exit_program();
    }
    getch();
}
}

```

OUTPUT :

```

PS C:\Users\rpdpr\Desktop\2ND TRINESTER\CPROGRAMMING\LABWORKS\LAB2> .\singlycircular.exe

+-----prop-Menu-----+
1.Create props
2.Display props
3.Insert prop Begining
4.Insert prop Middle
5.Insert prop End
6.Delete prop Begining
7.Delete prop Middle
8.Delete prop End
9.Search prop
10.Exit
+-----+
enter your option 1

Enter Name of prop BACKDROP
want to add more props(Y/N)
Enter Name of prop
BASKET
want to add more props(Y/N)
Enter Name of prop WRAPS
want to add more props(Y/N)
+-----prop-Menu-----+
1.Create props
2.Display props
3.Insert prop Begining
4.Insert prop Middle
5.Insert prop End
6.Delete prop Begining
7.Delete prop Middle
8.Delete prop End
9.Search prop
10.Exit
+-----+
enter your options
[BACKDROP]-->[BASKET]-->[WRAPS]-->[BACKDROP]
+-----prop-Menu-----+
1.Create props
2.Display props
3.Insert prop Begining
4.Insert prop Middle
5.Insert prop End
6.Delete prop Begining
7.Delete prop Middle
8.Delete prop End
9.Search prop
10.Exit
+-----+
enter your option 2
[WITCHHAT]-->[BACKDROP]-->[BASKET]-->[WRAPS]-->[WITCHHAT]
+-----prop-Menu-----+
1.Create props
2.Display props
3.Insert prop Begining
4.Insert prop Middle
5.Insert prop End
6.Delete prop Begining
7.Delete prop Middle
8.Delete prop End
9.Search prop
10.Exit
+-----+
enter your option 5

Enter Name of new prop : VINTAGECAM

+-----prop-Menu-----+
1.Create props
2.Display props
3.Insert prop Begining
4.Insert prop Middle
5.Insert prop End
6.Delete prop Begining
7.Delete prop Middle
8.Delete prop End
9.Search prop
10.Exit
+-----+
enter your option 2
[WITCHHAT]-->[BACKDROP]-->[BASKET]-->[WRAPS]-->[VINTAGECAM]-->[WITCHHAT]
+-----prop-Menu-----+
1.Create props
2.Display props
3.Insert prop Begining
4.Insert prop Middle

```

```

| 3.Insert prop Beginning |
| 4.Insert prop Middle   |
| 5.Insert prop End      |
| 6.Delete prop Beginning|
| 7.Delete prop Middle   |
| 8.Delete prop End      |
| 9.Search prop         |
| 10.Exit               |
+-----+
enter your option 4
Enter Postion for prop to be inserted : 3

Enter Name of new prop : FLOWER

+-----prop-Menu-----+
| 1.Create props         |
| 2.Display props        |
| 3.Insert prop Beginning|
| 4.Insert prop Middle   |
| 5.Insert prop End      |
| 6.Delete prop Beginning|
| 7.Delete prop Middle   |
| 8.Delete prop End      |
| 9.Search prop         |
| 10.Exit               |
+-----+

enter your option 2
[WITCHHAT]-->[BACKDROP]-->[FLOWER]-->[BASKET]-->[WRAPS]-->[VINTAGECAM]-->[WITCHHAT]

+-----prop-Menu-----+
| 1.Create props         |
| 2.Display props        |
| 3.Insert prop Beginning|
| 4.Insert prop Middle   |
| 5.Insert prop End      |
| 6.Delete prop Beginning|
| 7.Delete prop Middle   |
| 8.Delete prop End      |
| 9.Search prop         |
| 10.Exit               |
+-----+

enter your option 6

First prop deleted

+-----prop-Menu-----+
| 1.Create props         |
| 10.Exit               |
+-----+

```

```

+-----+
enter your option 6

First prop deleted

+-----prop-Menu-----+
| 1.Create props         |
| 2.Display props        |
| 3.Insert prop Beginning|
| 4.Insert prop Middle   |
| 5.Insert prop End      |
| 6.Delete prop Beginning|
| 7.Delete prop Middle   |
| 8.Delete prop End      |
| 9.Search prop         |
| 10.Exit               |
+-----+

enter your option 2
[BACKDROP]-->[FLOWER]-->[BASKET]-->[WRAPS]-->[VINTAGECAM]-->[BACKDROP]

+-----prop-Menu-----+
| 1.Create props         |
| 2.Display props        |
| 3.Insert prop Beginning|
| 4.Insert prop Middle   |
| 5.Insert prop End      |
| 6.Delete prop Beginning|
| 7.Delete prop Middle   |
| 8.Delete prop End      |
| 9.Search prop         |
| 10.Exit               |
+-----+

enter your option 8

Last prop deleted

+-----prop-Menu-----+
| 1.Create props         |
| 2.Display props        |
| 3.Insert prop Beginning|
| 4.Insert prop Middle   |
| 5.Insert prop End      |
| 6.Delete prop Beginning|
| 7.Delete prop Middle   |
| 8.Delete prop End      |
| 9.Search prop         |
+-----+

```

```

Last prop deleted

+-----prop-Menu-----+
| 1.Create props         |
| 2.Display props        |
| 3.Insert prop Beginning|
| 4.Insert prop Middle   |
| 5.Insert prop End      |
| 6.Delete prop Beginning|
| 7.Delete prop Middle   |
| 8.Delete prop End      |
| 9.Search prop         |
| 10.Exit               |
+-----+

enter your option 2
[BACKDROP]-->[FLOWER]-->[BASKET]-->[WRAPS]-->[BACKDROP]

+-----prop-Menu-----+
| 1.Create props         |
| 2.Display props        |
| 3.Insert prop Beginning|
| 4.Insert prop Middle   |
| 5.Insert prop End      |
| 6.Delete prop Beginning|
| 7.Delete prop Middle   |
| 8.Delete prop End      |
| 9.Search prop         |
| 10.Exit               |
+-----+

enter your option 7
Enter the position of the prop you want to delete: 2

prop at position 2 deleted

+-----prop-Menu-----+
| 1.Create props         |
| 2.Display props        |
| 3.Insert prop Beginning|
| 4.Insert prop Middle   |
| 5.Insert prop End      |
| 6.Delete prop Beginning|
| 7.Delete prop Middle   |
| 8.Delete prop End      |
| 9.Search prop         |
| 10.Exit               |
+-----+

enter your option 2

```

```
+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props         |
| 3.Insert prop Begining  |
| 4.Insert prop Middle    |
| 5.Insert prop End       |
| 6.Delete prop Begining  |
| 7.Delete prop Middle    |
| 8.Delete prop End       |
| 9.Search prop           |
| 10.Exit                 |
+-----+
enter your option 2
[BACKDROP]--->[BASKET]--->[WRAPS]--->(BACKDROP)
+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props         |
| 3.Insert prop Begining  |
| 4.Insert prop Middle    |
| 5.Insert prop End       |
| 6.Delete prop Begining  |
| 7.Delete prop Middle    |
| 8.Delete prop End       |
| 9.Search prop           |
| 10.Exit                 |
+-----+
enter your option 9

Enter name of the prop you want to find : WRAPS

prop Found at 3
+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props         |
| 3.Insert prop Begining  |
| 4.Insert prop Middle    |
| 5.Insert prop End       |
| 6.Delete prop Begining  |
| 7.Delete prop Middle    |
| 8.Delete prop End       |
| 9.Search prop           |
| 10.Exit                 |
+-----+
enter your option 10
PS C:\Users\vpdpr\Desktop\2ND TRIMESTER\CPROGRAMMING\LABWORKS\LAB2>
```

DOUBLY LINKED LIST

```
#include<conio.h>
#include<stdio.h>
#include<stdlib.h>
#include<string.h>
struct prop{
    char name[10];
    struct prop *right;
    struct prop *left;
}*temp,*prev,*first,*last,*newptr,*next;

int numOfPROPs = 0;

int create()
{
    char ch;
    while(1)
    {
        newptr=(struct prop*) malloc(sizeof(struct prop));
        if(newptr==NULL){
            printf("Memory allocation error");
            return 0;
        }
        printf("\nEnter Name of prop : ");
        scanf("%s",&newptr->name);
        numOfPROPs++;
        newptr->right=NULL;
        newptr->left=NULL;
        if(first==NULL)
            first=temp=newptr;
```



```

        else
        {
            temp->right=newptr;
            newptr->left=temp;
            temp=temp->right;
        }
        printf("Want to add more prop(Y/N) : ");
        ch=getch();
        if(ch=='n' || ch=='N')
            return(0);
        temp=first;
        while(temp->right!=NULL)
        {
            temp=temp->right;
            last=temp;
        }
    }
}

void display_forward()
{
    if(first==NULL){
        printf("There are no prop\n");
        return;
    }
    temp=first;
    printf("Forward Display of prop : \n");
    printf("NULL");
    while(temp!=NULL)
    {
        printf("<--[%s]-->",temp->name);
        temp=temp->right;
    }
    printf("NULL\n");
}

void display_backward()
{
    if(first==NULL){
        printf("There are no prop\n");
        return;
    }
    temp=first;
    printf("Reverse Display of prop : \n");
    while(temp->right!=NULL)
    {
        temp=temp->right;
    }
}

```

```

        last=temp;
    }
    temp=last;
    printf("NULL");
    while(temp!=NULL)
    {
        printf("<--[%s]-->",temp->name);
        temp=temp->left;
    }
    // printf("<--[%s]-->",first->name);
    printf("NULL\n");
}

void search(){
    if(first==NULL){
        printf("There are no prop\n");return;
    }
    char search_name[10];
    printf("Enter prop Name to be Searched : ");
    scanf("%s",&search_name);
    temp = first;
    int pos = 0;
    int foundFlag=0;
    while(temp->right!=NULL)
    {
        pos++;
        if(strcmpi(search_name,temp->name)==0)
        {
            printf("prop found at position : %d ",pos);
            foundFlag=1;
            break;
        }
        temp=temp->right;
    }
    if(foundFlag==0){
        printf("prop is not in List");
    }
}

void insert_begining()
{
    newptr=(struct prop*) malloc(sizeof(struct prop));
    if(newptr==NULL){
        printf("Memory allocation error");
        return ;
    }
}

```

```

    }
    printf("\nEnter prop Name ");
    scanf("%s",&newptr->name);
    numOfPROPs++;
    newptr->left=NULL;
    first->left=newptr;
    newptr->right=first;
    first=newptr;
    printf("\nprop Added At Begining");
}

void insert_end()
{
    newptr=(struct prop*) malloc(sizeof(struct prop));
    if(newptr==NULL){
        printf("Memory allocation error");
        return ;
    }
    printf("\nEnter prop Name : ");
    scanf("%s",&newptr->name);
    numOfPROPs++;
    newptr->right=NULL;
    last->right=newptr;
    newptr->left=last;
    last=newptr;
    printf("\nprop Added At end");
}

void delete_begining()
{
    if(first==NULL){
        printf("There are no prop\n");return;
    }
    temp=first;
    first=first->right;
    first->left=NULL;
    temp->right=NULL;
    free(temp);
    numOfPROPs--;
    printf("\nprop Deleted from Begining");
}

void delete_end()
{
    if(first==NULL){
        printf("There are no prop\n");return;
    }
}

```

```

temp=last;
last=last->left;
last->right=NULL;
temp->left=NULL;
numOfPROPs--;
free(temp);
printf("\nprop Deleted from end");
}

void delete_middle(){
    if(first==NULL){
        printf("\nThere are no prop");
    }
    else{
        int pos, c; c = 0;
        printf("Enter the position of the prop you want to delete : ");
        scanf("%d", &pos);

        temp = first;
        while(temp->right != NULL){
            c++;
            if(c == pos){
                prev= temp->left;
                next = temp->right;
                prev->right = next;
                next->left = prev;
                temp->left=NULL;
                temp->right=NULL;
                free(temp);
                printf("\nprop at position %d deleted\n", pos);
                numOfPROPs--;
                break;
            }
            temp = temp->right;
        }
    }
}

void insert_middle()
{
    int pos,c;c=0;
    newptr=(struct prop*) malloc(sizeof(struct prop));
    if(newptr==NULL){
        printf("Memory allocation error");
        return ;
    }
}

```

```

printf("\nEnter the position at which insert prop : ");
scanf("%d",&pos);
printf("\nEnter prop Name : ");
scanf("%s",&newptr->name);
numOfPROPs++;
temp=first;
while(temp->right!=NULL)
{
    c++;
    if(c==pos)
    {
        prev=temp->left;
        prev->right=newptr;
        newptr->left=prev;
        temp->left=newptr;
        newptr->right=temp;
    }
    temp=temp->right;
}
}

void exit_program(){
    temp = first;
    while (temp != NULL) {
        struct prop* nextPROP = temp->right;
        free(temp);
        temp = nextPROP;
    }
    exit(0);
}

void main()
{
    int opt;
    opt=0;
    first=temp=NULL;
    while(1)
    {
        printf("\n");
        printf(" +-----prop-Menu-----+\n");
        printf(" | 1.Create prop          |\n");
        printf(" | 2.Display prop         |\n");
        printf(" | 3.Display prop Reverse |\n");
        printf(" | 4.Insert prop Begining  |\n");
        printf(" | 5.Insert prop Middle    |\n");
        printf(" | 6.Insert prop End       |\n");
        printf(" | 7.Delete prop Begining  |\n");
    }
}

```

```

printf(" | 8.Delete prop Middle      |\n");
printf(" | 9.Delete prop End          |\n");
printf(" | 10.Search prop               |\n");
printf(" | 11.Exit                        |\n");
printf(" +-----+\n");
printf("Enter your option");
scanf("%d",&opt);
switch(opt)
{
    case 1:create();break;
    case 2:display_forward();break;
    case 3:display_backward();break;
    case 4:insert_begining();break;
    case 5:numOfPROPs>=2?insert_middle():printf("\nNeed More Than 1
PROP\n");break;
    case 6:insert_end();break;
    case 7:delete_begining();break;
    case 8:numOfPROPs>=2?delete_middle():printf("\nNeed More Than 1
PROP\n");break;
    case 9:delete_end();break;
    case 10:search();break;
    case 11:exit_program();
}
getch();
}
}

```

OUTPUT

```

PS C:\Users\rpdpr\Desktop\2ND TRIMESTER\CPROGRAMMING\LABWORKS\LAB2> .\doublylinkedlist.exe
+-----prop-Menu-----+
| 1.Create prop          |
| 2.Display prop         |
| 3.Display prop Reverse |
| 4.Insert prop Begining  |
| 5.Insert prop Middle   |
| 6.Insert prop End      |
| 7.Delete prop Begining  |
| 8.Delete prop Middle   |
| 9.Delete prop End      |
| 10.Search prop         |
| 11.Exit                |
+-----+
Enter your option 1

Enter Name of prop : Basket
Want to add more prop(Y/N) :
Enter Name of prop : Backdrop
Want to add more prop(Y/N) :
Enter Name of prop : Wraps
Want to add more prop(Y/N) :
+-----prop-Menu-----+
| 1.Create prop          |
| 2.Display prop         |
| 3.Display prop Reverse |
| 4.Insert prop Begining  |
| 5.Insert prop Middle   |
| 6.Insert prop End      |
| 7.Delete prop Begining  |
| 8.Delete prop Middle   |
| 9.Delete prop End      |
| 10.Search prop         |
| 11.Exit                |
+-----+
Enter your option 2
Forward Display of prop :
NULL<-- [Basket]--><-- [Backdrop]--><-- [Wraps]-->NULL
+-----prop-Menu-----+
| 1.Create prop          |
| 2.Display prop         |
| 3.Display prop Reverse |
| 4.Insert prop Begining  |
| 5.Insert prop Middle   |

```

```

| 4.Insert prop Begining |
| 5.Insert prop Middle |
| 6.Insert prop End |
| 7.Delete prop Begining |
| 8.Delete prop Middle |
| 9.Delete prop End |
| 10.Search prop |
| 11.Exit |
+-----+
Enter your option 4

Enter prop Name Cap

prop Added At Begining
+-----prop-Menu-----+
| 1.Create prop |
| 2.Display prop |
| 3.Display prop Reverse |
| 4.Insert prop Begining |
| 5.Insert prop Middle |
| 6.Insert prop End |
| 7.Delete prop Begining |
| 8.Delete prop Middle |
| 9.Delete prop End |
| 10.Search prop |
| 11.Exit |
+-----+
Enter your option 2
Forward Display of prop :
NULL<--[Cap]>--<--[Basket]>--<--[Backdrop]>--<--[Wraps]>-->NULL

+-----prop-Menu-----+
| 1.Create prop |
| 2.Display prop |
| 3.Display prop Reverse |
| 4.Insert prop Begining |
| 5.Insert prop Middle |
| 6.Insert prop End |
| 7.Delete prop Begining |
| 8.Delete prop Middle |
| 9.Delete prop End |
| 10.Search prop |
| 11.Exit |
+-----+
Enter your option 3
Reverse Display of prop :

```

```

| 11.Exit |
+-----+
Enter your option 3
Reverse Display of prop :
NULL<--[Wraps]>--<--[Backdrop]>--<--[Basket]>--<--[Cap]>-->NULL

+-----prop-Menu-----+
| 1.Create prop |
| 2.Display prop |
| 3.Display prop Reverse |
| 4.Insert prop Begining |
| 5.Insert prop Middle |
| 6.Insert prop End |
| 7.Delete prop Begining |
| 8.Delete prop Middle |
| 9.Delete prop End |
| 10.Search prop |
| 11.Exit |
+-----+
Enter your option 6

Enter prop Name : SUPERMANSET

prop Added At end
+-----prop-Menu-----+
| 1.Create prop |
| 2.Display prop |
| 3.Display prop Reverse |
| 4.Insert prop Begining |
| 5.Insert prop Middle |
| 6.Insert prop End |
| 7.Delete prop Begining |
| 8.Delete prop Middle |
| 9.Delete prop End |
| 10.Search prop |
| 11.Exit |
+-----+
Enter your option 2
Forward Display of prop :
NULL<--[Cap]>--<--[Basket]>--<--[Backdrop]>--<--[Wraps]>--<--[SUPERMANSET]>-->NULL

+-----prop-Menu-----+
| 1.Create prop |
| 2.Display prop |
| 3.Display prop Reverse |
| 4.Insert prop Begining |

```

```

| 3.Display prop Reverse |
| 4.Insert prop Begining |
| 5.Insert prop Middle |
| 6.Insert prop End |
| 7.Delete prop Begining |
| 8.Delete prop Middle |
| 9.Delete prop End |
| 10.Search prop |
| 11.Exit |
+-----+
Enter your option 5

Enter the position. at which insert prop : 4

Enter prop Name : FLOWER

+-----prop-Menu-----+
| 1.Create prop |
| 2.Display prop |
| 3.Display prop Reverse |
| 4.Insert prop Begining |
| 5.Insert prop Middle |
| 6.Insert prop End |
| 7.Delete prop Begining |
| 8.Delete prop Middle |
| 9.Delete prop End |
| 10.Search prop |
| 11.Exit |
+-----+
Enter your option 2
Forward Display of prop :
NULL<--[Cap]>--<--[Basket]>--<--[Backdrop]>--<--[FLOWER]>--<--[Wraps]>--<--[SUPERMANSET]>-->NULL

+-----prop-Menu-----+
| 1.Create prop |
| 2.Display prop |
| 3.Display prop Reverse |
| 4.Insert prop Begining |
| 5.Insert prop Middle |
| 6.Insert prop End |
| 7.Delete prop Begining |
| 8.Delete prop Middle |
| 9.Delete prop End |
| 10.Search prop |
| 11.Exit |
+-----+

```

```

3.Display prop Reverse
4.Insert prop Beginning
5.Insert prop Middle
6.Insert prop End
7.Delete prop Beginning
8.Delete prop Middle
9.Delete prop End
10.Search prop
11.Exit
-----
Enter your option 7

prop Deleted from Beginning
+-----prop-Menu-----+
1.Create prop
2.Display prop
3.Display prop Reverse
4.Insert prop Beginning
5.Insert prop Middle
6.Insert prop End
7.Delete prop Beginning
8.Delete prop Middle
9.Delete prop End
10.Search prop
11.Exit
-----
Enter your option 2
Forward Display of prop :
NULL<-[Basket]>-><-[Backdrop]>-><-[FLOWER]>-><-[Wraps]>-><-[SUPERMANSET]>->NULL

+-----prop-Menu-----+
1.Create prop
2.Display prop
3.Display prop Reverse
4.Insert prop Beginning
5.Insert prop Middle
6.Insert prop End
7.Delete prop Beginning
8.Delete prop Middle
9.Delete prop End
10.Search prop
11.Exit
-----
Enter your option 9

prop Deleted from end

```

```

7.Delete prop Beginning
8.Delete prop Middle
9.Delete prop End
10.Search prop
11.Exit
-----
Enter your option 8
Enter the position of the prop you want to delete : 3

prop at position 3 deleted

+-----prop-Menu-----+
1.Create prop
2.Display prop
3.Display prop Reverse
4.Insert prop Beginning
5.Insert prop Middle
6.Insert prop End
7.Delete prop Beginning
8.Delete prop Middle
9.Delete prop End
10.Search prop
11.Exit
-----
Enter your option 2
Forward Display of prop :
NULL<-[Basket]>-><-[Backdrop]>-><-[Wraps]>->NULL

+-----prop-Menu-----+
1.Create prop
2.Display prop
3.Display prop Reverse
4.Insert prop Beginning
5.Insert prop Middle
6.Insert prop End
7.Delete prop Beginning
8.Delete prop Middle
9.Delete prop End
10.Search prop
11.Exit
-----
Enter your option 10
Enter prop Name to be Searched : Backdrop
prop found at position : 2

+-----prop-Menu-----+
1.Create prop

```

```

1.Create prop
2.Display prop
3.Display prop Reverse
4.Insert prop Beginning
5.Insert prop Middle
6.Insert prop End
7.Delete prop Beginning
8.Delete prop Middle
9.Delete prop End
10.Search prop
11.Exit
-----
Enter your option 9

prop Deleted from end
+-----prop-Menu-----+
1.Create prop
2.Display prop
3.Display prop Reverse
4.Insert prop Beginning
5.Insert prop Middle
6.Insert prop End
7.Delete prop Beginning
8.Delete prop Middle
9.Delete prop End
10.Search prop
11.Exit
-----
Enter your option 2
Forward Display of prop :
NULL<-[Basket]>-><-[Backdrop]>-><-[FLOWER]>-><-[Wraps]>->NULL

+-----prop-Menu-----+
1.Create prop
2.Display prop
3.Display prop Reverse
4.Insert prop Beginning
5.Insert prop Middle
6.Insert prop End
7.Delete prop Beginning
8.Delete prop Middle
9.Delete prop End
10.Search prop
11.Exit
-----
Enter your option 8

```



```
| 1.Create prop      |
| 2.Display prop    |
| 3.Display prop Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle |
| 6.Insert prop End |
| 7.Delete prop Beginning |
| 8.Delete prop Middle |
| 9.Delete prop End |
| 10.Search prop   |
| 11.Exit          |
+-----+
Enter your option 9

prop Deleted from end
+-----prop-Menu-----+
| 1.Create prop      |
| 2.Display prop    |
| 3.Display prop Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle |
| 6.Insert prop End |
| 7.Delete prop Beginning |
| 8.Delete prop Middle |
| 9.Delete prop End |
| 10.Search prop   |
| 11.Exit          |
+-----+
Enter your option 2
Forward Display of prop :
NULL<--[Basket]>--<--[Backdrop]>--<--[FLOWER]>--<--[Wraps]>--NULL

+-----prop-Menu-----+
| 1.Create prop      |
| 2.Display prop    |
| 3.Display prop Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle |
| 6.Insert prop End |
| 7.Delete prop Beginning |
| 8.Delete prop Middle |
| 9.Delete prop End |
| 10.Search prop   |
| 11.Exit          |
+-----+
Enter your option 8

Forward Display of prop :
NULL<--[Basket]>--<--[Backdrop]>--<--[Wraps]>--NULL

+-----prop-Menu-----+
| 1.Create prop      |
| 2.Display prop    |
| 3.Display prop Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle |
| 6.Insert prop End |
| 7.Delete prop Beginning |
| 8.Delete prop Middle |
| 9.Delete prop End |
| 10.Search prop   |
| 11.Exit          |
+-----+
Enter your option 10
Enter prop Name to be Searched : Backdrop
prop found at position : 2

+-----prop-Menu-----+
| 1.Create prop      |
| 2.Display prop    |
| 3.Display prop Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle |
| 6.Insert prop End |
| 7.Delete prop Beginning |
| 8.Delete prop Middle |
| 9.Delete prop End |
| 10.Search prop   |
| 11.Exit          |
+-----+
Enter your option 11
PS C:\Users\rpdp\Desktop\2ND TRIMESTER\CPROGRAMMING\LABWORKS\LAB2> |
```

DOUBLY CIRCULAR LINKED LIST

```
#include<conio.h>
#include<stdio.h>
#include<stdlib.h>
#include<string.h>
struct prop{
    char name[10];
    struct prop *right;
    struct prop *left;
}*temp,*prev,*first,*last,*newptr,*next;

int create()
{
    char ch;
    while(1)
    {
        newptr=(struct prop*) malloc(sizeof(struct prop));
        if(newptr==NULL){
            printf("Memory allocation error");
            return 0;
        }
    }
}
```

```

    }
    printf("\nEnter Name of prop : ");
    scanf("%s",&newptr->name);
    newptr->right=NULL;
    newptr->left=NULL;
    if(first==NULL)
        first=temp=last=newptr;
    else
    {
        temp->right=newptr;
        newptr->left=temp;
        temp=temp->right;
    }

    printf("Want to add more props(Y/N)");
    ch=getch();
    if(ch=='n' || ch=='N')
    {
        temp=first;
        while(temp->right!=NULL)
        {
            temp=temp->right;
            last=temp;
        }
        last->right = first;
        first->left = last;
        return(0);
    }
}

void display_forward()
{
    temp= first;
    if(temp==NULL){
        printf("There are no props\n");
        return;
    }
    printf("Forward Display of props : \n");
    do{
        printf("<---[%s]--->",temp -> name );
        temp = temp-> right ;
    }while(temp!=first);
    printf("(%s)",last->right->name);
}

void display_backward()

```

```

{
    temp= last;
    if(temp==NULL){
        printf("There are no props\n");
        return;
    }
    printf("Backward Display of props : \n");
    do{
        printf("<---[%s]--->",temp -> name );
        temp = temp-> left ;
    }while(temp!=last);
    printf("(%s)",first->left->name);
}

void search(){

    char search_name[10];
    printf("Enter prop Name to be Searched");
    scanf("%s",&search_name);
    temp = first;
    int pos = 0;
    int foundFlag=0;
    while(temp->right!=NULL)
    {
        pos++;
        if(strcmpi(search_name,temp->name)==0)
        {

            printf("prop found at position : %d ",pos);
            foundFlag=1;
            break;
        }
        temp=temp->right;
    }
    if(foundFlag==0){
        printf("prop is not in List");
    }

}

void insert_begining()
{
    newptr=(struct prop*) malloc(sizeof(struct prop));
    if(newptr==NULL){
        printf("Memory allocation error");
        return;
    }
}

```

```

    printf("\nEnter prop Name ");
    scanf("%s",&newptr->name);
    newptr->left=last;
    first->left=newptr;
    newptr->right=first;
    first=newptr;
    last->right=first;
}

void insert_end()
{
    newptr=(struct prop*) malloc(sizeof(struct prop));
    if(newptr==NULL){
        printf("Memory allocation error");
        return;
    }
    printf("\nEnter prop Name ");
    scanf("%s",&newptr->name);
    newptr->right=first;
    last->right=newptr;
    newptr->left=last;
    last=newptr;
    first->left=last;
}

void delete_begining()
{
    temp=first;
    first=first->right;
    first->left=last;
    temp->right=NULL;
    temp->left=NULL;
    last->right=first;
    free(temp);
}

void delete_end()
{
    temp=last;
    last=last->left;
    last->right=first;
    temp->left=NULL;
    temp->right=NULL;
    first->left=last;
    free(temp);
}

```

```

void delete_middle(){
    if(first==NULL){
        printf("\nThere are no props");
    }
    else{
        int pos, c; c = 0;
        printf("Enter the position of the prop you want to delete: ");
        scanf("%d", &pos);

        temp = first;
        while(temp!= NULL){
            c++;
            if(c == pos){
                prev= temp->left;
                next = temp->right;
                prev->right = next;
                next->left = prev;
                temp->left=NULL;
                temp->right=NULL;
                free(temp);
                printf("\nprop at position %d deleted\n", pos);
                break;
            }
            temp = temp->right;
        }
    }
}

void insert_middle()
{
    int pos,c;c=0;
    newptr=(struct prop*) malloc(sizeof(struct prop));
    if(newptr==NULL){
        printf("Memory allocation error");
        return;
    }
    printf("\nEnter the position at which insert prop");
    scanf("%d",&pos);
    printf("\nEnter prop Name");
    scanf("%s",&newptr->name);
    temp=first;
    while(temp!=NULL)
    {
        c++;
        if(c==pos)
        {
            prev=temp->left;
            prev->right=newptr;

```

```

        newptr->left=prev;
        temp->left=newptr;
        newptr->right=temp;
        break;
    }
    temp=temp->right;
}

}

void main()
{
    int opt;
    opt=0;
    first=temp=NULL;
    while(1)
    {
        printf("\n");
        printf(" +-----prop-Menu-----+\n");
        printf(" | 1.Create props                |\n");
        printf(" | 2.Display props                |\n");
        printf(" | 3.Display props Reverse       |\n");
        printf(" | 4.Insert prop Begining        |\n");
        printf(" | 5.Insert prop Middle          |\n");
        printf(" | 6.Insert prop End             |\n");
        printf(" | 7.Delete prop Begining        |\n");
        printf(" | 8.Delete prop Middle          |\n");
        printf(" | 9.Delete prop End             |\n");
        printf(" | 10.Search prop               |\n");
        printf(" | 11.Exit                      |\n");
        printf(" +-----+\n");
        printf("Enter your option");
        scanf("%d",&opt);
        switch(opt)
        {
            case 1:create();break;
            case 2:display_forward();break;
            case 3:display_backward();break;
            case 4:insert_begining();break;
            case 5:insert_middle();break;
            case 6:insert_end();break;
            case 7:delete_begining();break;
            case 8:delete_middle();break;
            case 9:delete_end();break;
            case 10:search();break;
            case 11:exit(0);
        }
        getch();
    }
}

```

```
}
```

OUTPUT

```
PS C:\Users\rpdpn\Desktop\2ND TRIMESTER\CPROGRAMMING\LABWORKS\LAB2> .\doublycircular.exe
```

```
+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props         |
| 3.Display props Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
| 11.Exit                |
+-----+
Enter your option 1
Enter Name of prop : BASKET
Want to add more props(Y/N)
Enter Name of prop : BACKDROP
Want to add more props(Y/N)
Enter Name of prop : WRAPS
Want to add more props(Y/N)
+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props         |
| 3.Display props Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
| 11.Exit                |
+-----+
Enter your option 2
Forward Display of props :
<---[BASKET]---><---[BACKDROP]---><---[WRAPS]--->(BASKET)
+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props         |
| 3.Display props Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
+-----+
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
| 11.Exit                |
+-----+
Enter your option 3
Backward Display of props :
<---[WRAPS]---><---[BACKDROP]---><---[BASKET]--->(WRAPS)
+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props         |
| 3.Display props Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
| 11.Exit                |
+-----+
Enter your option 4
Enter prop Name WITCHHAT
+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props         |
| 3.Display props Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
| 11.Exit                |
+-----+
Enter your option 2
Forward Display of props :
<---[WITCHHAT]---><---[BASKET]---><---[BACKDROP]---><---[WRAPS]--->(WITCHHAT)
+-----prop-Menu-----+
```

```

Forward Display of props :
<---[WITCHHAT]--->---[BASKET]--->---[BACKDROP]--->---[WRAPS]--->---[WITCHHAT]
+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props        |
| 3.Display props Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
| 11.Exit                 |
+-----+
Enter your option 6

Enter prop Name VINTAGECAM

+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props        |
| 3.Display props Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
| 11.Exit                 |
+-----+
Enter your option 2
Forward Display of props :
<---[WITCHHAT]--->---[BASKET]--->---[BACKDROP]--->---[WRAPS]--->---[VINTAGECAM]--->---[WITCHHAT]
+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props        |
| 3.Display props Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
+-----+

```

```

| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
| 11.Exit                 |
+-----+
Enter your option 5

Enter the position at which insert prop 4

Enter prop Name MARVELSET

+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props        |
| 3.Display props Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
| 11.Exit                 |
+-----+
Enter your option 2
Forward Display of props :
<---[WITCHHAT]--->---[BASKET]--->---[BACKDROP]--->---[MARVELSET]--->---[WRAPS]--->---[VINTAGECAM]--->---[WITCHHAT]
+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props        |
| 3.Display props Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
| 11.Exit                 |
+-----+
Enter your option 7

```

```

| 1.Create props          |
| 2.Display props        |
| 3.Display props Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
| 11.Exit                 |
+-----+
Enter your option 7

+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props        |
| 3.Display props Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
| 11.Exit                 |
+-----+
Enter your option 2
Forward Display of props :
<---[BACKDROP]--->---[MARVELSET]--->---[WRAPS]--->---[VINTAGECAM]--->---[BACKDROP]
+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props        |
| 3.Display props Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
| 11.Exit                 |
+-----+
Enter your option 8
Enter the position of the prop you want to delete: 3

```



```

+-----+
Enter your option 8
Enter the position of the prop you want to delete: 3

prop at position 3 deleted

+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props        |
| 3.Display props Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
| 11.Exit                |
+-----+

Enter your option 2
Forward Display of props :
<---[BACKDROP]--->---[MARVELSET]--->---[VINTAGECAM]--->(BACKDROP)

+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props        |
| 3.Display props Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
| 11.Exit                |
+-----+

Enter your option 9

+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props        |
| 3.Display props Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
+-----+

| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
| 11.Exit                |
+-----+

Enter your option 2
Forward Display of props :
<---[BACKDROP]--->---[MARVELSET]--->(BACKDROP)

+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props        |
| 3.Display props Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
| 11.Exit                |
+-----+

Enter your option 10
Enter prop Name to be Searched MARVELSET
prop found at position : 2

+-----prop-Menu-----+
| 1.Create props          |
| 2.Display props        |
| 3.Display props Reverse |
| 4.Insert prop Beginning |
| 5.Insert prop Middle    |
| 6.Insert prop End       |
| 7.Delete prop Beginning |
| 8.Delete prop Middle    |
| 9.Delete prop End       |
| 10.Search prop         |
| 11.Exit                |
+-----+

Enter your option 11

```

P5 C:\Users\vpdp\Desktop\2ND TRIMESTER\CPROGRAMMING\LABWORKS\LAB2>