# Experiment 4:

# Parth Ashra

**SYIT 1**

Code:

#include <stdio.h> #define MAX 10

int deque[MAX];

int left = -1, right = -1;

void input\_deque(void); void output\_deque(void); void insert\_left(void); void insert\_right(void); void delete\_left(void); void delete\_right(void); void display(void);

int main() { int option;

printf("\n \*\*\*\*MAIN MENU\*\*\*\*"); printf("\n 1.Input restricted deque"); printf("\n 2.Output restricted deque"); printf("\n Enter your option : "); scanf("%d", &option);

switch (option) { case 1:

input\_deque(); break;

case 2:

output\_deque(); break;

}

return 0;

}

void input\_deque() { int option;

do {

printf("\n INPUT RESTRICTED DEQUE");

printf("\n 1.Insert at right"); printf("\n 2.Delete from left"); printf("\n 3.Delete from right"); printf("\n 4.Display"); printf("\n 5.Quit");

printf("\n Enter your option : "); scanf("%d", &option);

switch (option) { case 1:

insert\_right(); break;

case 2:

delete\_left(); break;

case 3:

delete\_right(); break;

case 4:

display(); break;

}

} while (option != 5);

}

void output\_deque() { int option;

do {

printf("OUTPUT RESTRICTED DEQUE");

printf("\n 1.Insert at right"); printf("\n 2.Insert at left"); printf("\n 3.Delete from left"); printf("\n 4.Display"); printf("\n 5.Quit");

printf("\n Enter your option : "); scanf("%d", &option);

switch (option) {

case 1:

insert\_right(); break;

case 2:

insert\_left(); break;

case 3:

delete\_left(); break;

case 4:

display(); break;

}

} while (option != 5);

}

void insert\_right() {

int val;

printf("\n Enter the value to be added: "); scanf("%d", &val);

if ((left == 0 && right == MAX - 1) || (left == right + 1)) { printf("\n OVERFLOW");

return;

}

if (left == -1) {

left = 0;

right = 0;

} else {

if (right == MAX - 1) right = 0;

else

right = right + 1;

}

deque[right] = val;

}

void insert\_left() { int val;

printf("\n Enter the value to be added: "); scanf("%d", &val);

if ((left == 0 && right == MAX - 1) || (left == right + 1)) { printf("\n Overflow");

return;

}

if (left == -1) { left = 0;

right = 0;

} else {

if (left == 0)

left = MAX - 1; else

left = left - 1;

}

deque[left] = val;

}

void delete\_left() { if (left == -1) {

printf("\n UNDERFLOW"); return;

}

printf("\n The deleted element is: %d", deque[left]);

if (left == right) { left = -1;

right = -1;

} else {

if (left == MAX - 1) left = 0;

else

left = left + 1;

}

}

void delete\_right() { if (left == -1) {

printf("\n UNDERFLOW"); return;

}

printf("\n The element deleted is: %d", deque[right]); if (left == right)

{

left = -1;

right = -1;

} else {

if (right == 0)

right = MAX - 1; else

right = right - 1;

}

}

void display() {

int front = left, rear = right; if (front == -1) {

printf("\n QUEUE IS EMPTY"); return;

}

printf("\n The elements of the queue are: ");

if (front <= rear) {

while (front <= rear) { printf("%d ", deque[front]); front++;

}

} else {

while (front <= MAX - 1) { printf("%d ", deque[front]); front++;

}

front = 0;

while (front <= rear) { printf("%d ", deque[front]); front++;

}

}

printf("\n");

}

Output:

\* \* \* \* L1AIN L1ENU \* \* \* \*

1.Input restricted deque 2.Output restricted deque Enter your option : 1

I NPUT RE S TRI C T ED D E§UE

1 . I n s e *r* t a t r I g h t

Z . Det e t e Fr am T eF t 3 . Det e t e I r or r T g h t 4.Display

5.Quit

E n t e r yo u r a p t T a n : 1

Enter the value to be added: 42

INPUT RESTRICTED DEQUE

1.Insert at right 2.Delete *from* left 3.Delete *from* right 4.Display

5.Quit

E n t er *yo* u *r* ap t I on : 1

E n t e r t h e va T ue t a be a dded : 44

I NPUT RE S TRI C T ED D E§UE

1. . I n s e *r* t a t r I g h t
2. . Det e t e Fr am T eF t 3 . Det e t e *T r o*n r T g h t 4.Display

5 . g u T t

E n t er yo u r ap t T an : 4

The elements of the queue are: 42 44

T he eT enen t s aI t h e qu eu e a r e : 4 Z 44

INPUT RESTRICTED DEQUE

1.Insert at riqht 2.Delete from left 3.Delete from riqht 4.Display

5.Quit

Enter your option : 2

The deleted element is: 42

INPUT RESTRICTED DEQUE

1 . I n ser t a t r tg h t 2.Delete from left 3.Delete from riqht 4.Display

5.Quit

Enter your option : 5