E4 Deque

#include<stdio.h>

#include<stdlib.h>

#define max\_val 7

int deque[max\_val];

int right=-1,left=-1;

int main()

{

int val;

void insert\_from\_right();

void insert\_from\_left();

void delete\_from\_right();

void delete\_from\_left();

void display();

printf("You have entered a DEQUE program.\n");

do{

printf("\n Enter your choice OR press 0 to close ");

printf("\n PRESS : \n\t 1) to insert from rear \n\t 2) to insert from front \n\t 3) to delete from rear \n\t 4) to delete from front \n\t 5) display \n");

scanf("%d",&val);

switch(val)

{

case 1:

insert\_from\_right();

break;

case 2:

insert\_from\_left();

break;

case 3:

delete\_from\_right();

break;

case 4:

delete\_from\_left();

break;

case 5:

display();

break;

}

}while(val!=0);

return 0;

}

void insert\_from\_right()

{ int num\_r;

printf("Enter the number to be inserted from rear : ");

scanf("%d",&num\_r);

if(left==0 && right==max\_val-1)

{

printf("OVERFLOW\n");

return;

}

if(right==-1 && left==-1)

{

right=0;

left=0;

}

else

{

if(right==max\_val-1)

{

right=0;

}

else

{

right=right+1;

}

}

deque[right]=num\_r;

return;

}

void insert\_from\_left()

{ int num\_l;

printf("Enter the number to be inserted from front : ");

scanf("%d",&num\_l);

if(left==0 && right==max\_val-1)

{

printf("OVERFLOW\n");

return;

}

if(right==-1 && left==-1)

{

right=0;

left=0;

}

else

{

if(left==0)

{

left=max\_val-1;

}

else

{

left=left-1;

}

}

deque[left]=num\_l;

return;

}

void delete\_from\_right()

{

if(left==-1)

{

printf("UNDERFLOW\n");

return;

}

if(right==0 && left==0)

{

left=-1;

right=-1;

}

else

{

if(right==0)

{

right=max\_val-1;

}

else

{

right=right-1;

}

}

return;

}

void delete\_from\_left()

{

if(left==-1)

{

printf("UNDERFLOW\n");

return;

}

if(right==0 && left==0)

{

left=-1;

right=-1;

}

else

{

if(left==max\_val-1)

{

left=0;

}

else

{

left=left+1;

}

}

return;

}

void display()

{

printf("\n Displaying modified deque :\n");

int start=left,end=right;

if(start==-1)

{

printf("Nothing to display\n");

}

if(start<=end)

{

while(start<=end)

{

printf("%d ",deque[start]);

start=start+1;

}

printf("\n");

}

else

{

while(start<=max\_val-1)

{

printf("%d ",deque[start]);

start=start+1;

}

start=0;

while(start<=end)

{

printf("%d ",deque[start]);

start=start+1;

}

}

}