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Roll no- 15

IT

CODE

```
#include <stdio.h>
#include <conio.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;
    // clrscr();
    printf("\n *****MAIN MENU*****");
    printf("\n 1.Input restricted deque");
    printf("\n 2.Output restricted deque");
    printf("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;
```

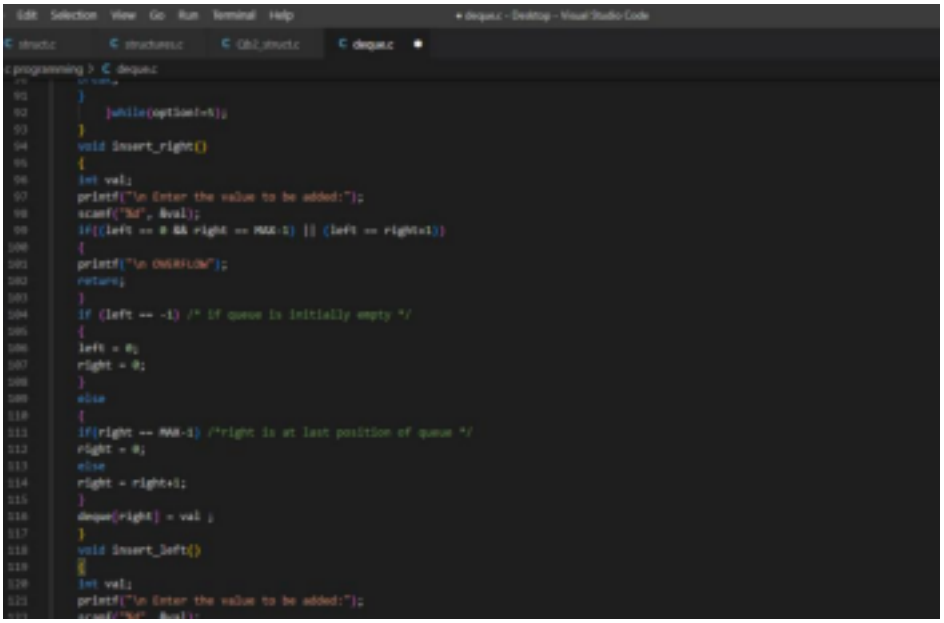
```
case 4:
display();
break;
}
   }while(option!=5);
}
void insert_right()
{
int val;
printf("\n Enter the value to be
added:"); scanf("%d", &val);
if((left == 0 && right == MAX-1) || (left == right+1))
{
printf("\n OVERFLOW");
return;
}
if (left == -1) /* if queue is initially empty
*/ {
left = 0;
right = 0;
}
else
{
if(right == MAX-1) /*right is at last position of queue
*/ 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)/*If queue is initially empty*/

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) /*Queue has only one element */ {
```

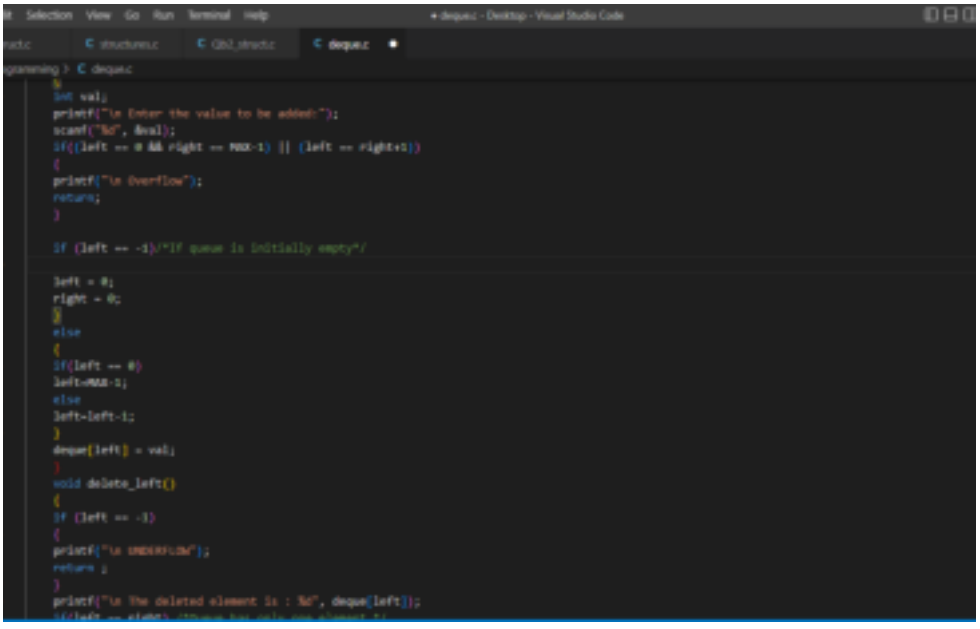
```
left = -1;
right = -1;
}
else
{
if(left == MAX-1)
left = 0;
else
left = left+1;
}
}
void delete_right()
{
if (left == -1)
{
printf("\n UNDERFLOW");
return ;
}
printf("\n The element deleted is : %d", deque[right]);
if(left == right) /*queue has only one element*/ {
left = -1;
right = -1;
}
else
{
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");
}
```

SCREENSHOTS



```
    }while(option!=5);
}
void input_deque()
{
int option;
do
{
printf("\n INPUT 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);
}
```



```
    %
    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)/*If queue is initially empty*/

    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]);
```

```
    return ;
    }
    printf("\n The deleted element is : %d", deque[left]);
    if(left == right) /*Queue has only one element */
    {
    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) /*queue has only one element*/
    {
    left = -1;
    right = -1;
    }
    else
    {
    if(right == 0)
```

OUTPUT