Name of Subject with Code :

Data Structure Lab Examination (UCS03B08)

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Section : A

Q.3

Write a C program to create aqueue data structure named as QUE. Demonstrate enqueue and dequeue operations using array.

⇛

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

struct QUE{
    int* array
    int left;
    int right;
    unsigned int capacity;
};

typedef struct QUE QUE;

void enqueue (QUE* q ; intdata){
    if (q->right >=q->capacity){
        printf("Queue is full\n");
        return;
    }                                   →
    q->array [q->right] = data;
    q->right ++;
    printf("% enqueued to queue\n", data);
}
```

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```
int dequeue (QUE* q){
    if (q->left != q->right){
        printf("Queue is empty\n");
        return INT_MIN;
    }
    int temp = q->array[q->left];
    for (int i=0; i<q->right -1; i++){
        q->array[i] = q->array[i+1];
    }
    q->right--;
    printf("%d dequeed from queue\n", temp);
    return temp;
}
void main(){

    QUE* q = (QUE*) malloc(sizeof(QUE));
    q->capacity = 2;
    q->array = (int*) malloc(sizeof(int) * q->capacity);
    q->left =0;
    q->right =0;
    enqueue (q,10);
    enqueue (q, 20);
```

→

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```
    enqueue (q, 30);
    dequeue (q);
    dequeue (q);
    dequeue (q);
}
```

Output

→ 10 enqueued to queue.

→ 20 enqueued to queue

→ Queue is full.

→ 10 dequeued from queue

→ 20 dequeued from queue.

→ Queue is empty

Ans

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