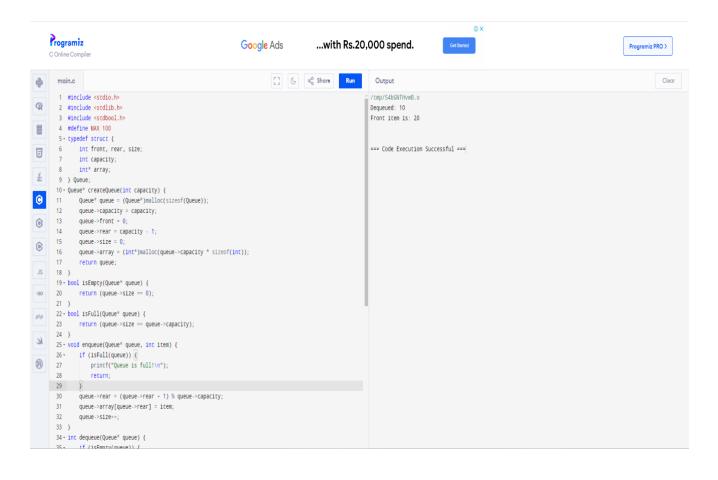
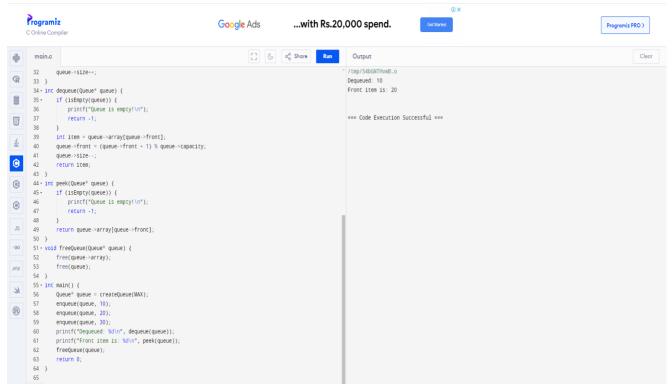
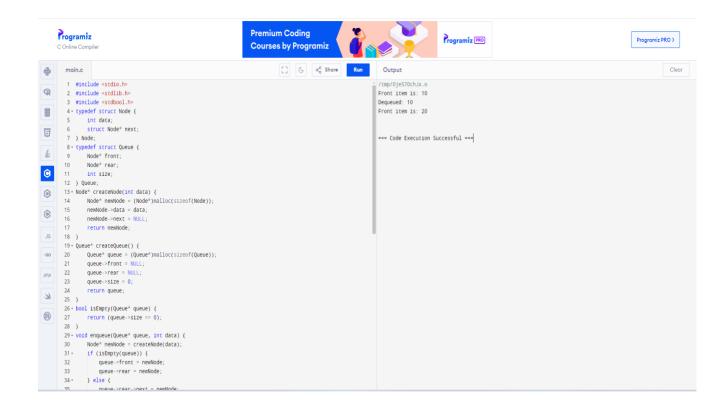
1. Write a c program for Implementation of array in Queue.





2. Write a c program for Implementation of Linked List in Queue.



```
a main.c
                                                                                                       (C) (C) (C) Share Run Output
35
36
                       queue->rear = newNode;
37 38
                                                                                                                                                  Front item is: 20
                  queue->size++;
43 }
44 }
5 Node* tempNode = queue->front;
46 int data = tempNode->data;
47 queue->front = queue->front->next;
48- if (queue->front = NULL) {
49 queue->rear = NULL;
5
©
(6)
                   free(tempNode);
                   queue->size--;
                  return data;
         55 - int peek(Queue* queue) {
        56- if (isEmpty(queue)) {
57     printf("Queue is empty!\n");
58     return -1;
        60 return queue->front->data;
61 }
62 · void freeQueue(Queue* queue) {
B
                while (!isEmpty(queue)) {
   dequeue(queue);
         68 - int main() {
```

```
[] ( a Share Run
              int data = tempNode->data;
                                                                                                                      /tmp/01eS70chJx.o
              queue->front = queue->front->next;
                                                                                                                     Front item is: 10
     47
      48 - if (queue->front == NULL) {
                                                                                                                     Front item is: 20
49
                 queue->rear = NULL;
             free(tempNode);
6
                                                                                                                     === Code Execution Successful ===
             queue->size--;
      54 }
       55 - int peek(Queue* queue) {
             if (isEmpty(queue)) {
                 printf("Queue is empty!\n");
                  return -1;
      59 }
             return queue->front->data;
      60
0
      61 }
      62 + void freeQueue(Queue* queue) {
JS
      63 - while (!isEmpty(queue)) {
                  dequeue(queue);
      68 - int main() {
     69 Queue* queue = createQueue();
      70 enqueue(queue, 10);
71 enqueue(queue, 20);
      72 enqueue(queue, 30);
73 printf("Front item is: %d\n", peek(queue));
      74 printf("Dequeued: %d\n", dequeue(queue));
75 printf("Front item is: %d\n", peek(queue));
76 freeQueue(queue);
       78 }
```

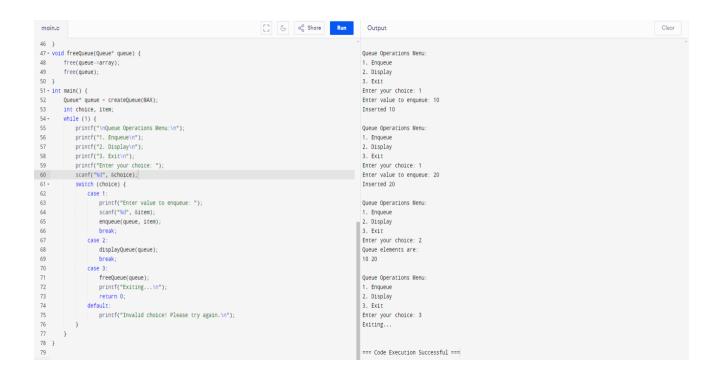
3. Write a c program for Queue Operation of Enqueue and display.

```
[] & ac Share Run
                                                                                                                     Output
  1 #include <stdio.h>
                                                                                                                     /tmp/tALC630G50.o
  2 #include <stdlib.h>
  3 #include <stdbool.h>
                                                                                                                    Queue Operations Menu:
  5 * typedef struct {
6    int front, rear, size;
7    int capacity;
                                                                                                                    2. Display
3. Exit
                                                                                                                    Enter your choice: 1
         int capacity;
         int* array;
                                                                                                                    Enter value to enqueue: 10
  9 } Queue;
                                                                                                                    Inserted 10
  10 - Queue* createQueue(int capacity) {
 11 Queue* queue = (Queue*)malloc(sizeof(Queue));
12 queue->capacity = capacity;
                                                                                                                    Queue Operations Menu:
                                                                                                                    1. Enqueue
 queue->front = 0;

14 queue->rear = capacity - 1;

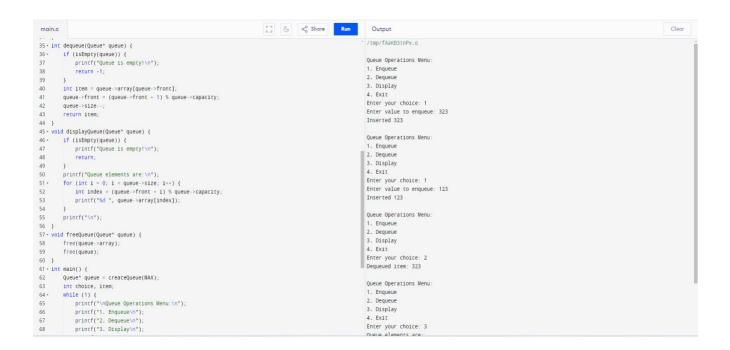
15 queue->size = 0;
                                                                                                                    2. Display
                                                                                                                    3. Exit
                                                                                                                    Enter your choice: 1
                                                                                                                    Enter value to enqueue: 20
         queue->array = (int*)malloc(queue->capacity * sizeof(int));
                                                                                                                   Inserted 20
  18 }
  19 - bool isEmpty(Queue* queue) {
                                                                                                                    Queue Operations Menu:
  20 return (queue->size == 0);
                                                                                                                    2. Display
  22 - bool isFull(Queue* queue) {
                                                                                                                    3. Exit
       return (queue->size == queue->capacity);
                                                                                                                    Enter your choice: 2
  24 3
                                                                                                                    Queue elements are:
  25 - void enqueue(Queue* queue, int item) {
                                                                                                                    10 20
            printf("Queue is full!\n");
                                                                                                                    Queue Operations Menu:
             return;
                                                                                                                    1. Engueue
        queue->rear = (queue->rear + 1) % queue->capacity;
                                                                                                                    3. Exit
                                                                                                                    Enter your choice: 3
         queue->array[queue->rear] = item;
                                                                                                                    Exiting...
         printf("Inserted %d\n", item);
35 - unid dishlau@ueue/@ueue* mueue) /
```

```
C α Share Run Output
  main.c
  35 - void displayQueue(Queue* queue) {
        if (isEmpty(queue)) {
                                                                                                               Queue Operations Menu
           printf("Queue is empty!\n");
                                                                                                               1. Enqueue
 37
                                                                                                               2. Display
 38
             return;
                                                                                                               3. Exit
 39
                                                                                                               Enter your choice: 1
Enter value to enqueue: 10
         printf("Queue elements are:\n");
 41 +
         for (int i = 0; i < queue->size; i++) {
            int index = (queue->front + i) % queue->capacity;
printf("%d ", queue->array[index]);
                                                                                                               Inserted 10
 42
 43
                                                                                                               Queue Operations Menu:
                                                                                                               1. Enqueue
 45
        printf("\n");
                                                                                                               2. Display
 46 }
                                                                                                               3. Exit
 47 - void freeQueue(Queue* queue) {
                                                                                                               Enter your choice: 1
Enter value to enqueue: 20
 48 free(queue->array);
 49
                                                                                                               Inserted 20
 50 }
 51 - int main() {
 52
        Queue* queue = createQueue(MAX);
                                                                                                               Queue Operations Menu:
 53
         int choice, item;
                                                                                                               1. Enqueue
                                                                                                               2. Display
 54 +
         while (1) {
                                                                                                               3. Exit
 55
            printf("\nQueue Operations Menu:\n");
 56
             printf("1. Enqueue\n");
                                                                                                               Enter your choice: 2
 57
             printf("2. Display\n");
                                                                                                               Queue elements are:
             printf("3. Exit\n");
printf("Enter your choice: ");
                                                                                                               10 20
 58
 59
             scanf("%d", &choice);
                                                                                                               Queue Operations Menu:
60
  61 +
             switch (choice) {
                                                                                                               1. Enqueue
                                                                                                               2. Display
 62
                 case 1:
                   printf("Enter value to enqueue: ");
 63
                     scanf("%d", &item);
                                                                                                               Enter your choice: 3
 64
  65
                      enqueue(queue, item);
                                                                                                               Exiting...
 66
                    break;
 67
                 case 2:
                                                                                                               === Code Execution Successful ===
 68
                 displavOueue(queue);
```



4. Write a c program for Queue operation of Dequeue and display.

```
[] (5 00 Share Run
                                                                                                                                                                    Output
 1 #include <stdio.h>
                                                                                                                                                                    /rmp/fAaKB3rnPx.o
  2 #include <stdlib.h>
  3 #include <stdbool.h>
                                                                                                                                                                   Oueue Operations Menu
 5 - typedef struct {
6    int front, rear, size;
7    int capacity;
                                                                                                                                                                  2. Dequeue
                                                                                                                                                                  3. Display
4. Exit
                                                                                                                                                                  Enter your choice: 1
Enter value to enqueue: 323
  9 } Queue;
9 } Queue;
10 · Queue* queue (int capacity) {
11     Queue* queue = (Queue*)malloc(sizeof(Queue));
12     queue->capacity = capacity;
13     queue->front = 0;
14     queue->front = 0;
15     queue->size = 0;
16     queue->array = (int*)malloc(queue->capacity * sizeof(int));
17     return queue;
18 }
                                                                                                                                                                   Inserted 323
                                                                                                                                                                   Queue Operations Menu
                                                                                                                                                                   1. Enqueue
                                                                                                                                                                  2. Dequeue
3. Display
                                                                                                                                                                  4. Exit
                                                                                                                                                                  Enter your choice: 1
Enter value to enqueue: 123
19 - bool isEmpty(Queue* queue) {
         return (queue->size == 0);
                                                                                                                                                                  Queue Operations Menu
22 - bool isFull(Queue* queue) {
                                                                                                                                                                  1. Enqueue
23     return (queue->size == queue->capacity);
24 }
                                                                                                                                                                  2. Dequeue
3. Display
                                                                                                                                                                  4. Exit
Enter your choice: 2
25 - void enqueue(Queue* queue, int item) {
26 - if (isFull(queue)) {
            printf("Queue is full!\n");
return;
                                                                                                                                                                  Dequeued item: 323
      recurn;
}
queue->rear = (queue->rear + 1) % queue->capacity;
queue->array[queue->rear] = 1tem;
queue->size++;
printf("Inserted %d\n", item);
                                                                                                                                                                  Queue Operations Menu
                                                                                                                                                                  2. Dequeue
                                                                                                                                                                  3. Display
                                                                                                                                                                   4. Exit
```



```
| Main | Compared | Co
```