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Queues

1. Linear Queue:

```
#include<stdio.h>
#define queue[N];
  int front=-1, rear=-1;

void enqueue(int x)
{
   if(rear==N-1)
   {
    Printf("Overflow");
   }
   else{
      rear++;
      queue[rear]=x;
   }  }
}
void deque()
{  if(front==-1 && rear==-1)
   {  printf("Underflow");
   }
   else{
      printf("%d", queue[front]);
      front++;
   }
}
  void display()
  {  if(front==-1 && rear==-1)
     {  Printf("Underflow");
     }
```

```
else
{ printf("Queue Contains");
  for(int i=front; i<rear+1; i++)
  { printf("%d", queue[i]);
  }
}
}
int main()
{
  enqueue(10);
  enqueue(20);
  enqueue(30);
  display Queue();
  int deqed = dequeue();
Printf("Deqed item: %d", deqed);
  display Queue();
  return 0;
}
```

Output:

Queue contains.

10
20
30

Queue Contains

20
30

08/01/2024

2. Circular Queues:

```
#include<stdio.h>
#define N=5
 int queue[5];
 int front=-1, rear=-1;

void enqueue(int x)
{
 for(front==-1 && rear==-1)
 {
  front=rear=0;
   queue[rear]=x;
 }
else if((rear+1)%N==front)
   {
     printf("Queue is full");
   }
else{
    rear=(rear+1)%N;
    queue[rear]=x;
  }
} void dequeue()
 {
   if(front==-1 && rear==-1)
   { printf("underflow");
   }
  else if(front==rear)
  { front=rear=-1;
  }
 else
   { printf("%d", q[front]);
    front=(front+1) % N;
}}
```

```
void display()
{ if(front==-1 && rear==-1)
{ printf("Underflow");
}
else{
  printf("Queue Contains");
    int i=front;
  while(i!=rear)
  { printf("%d",queue[i]);
      i=(i+1)%N;
  }
  printf("%d",queue[rear]);
}
int main()
{ enqueue(10);
  enqueue(20);
  enqueue(30);
  display Queue();
  int dequed=dequeue();
  printf("Dequed item: %d",dequed);
  display Queue();
  enqeue(40);
  enqeue(50);
  display Queue;
  return 0;
```

Output.

Queue contains.
10
20
30
Queue contains
20
30

Queue Contains
20
30
40
50

Book DataBase

```
import java.util.Scanner;

class Books {
    String name;
    String author;
    int price;
    int numpages;

    Books() { }

    Books(String name, String author, int price,
            int numpages) {
        this.name = name;
        this.author = author;
        this.price = price;
        this.numpages = numpages;
    }

    @Override
    public String toString()
    {
    String bookInfo = "Book name: " + this.name +
                "\n" +
                "Author name: " + this.author +
                "\n" + "Price" + this.price +
                "\n" + "Number of pages: " +
                this.numpages + "\n";

    return bookInfo;
    }
}
```