

*Tutorial*

Programming & Data Structure: CS 11001

*Section - 4/D*

Department of Computer Science and  
Engineering

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*Spring Semester: 2013 - 2014 (10.04.2014)*

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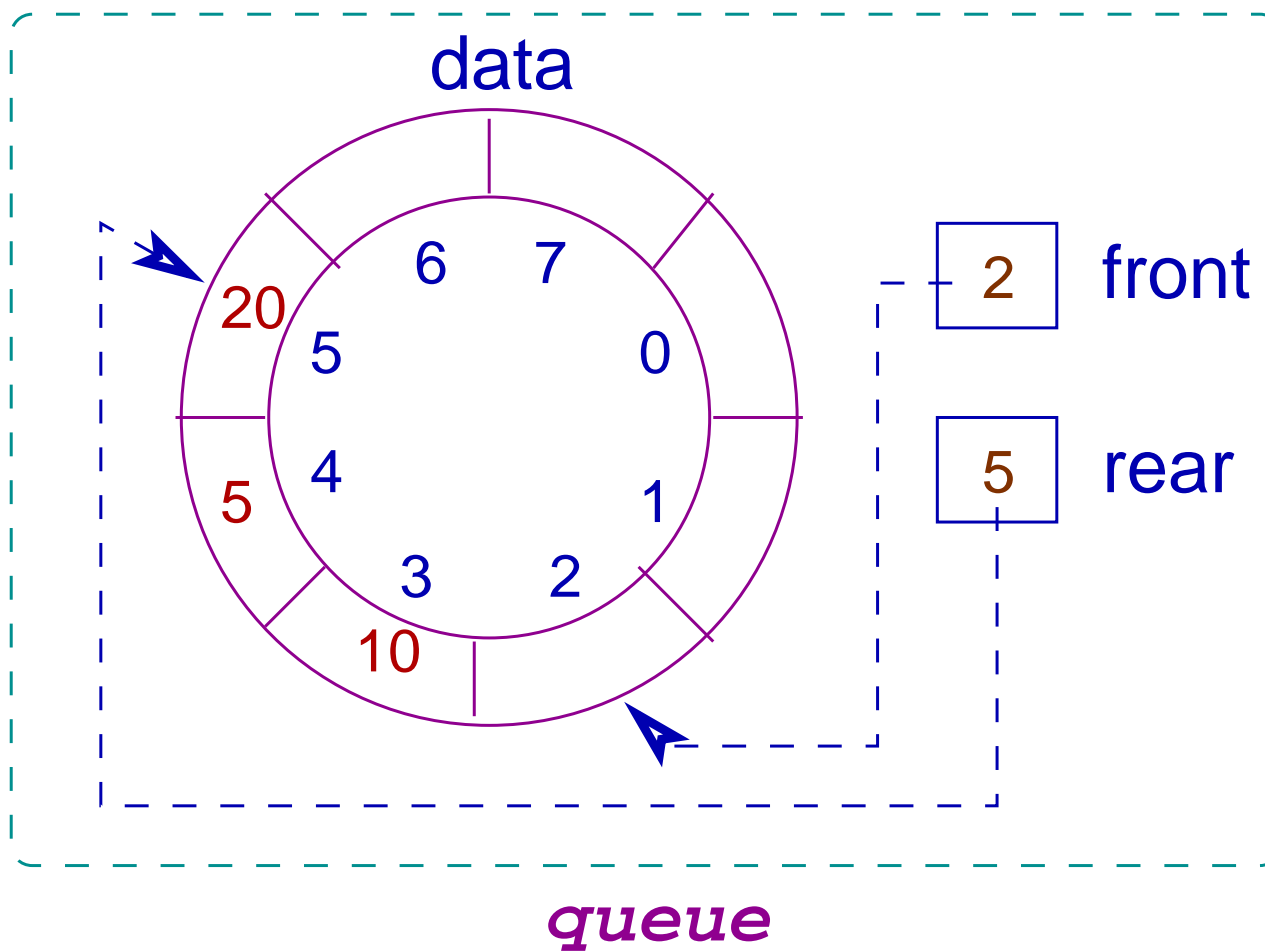
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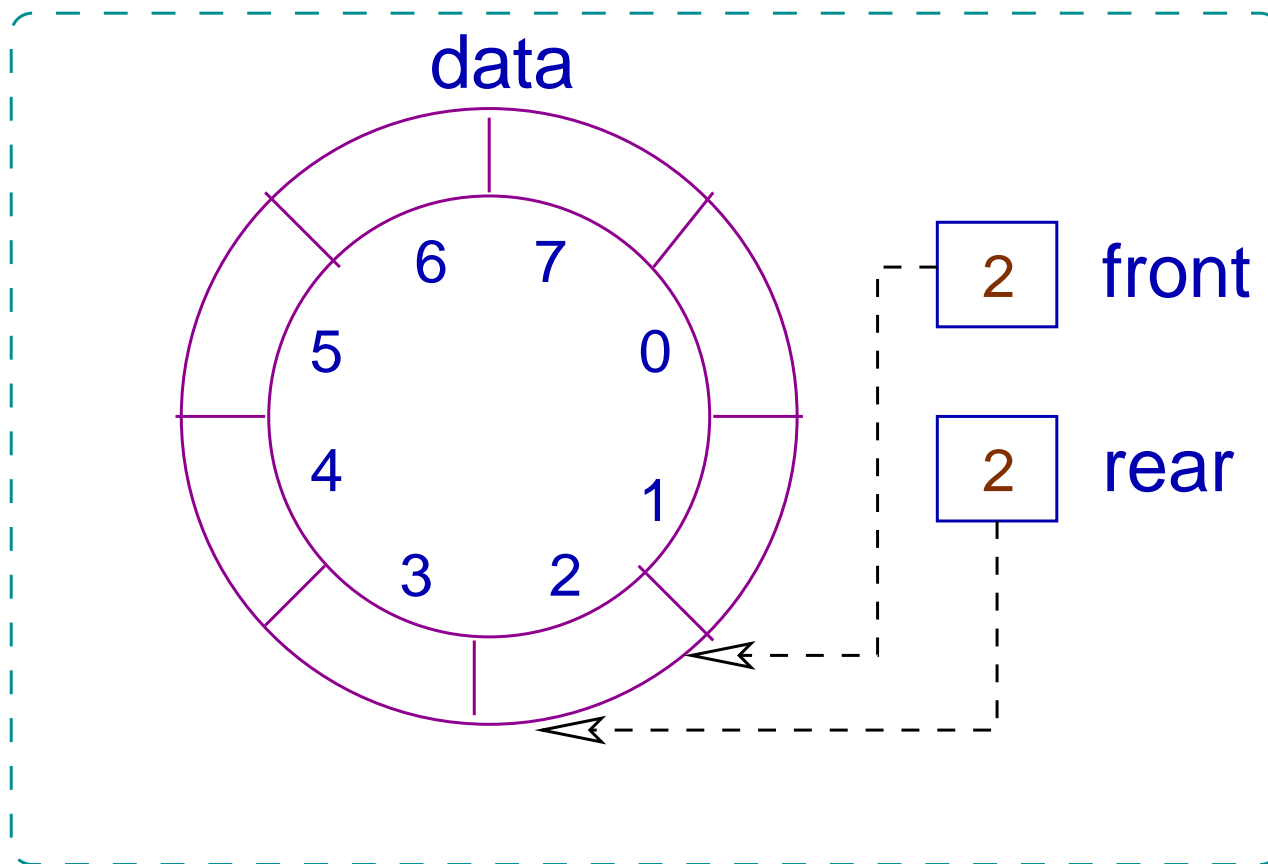
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## Queue on Circular Array: Representation

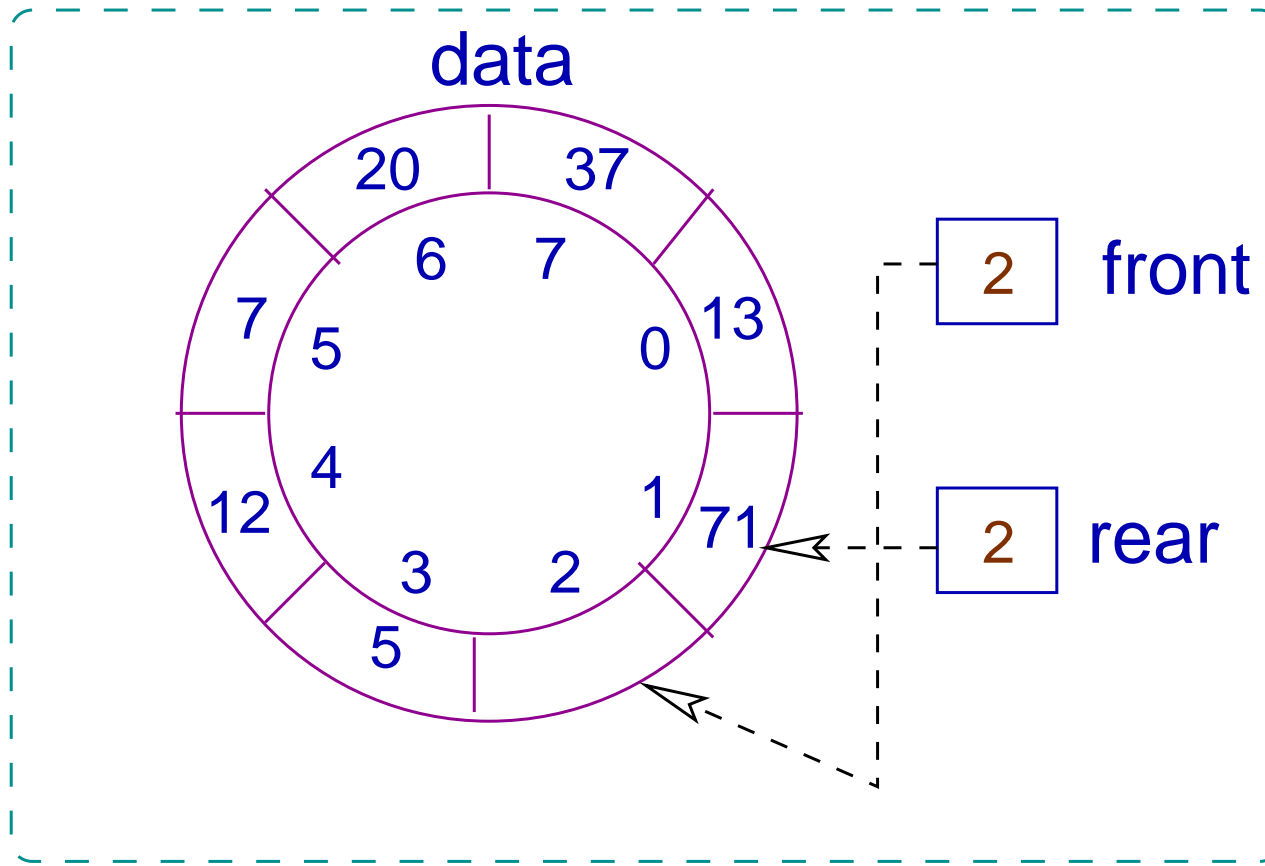
```
#define MAX 200
typedef struct {
    int data[MAX] ;
    int front , rear ;
} queue;
```

The `queue` may contain `MAX - 1` data.





*empty queue*



*full queue*

## Tutorial XIII.1

Write the following functions:

```
void init(queue *);  
int add(queue *, int);  
int delete(queue *);  
int front(queue *, int *);  
int isEmpty(queue *);  
int isFull(queue *);
```

## Tutorial XIII.2

What is the time complexity of each operation on a **queue**?

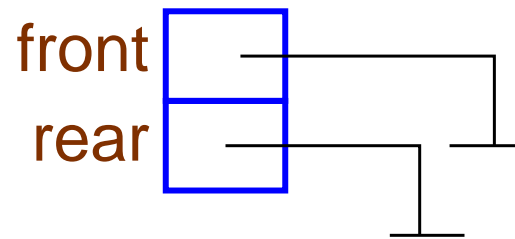


## Queue on Self-Referencing Structures

## Representation of Queue

```
struct queue {  
    int data ;  
    struct queue *next ;  
};  
  
typedef struct {  
    struct queue *front, *rear ;  
} queue ;
```

queue q

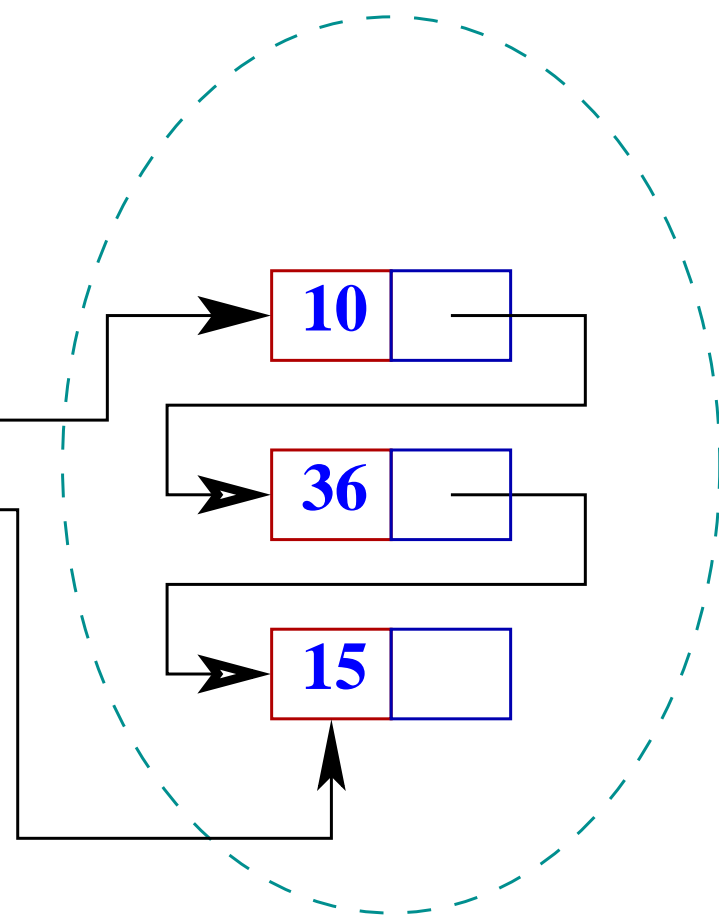


*Empty Queue*

queue q

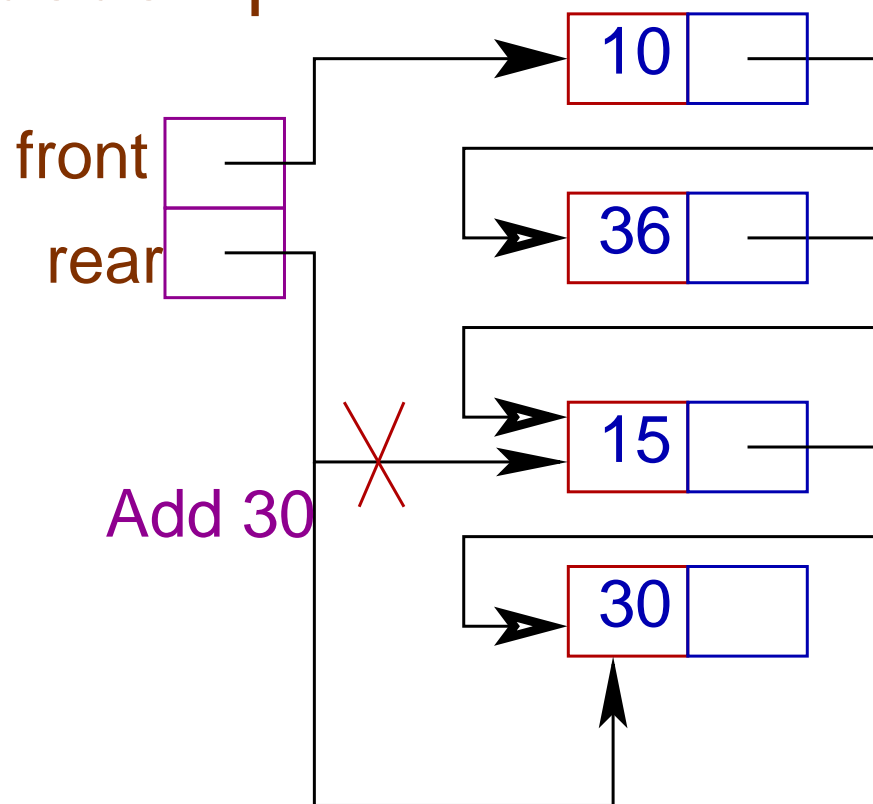
front

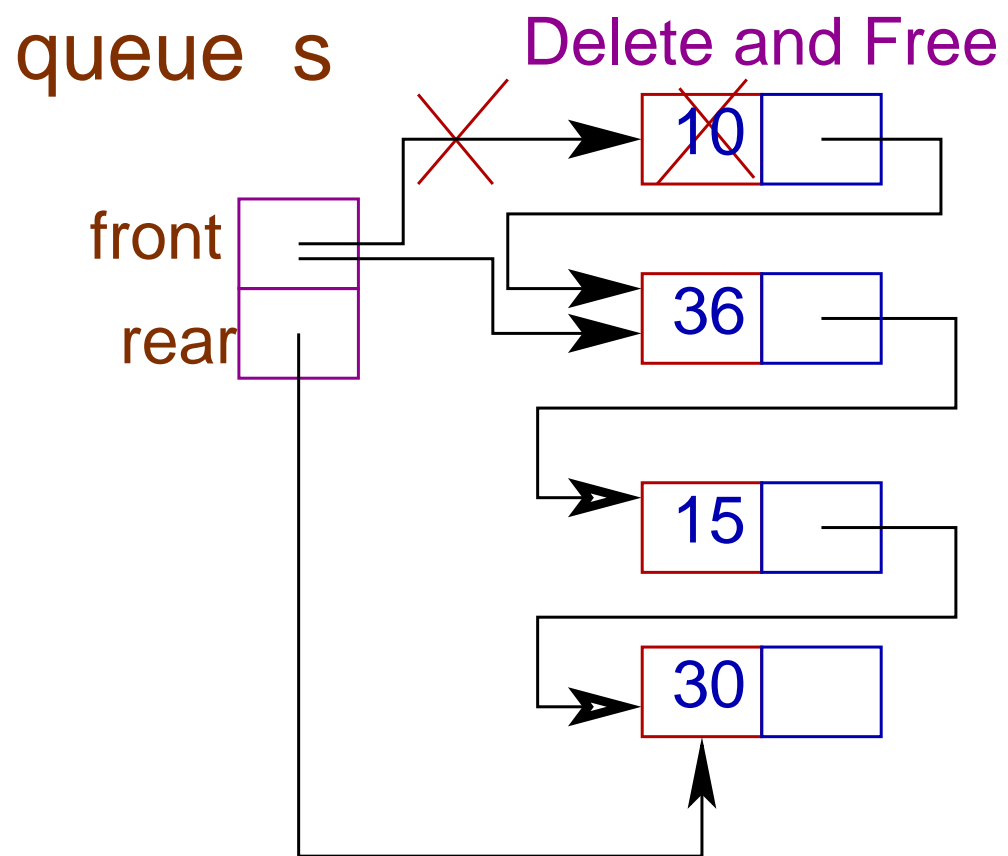
rear



*Dynamically Created Data Area*

queue q





## Tutorial XIII.3

Write the following functions:

```
void init(queue *);  
int add(queue *, int);  
int delete(queue *);  
int front(queue *, int *);  
int isEmpty(queue *);  
int isFull(queue *);
```

## Tutorial XIII.4

What is the time complexity of each operation on a **queue**?