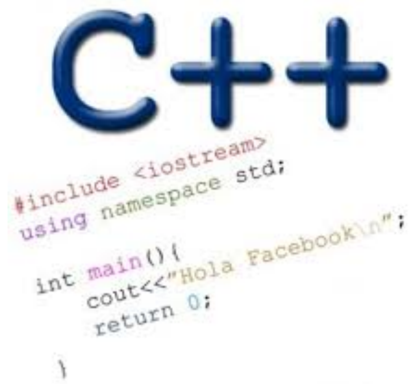
QUEUES
INTERVIEW PRACTICE

Problem Solving with Computers-II

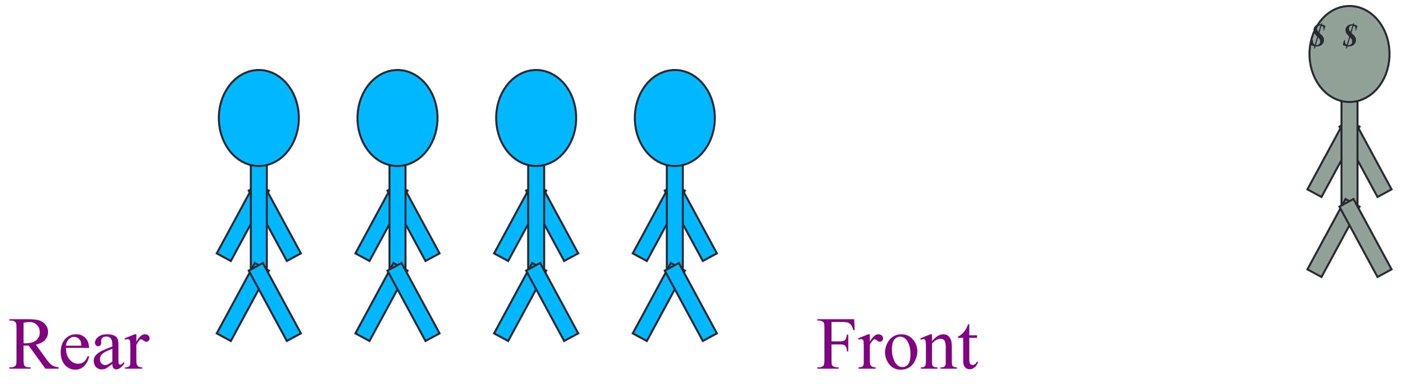


```
#include <iostream>
using namespace std;

int main(){
    cout<<"Hola Facebook\n";
    return 0;
}
```

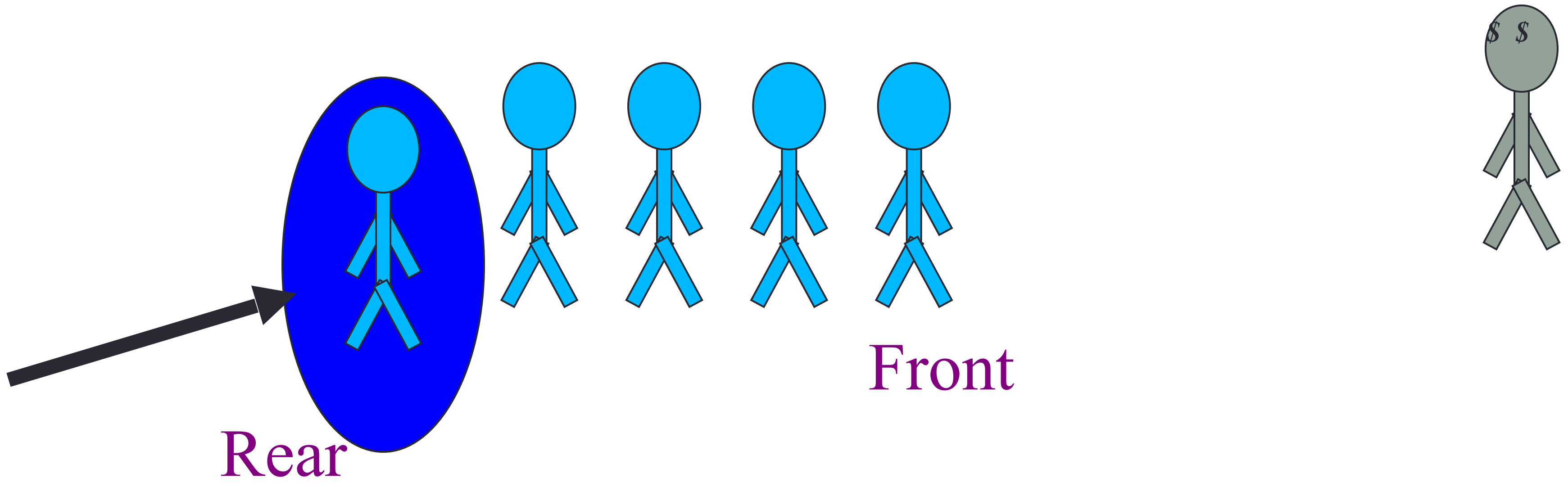
The Queue Operations

- A queue is like a line of people waiting for a bank teller.
- The queue has a **front** and a **rear**.



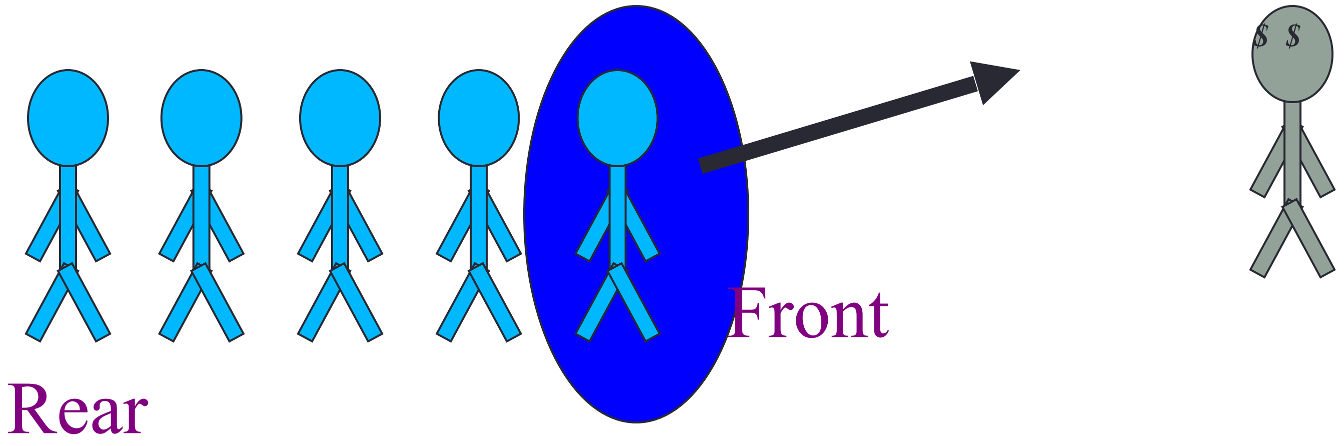
The Queue Operations

- New people must enter the queue at the rear. The C++ queue class calls this a **push**, although it is usually called an **enqueue** operation.



The Queue Operations

- When an item is taken from the queue, it always comes from the front. The C++ queue calls this a **pop**, although it is usually called a **dequeue** operation.

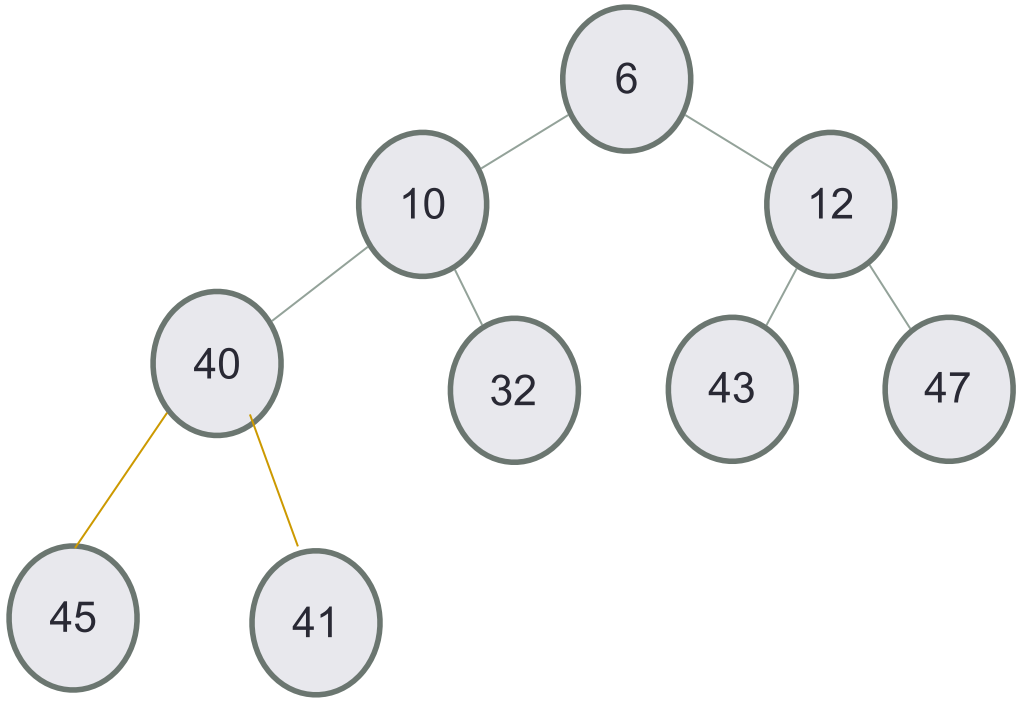


The Queue Class

- The C++ standard template library has a queue template class.
- The template parameter is the type of the items that can be put in the queue.

```
template <class Item>
class queue<Item>
{
public:
        queue( );
        void push(const Item& entry);
        void pop( );
        bool empty( ) const;
        Item front( ) const;
        …
```

Breadth first traversal

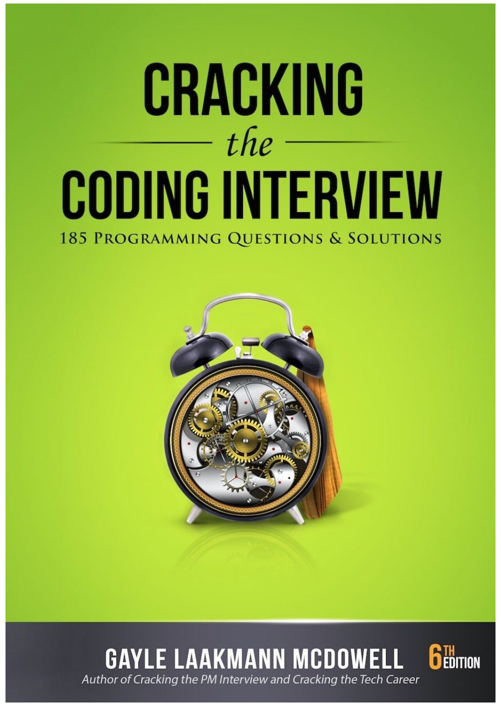


- Take an empty Queue.
- Start from the root, insert the root into the Queue.
- Now while Queue is not empty,
    - Extract the node from the Queue and insert all its children into the Queue.
    - Print the extracted node.

Small group exercise

Write a ADT called in minStack that provides the following methods

- push() // inserts an element to the “top” of the minStack
- pop() // removes the last element that was pushed on the stack
- top () // returns the last element that was pushed on the stack
- min() // returns the minimum value of the elements stored so far
- empty()// returns true if minStack is empty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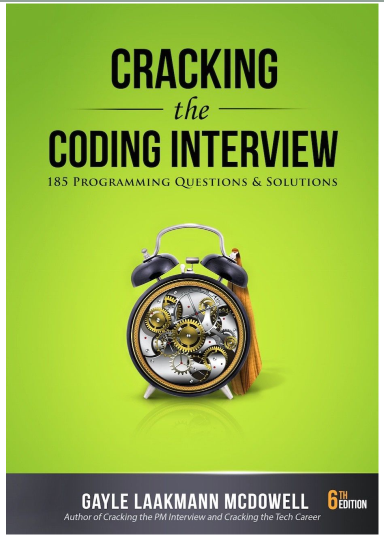
Queue via stacks

Implement a MyQueue class which implements a queue using two stacks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Next lecture

- Wrap up