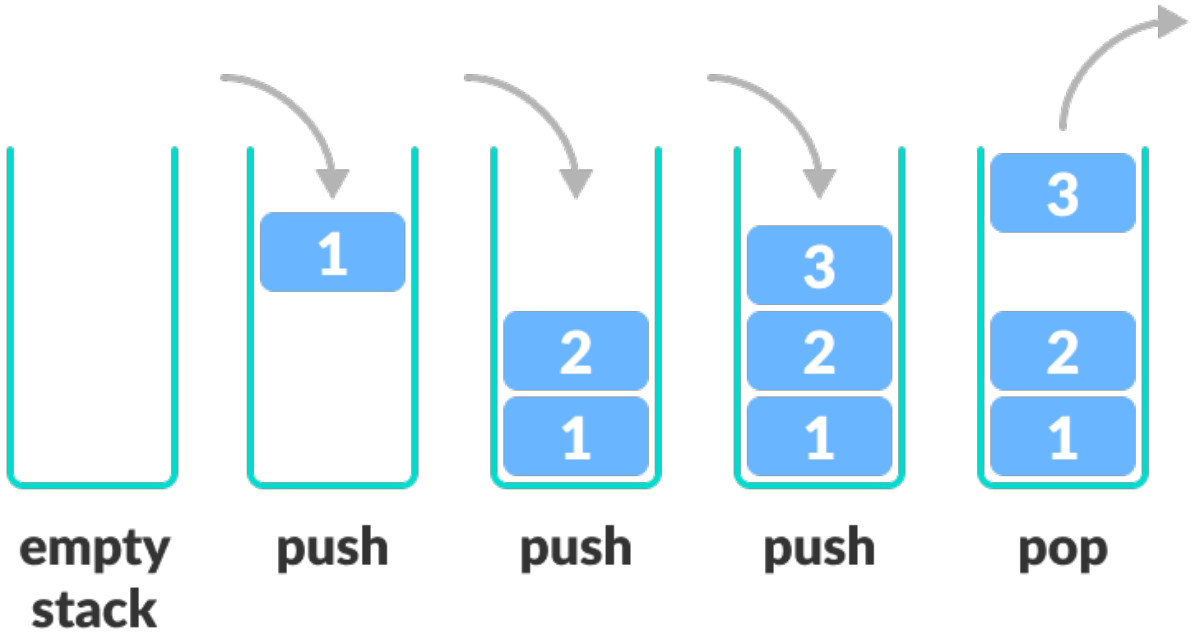
Pilas y Colas

me when i'm learning about stacks & queues

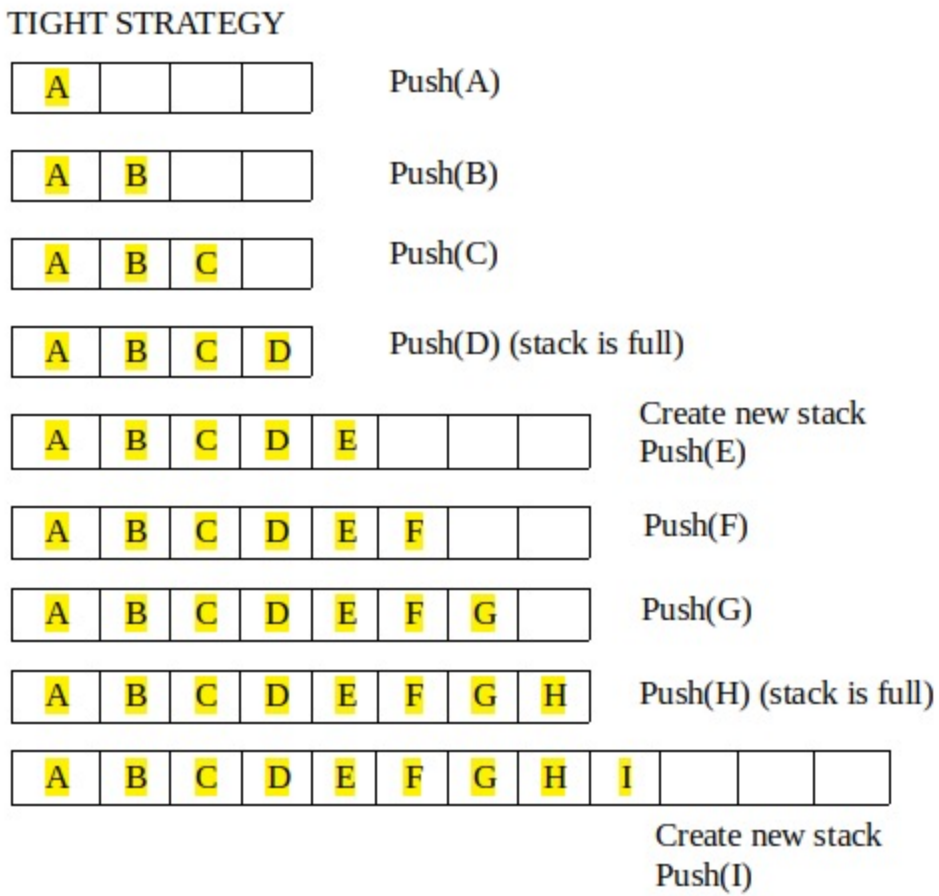
¿Qué vamos a ver hoy?

- Pila
  - Funcionamiento
  - STL
- Cola
  - Funcionamiento
  - STL
- Problema Paréntesis
- Destruyendo Edificios

Stack / Pila / FIFO



https://www.programiz.com/dsa/stack



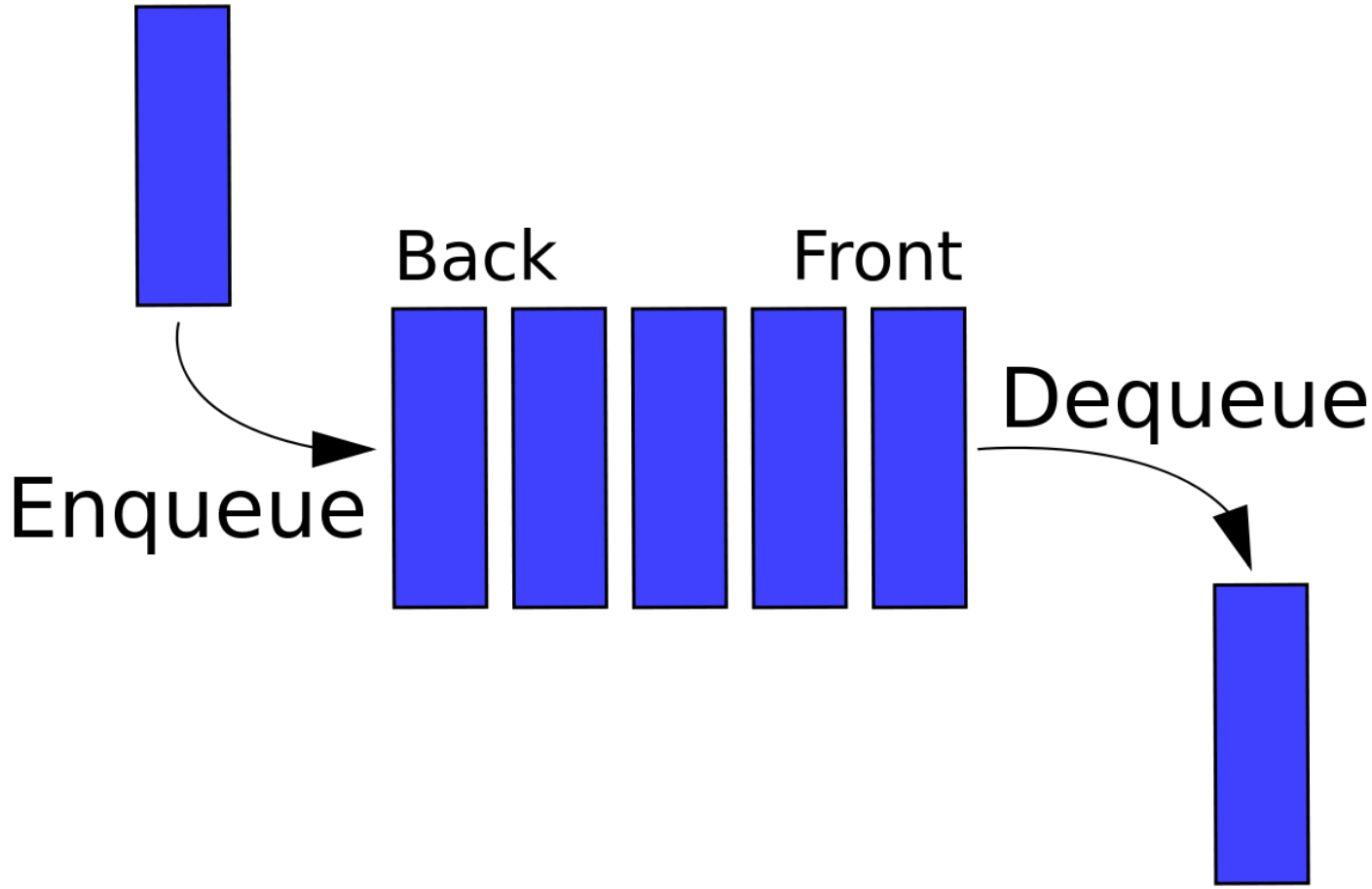
https://www.geeksforgeeks.org/growable-array-based-stack/

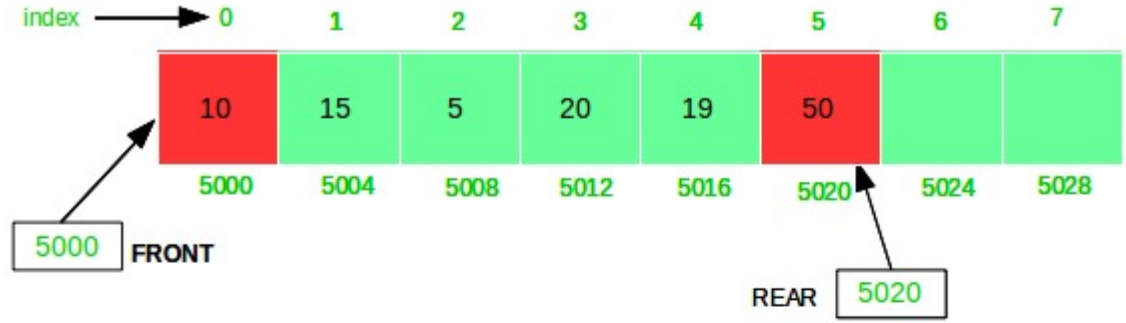
```cpp
// stack::push/pop
#include <iostream>       // std::cout
#include <stack>          // std::stack

int main ()
{
  std::stack<int> mystack;

  for (int i=0; i<5; ++i) mystack.push(i);

  std::cout << "Popping out elements...";
  while (!mystack.empty())
  {
     std::cout << ' ' << mystack.top();
     mystack.pop();
  }
  std::cout << '\n';

  return 0;
}
```

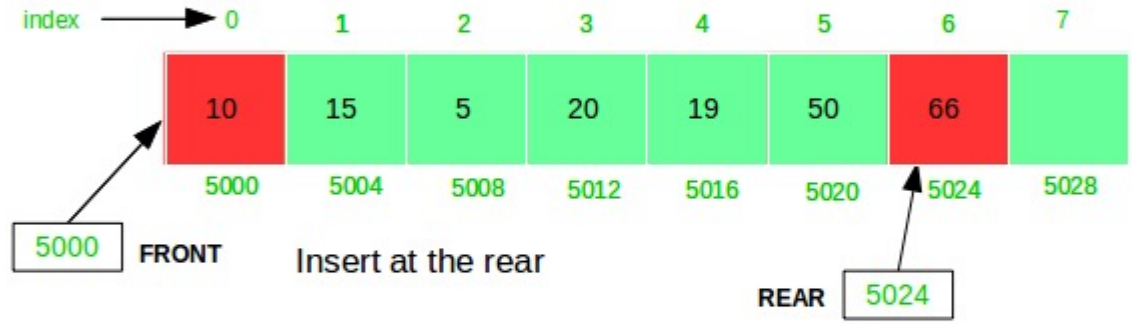
https://www.cplusplus.com/reference/stack/stack/push/

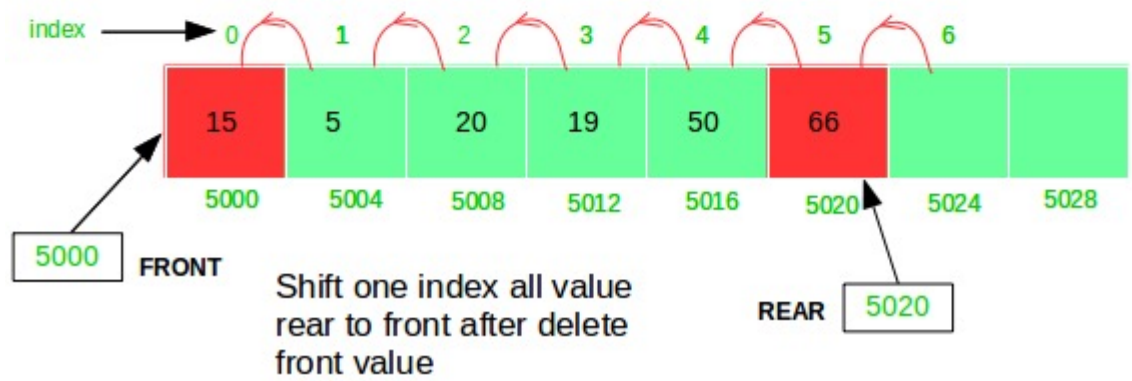
Función	Descripción	Complejidad
push([elemento]);	Inserta elemento	O(1) amortizado
pop();	Elimina elemento en top	O(1) amortizado
top();	Retorna el elemento en top	O(1)
size();	Retorna la cantidad de elementos en la pila	O(1)

Queue / cola / LIFO









https://www.geeksforgeeks.org/array-implementation-of-queue-simple/

```cpp
// queue::push/pop
#include <iostream>       // std::cin, std::cout
#include <queue>          // std::queue

int main ()
{
  std::queue<int> myqueue;
  int myint;

  std::cout << "Please enter some integers (enter 0 to end):\n";

  do {
    std::cin >> myint;
    myqueue.push (myint);
  } while (myint);

  std::cout << "myqueue contains: ";
  while (!myqueue.empty())
  {
    std::cout << ' ' << myqueue.front();
    myqueue.pop();
  }
  std::cout << '\n';

  return 0;
}
```

http://www.cplusplus.com/reference/queue/queue/pop/

Función	Descripción	Complejidad
push([elemento]);	Inserta elemento atras	O(1) amortizado
pop();	Elimina elemento en el frente	O(1) amortizado
front();	Retorna el elemento en el frente	O(1)
size();	Retorna la cantidad de elementos en la cola	O(1)