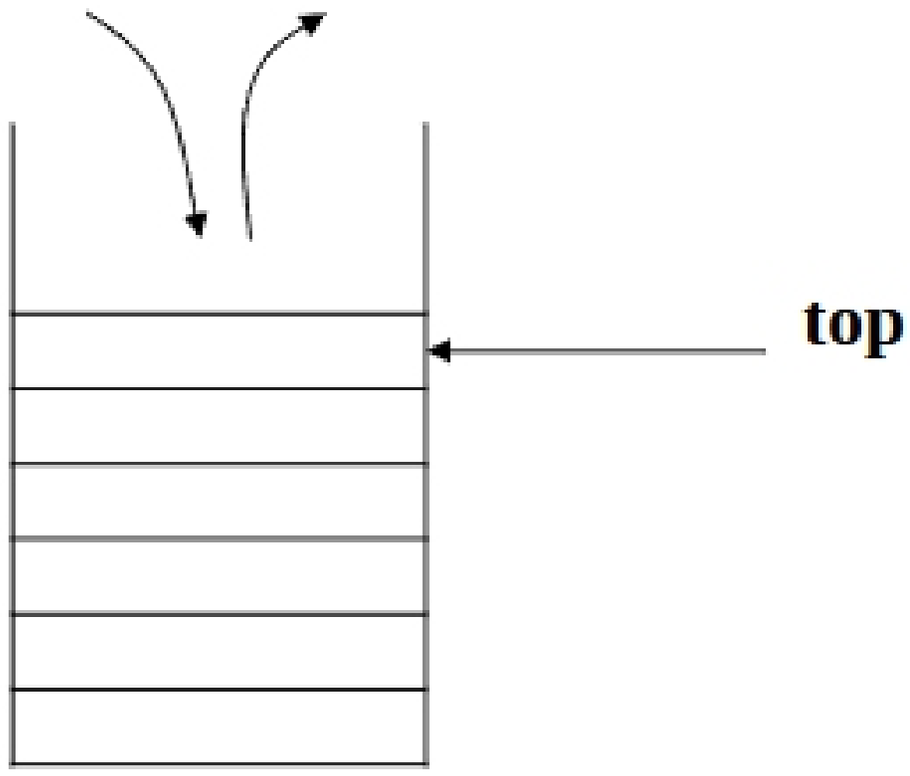
STACK

- A *stack* is a collection of items into which new items are inserted and from which items are deleted at one end (called the *top* of the stack).

- Different implementations are possible; although the concept of a stack is unique.

Example: Trays in the cafeteria.

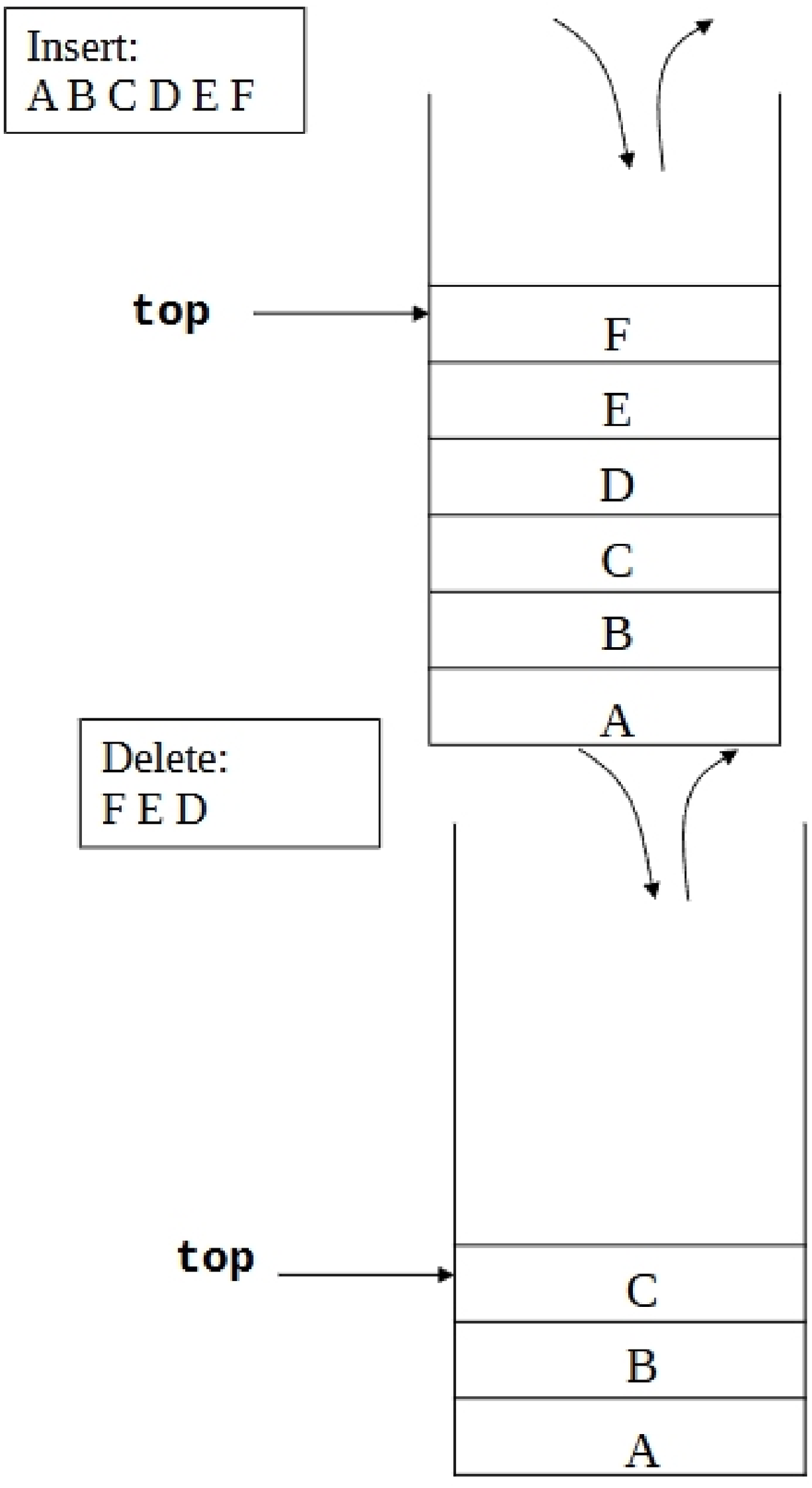


- Two primary operations:
  1. **push**: adds a new item on top of a stack.
  2. **pop**: removes the item on the top of a stack

- Stack is also known as push-down list

- LIFO (Last In First Out): order of addition and deletion of items from a stack.

A stack is a dynamic structure. It changes as elements are added to and removed from it.



Implementation of a stack as an array

```
#define maxstack 100

struct stack{
   int items[maxstack];
   int top;
};

int isEmpty(struct stack s){
   return (s.top < 0);
}

int isFull(struct stack s){
   return (s.top >= maxstack-1);
}
```

To put a new item on stack:

```
void push (struct stack *s, int x){
   if (s->top >= maxstack-1)
      printf("The stack is full.\n");
   else {
      s->top = s->top +1;
      s->items[s->top] = x;
   }
```