90-789

Lecture 6

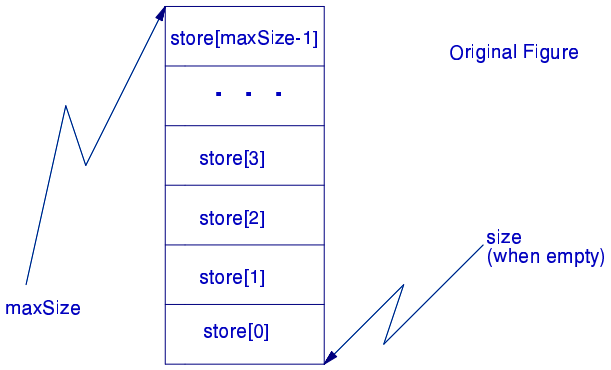
Classes -- 1

Richard J. Orgass
Heinz School
Carnegie Mellon University

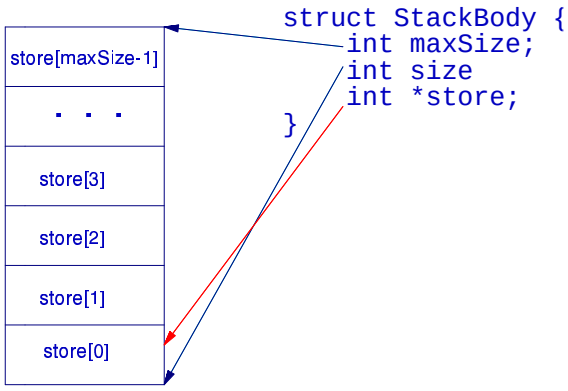
Stack Object in C

- Corrected C Source and Example main in handout
- Example program shows how stacks can reverse the order of items pushed on stack
- Features of Example
  - implementation completely hidden from clients
    - can change implementation without client knowledge
    - only the abstraction is visible
  - multiple instances easy to create
- Revised figure to show struct on next slides

Example: Stacks



Example: Stacks



A struct of Functions

```
typedef void (*Push)(Stack, int);
typedef int (*Pop)(Stack);
typedef bool (*Full)(Stack);
typedef bool (*Empty)(Stack);

struct StackFunctions {
  Push push_;
  Pop pop_;
  Full full_;
  Empty empty_;
}
```


A struct of Functions -- 2 --

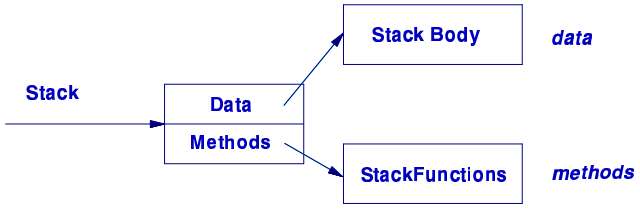
```
// Now initialize such a struct

#include <Stack.h>

struct StackFunctions methodBody;

methodBody.push_ = push;
methodBody.pop_ = pop;
methodBody.full_ = full;
methodBody.empty_ = empty;
```

New View of a Stack



Simplified view of C++ object implementation