

stk.h

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1 /*****
2 File name:  stk.h
3 Author:    Computer Science, Pacific University
4 Date:     10.11.17
5 Class:    CS300
6 Assignment: Static Generic Stack
7 Purpose:   Interface for a static stack of generic elements
8 *****/
9
10 #ifndef STK_H_
11 #define STK_H_
12
13 #include <stdbool.h>
14 #include <stdlib.h>
15 #include <string.h>
16
17 // *****/
18 // Constants
19 // *****/
20 #define STK_MAX_ERROR_CHARS 64
21 #define STK_MAX_ELEMENTS 100
22 #define STK_EMPTY 0
23
24 enum {STK_NO_ERROR = 0,
25       STK_EMPTY_ERROR,
26       STK_FULL_ERROR,
27       STK_NO_CREATE_ERROR,
28       STK_NO_TERMINATE_ERROR,
29       STK_NO_MEMORY_ERROR,
30       STK_NO_BUFFER_ERROR}; // If this error name changes, change stmt below
31 #define STK_NUMBER_OF_ERRORS STK_NO_BUFFER_ERROR - STK_NO_ERROR + 1
32
33 // *****/
34 // Error Messages
35 // *****/
36 #define LOAD_ERRORS strcpy (gszErrors[STK_NO_ERROR], "No Error.");\
37 strcpy (gszErrors[STK_EMPTY_ERROR], "Error: Empty Stack.");\
38 strcpy (gszErrors[STK_FULL_ERROR], "Error: Full Stack.");\
39 strcpy (gszErrors[STK_NO_CREATE_ERROR], "Error: No Stack Create.");\
40 strcpy (gszErrors[STK_NO_TERMINATE_ERROR], "Error: No Stack Terminate.");\
41 strcpy (gszErrors[STK_NO_MEMORY_ERROR], "Error: No Stack Memory.");\
42 strcpy (gszErrors[STK_NO_BUFFER_ERROR], "Error: No Buffer.");
43
```

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44
45 //*****
46 // User-defined types
47 //*****
48 typedef struct Stack *StackPtr;
49 typedef struct Stack
50 {
51     void *pData[STK_MAX_ELEMENTS];
52     int top;
53 } Stack;
54
55 //*****
56 // Function prototypes
57 //*****
58 extern void stkLoadErrorMessages ();
59 extern void stkCreate (StackPtr psStack);
60 extern void stkTerminate (StackPtr psStack);
61 extern bool stkIsFull (const StackPtr psStack);
62 extern bool stkIsEmpty (const StackPtr psStack);
63 extern void stkPush (StackPtr psStack, void *pBuffer, int size);
64 extern void *stkPop (StackPtr psStack, void *pBuffer, int size);
65 extern void *stkPeek (const StackPtr psStack, void *pBuffer, int size);
66 extern int stkSize (const StackPtr psStack);
67
68 #endif /* STK_H_ */
69
```