What is a stack in C?

a. Linear data structure

b. Non-linear data structure

c. Both a and b

d. None of the above

In a stack, the element that is added last is removed first. This principle is known as:

a. LIFO (Last In, First Out)

b. FIFO (First In, First Out)

c. LILO (Last In, Last Out)

d. FILO (First In, Last Out)

Which of the following operations is NOT performed on a stack?

a. Push

b. Pop

c. Insert

d. Peek

What is the minimum number of elements a stack must have to cause an overflow in C?

a. 100

b. 256

c. 512

d. It depends on the implementation

In C, which library should be included for stack operations?

a. stdlib.h

b. stack.h

c. conio.h

d. math.h

Which of the following is the correct way to initialize an empty stack in C?

a. stack = []

b. stack = NULL

c. top = -1

d. stack = 0

The process of adding an element to a stack is known as:

a. Pop

b. Push

c. Insert

d. Remove

What is the purpose of the "top" variable in a stack?

a. It points to the bottom of the stack

b. It points to the middle of the stack

c. It points to the top of the stack

d. It is not used in stacks

Which of the following data structures is based on the stack principle?

a. Queue

b. Linked List

c. Tree

d. None of the above

In C, which function is used to remove the top element from a stack?

a. pop()

b. remove()

c. delete()

d. extract()

In a stack implementation using an array in C, what does the "top" variable represent?

a. The size of the stack

b. The index of the top element in the stack

c. The total number of elements in the stack

d. The capacity of the stack

Which of the following is the correct order of operations to perform when pushing an element onto a stack?

a. Increase top, then assign value

b. Assign value, then increase top

c. Decrease top, then assign value

d. Assign value, then decrease top

What happens when you try to pop an element from an empty stack in C?

a. Compile-time error

b. Run-time error

c. Undefined behavior

d. Nothing happens

Which stack operation is used to check the top element of the stack without removing it?

a. peek()

b. top()

c. view()

d. fetch()

In C, which data structure can be used to implement a stack efficiently?

a. Array

b. Linked List

c. Queue

d. Tree

What is the time complexity of the push operation in a stack implemented using an array?

a. O(1)

b. O(log n)

c. O(n)

d. O(n^2)

In C, which header file is commonly used for stack operations?

a. stack.h

b. stdlib.h

c. conio.h

d. stacklib.h

Which of the following is a drawback of using arrays to implement a stack?

a. Fixed size

b. Dynamic resizing

c. Efficient random access

d. Automatic memory management

The process of removing all elements from a stack is known as:

a. Emptying

b. Clearing

c. Popping

d. Deleting

In C, which function is used to allocate memory for a dynamic stack?

a. malloc()

b. alloc()

c. stack\_alloc()

d. create\_stack()

Which of the following statements is true about the stack data structure?

a. It follows the FIFO principle

b. It follows the LIFO principle

c. It has constant time complexity for all operations

d. It is used for sorting elements

What is the primary advantage of using a linked list to implement a stack over using an array?

a. Constant time complexity for all operations

b. Dynamic resizing

c. Efficient random access

d. Fixed size

In C, which keyword is used to declare a stack structure?

a. stack

b. structure

c. stack\_struct

d. typedef

What is the role of the "base" pointer in a stack implementation using a linked list?

a. It points to the first element in the stack

b. It points to the last element in the stack

c. It is not used in linked list implementations

d. It points to the middle element in the stack

Which of the following is an application of the stack data structure?

a. Breadth-first search

b. Depth-first search

c. Hashing

d. Sorting

The process of adding an element to a stack is also known as:

a. Insertion

b. Enqueue

c. Push

d. Append

In C, which function is used to release the memory occupied by a dynamic stack?

a. release()

b. free()

c. dealloc()

d. clear()

What is the purpose of the "capacity" variable in a stack implementation using an array?

a. It represents the total number of elements in the stack

b. It represents the maximum number of elements the stack can hold

c. It is not used in array implementations

d. It represents the size of the stack

Which stack operation is used to check if the stack is empty?

a. is\_empty()

b. empty()

c. stack\_empty()

d. check\_empty()

In a stack implementation using a linked list, what is the time complexity of the pop operation?

a. O(1)

b. O(log n)

c. O(n)

d. O(n^2)

Which of the following is an example of a real-world application where a stack is commonly used?

a. Spreadsheet calculations

b. Database management

c. Image processing

d. All of the above

In a stack implementation using a linked list, what is the role of the "next" pointer in each node?

a. It points to the previous node

b. It points to the next node

c. It is not used in linked list implementations

d. It points to the middle node

What is the purpose of the "max\_size" variable in a stack implementation using an array?

a. It represents the maximum size of the stack

b. It represents the current size of the stack

c. It is not used in array implementations

d. It represents the minimum size of the stack

In C, which function is used to perform the push operation on a stack implemented using a linked list?

a. push()

b. add()

c. insert()

d. enqueue()

The process of removing an element from a stack is also known as:

a. Remove

b. Pop

c. Dequeue

d. Eject

What is the primary advantage of using an array to implement a stack over using a linked list?

a. Dynamic resizing

b. Efficient random access

c. Constant time complexity for all operations

d. None of the above

In C, which data type is commonly used to represent the elements in a stack?

a. char

b. int

c. float

d. All of the above

What is the time complexity of the pop operation in a stack implemented using an array?

a. O(1)

b. O(log n)

c. O(n)

d. O(n^2)

Which of the following is a disadvantage of using a linked list to implement a stack?

a. Fixed size

b. Inefficient random access

c. Automatic memory management

d. None of the above

In C, which function is used to retrieve the number of elements in a stack?

a. size()

b. length()

c. count()

d. elements()

In a stack implementation using a linked list, what is the time complexity of the push operation?

a. O(1)

b. O(log n)

c. O(n)

d. O(n^2)

What is the primary advantage of using a stack in recursive function calls?

a. Reduces memory usage

b. Simplifies the code

c. Prevents stack overflow

d. Improves runtime performance

In C, which function is used to create a new stack?

a. new\_stack()

b. create\_stack()

c. init\_stack()

d. stack\_create()

What is the purpose of the "rear" pointer in a stack implementation using a linked list?

a. It points to the front of the stack

b. It points to the rear of the stack

c. It is not used in linked list implementations

d. It points to the middle of the stack

In C, which function is used to perform the pop operation on a stack implemented using a linked list?

a. pop()

b. remove()

c. delete()

d. dequeue()

What is the primary disadvantage of using a stack data structure?

a. Limited capacity

b. Slow access time

c. Limited functionality

d. Difficulty in implementation

In C, which function is used to check if the stack is full in an array-based implementation?

a. is\_full()

b. full()

c. stack\_full()

d. check\_full()

What is the purpose of the "front" pointer in a stack implementation using a linked list?

a. It points to the front of the stack

b. It points to the rear of the stack

c. It is not used in linked list implementations

d. It points to the middle of the stack