

Course: Introduction to Programming Using Python

Module 10. Data Structures. Part 1

Task 1

The user inputs a set of numbers from the keyboard. The received numbers should be saved in a singly linked list. After this, display a menu offering the user the following items:

1. Add an item to the list.
2. Delete an item from the list.
3. Show the list contents.
4. Check if the list contains this value.
5. Replace a value in the list.

The action is performed based on the user's choice, and the menu displays again.

Task 2

The user inputs a set of strings from the keyboard. The received strings should be saved in doubly linked list. After this, display a menu offering the user the following items:

1. Add an item to the list.
2. Delete an item from the list.
3. Show the list contents.
4. Check if the list contains this value.
5. Replace a value in the list.

The action is performed based on the user's choice, and the menu displays again.

Task 3

Implement a stack class to work with integers (integer stack).

The stack should have a fixed size.

Implement a set of operations for working with the stack:

- putting an integer to stack;
- pushing an integer from stack;
- counting the number of integers in stack;
- checking whether the stack is empty;
- checking whether the stack is full;
- clearing stack;
- getting a value without pushing the top integer from stack.

When the app starts, display a menu that a user can use to choose the desired operation.

Task 4

Change the stack from Task 3 so that its size is unfixed.