**The laboratory work 13**

Develop a program that implements work with collections.

1. The program must be developed as a console application on C # language.

2. Create objects of the classes "Rectangle", "Square", "Circle".

3. To implement the possibility of sorting geometric shapes for the class "Geometric Shape" add an implementation of the IComparable interface. Sorting is performed by the area of ​​the figure.

4. Create a collection of the ArrayList class. Save objects to collection. Sort the collection. Loop the contents of the collection.

5. Create a collection of the List <Figure> class. Save objects to collection. Sort the collection. Loop the contents of the collection.

6. Modify the class of the sparse matrix Matrix (presented in section "Auxiliary materials for performing laboratory works ") for working with three dimensions - x, y, z. Displaying elements in a method ToString () in the form that you think is the most convenient. Develop an example of using a sparse matrix for geometric shapes.

7. Implement the "SimpleStack" class based on a singly linked list. Class SimpleStack inherits from SimpleList class (presented in the section nine "Auxiliary materials for laboratory work"). It is necessary to add methods to the class: • public void Push (T element) - adding to the stack; • public T Pop () - read and remove from the stack.

8. An example of the work of the SimpleStack class to implement on the basis of geometric figures.