**Discipline** - SoftwareEngineeringMethods.

Laboratory №1 - 4

**STRUCTURAL DESIGN METHOD**

Tool design: MicrosoftVisio or Yed Editor

Contents

1. Statement of a problem
2. Requirements Analysis
3. Design of Diagrams
4. Testing
5. Conclusion

**Task**: Development of the project for finding the maximum and minimum element of the array and their indices.

**Design** - The structural method – decomposition - is applied to the solution of the problem. To decompose the task at the top level (modules) and the lowest level (function). Process data for exception cases.

**2. Requirements analysis:**

- The array to be dynamic;

- An array of one-dimensional;

- The size of the array is the keypad (the variable n;

- Maximum and minimum elements of the array separate functions;

- Check the entered data;

1. **Design of diagrams**

Review of diagram names:

Input= function of input;

Output =function of output;

Max/Imax=function of searching max element and index of max element in the array;

Min/Imin=function of searching min element and index of min element in the array.

**First level design by top-down**



Fig.1. First level design by top-down

**Diagrams of the lower-level design**

2-nd level of decomposition is realized on the level of the function programming language C ++.

Fig.2 Input /output data

Fig.3. Finding the maxium element and its index Fig. 4. Finding the minimum element and its index

1. **Testing task**

**Assembling task from the bottom up**

Block input Testing data you entered is correct. Block Output Testing for correct output. 

Fig.5. Testing input/output

If our program has been tested on the data input and output with no errors, then we move on to testing units (Max, imax) and (Min, imin)

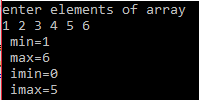
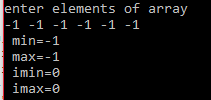


Fig. 6. Testing of Max, imax and Min, imin



**Testing task on the correct processing, computation and non-standard exception case.**

The test for the best case worst case

** **

1. **Conclusion**

The following topics have been learned during the design project

-Construction Charts in MicrosoftVisio 2013;

- Development of an algorithm for the given conditions;

- Arrays and their application in C ++;

- Introduction to the basics of software testing.