Expression System Calculator

KH-221b.e

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Software Requirements Specification Document

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1. Introduction

1.1 Purpose

The purpose of this SRS is to form the basis of an organization's entire project. The intended audience is the participants in the learning process, students and teachers.

1.2 Scope

This document specifies the functional requirements for a calculator program. The program is designed to act like a “handheld calculator” which solves the system of equations of two functions in accordance with the assignment. The application of the software is being specified, including relevant benefits such as input predefined rang(a,b) and step; program calculate function y for each value x from range (a,b); the results of each step will be displayed on the screen

1.3 References

This project was developed taking into account METHODICAL RECOMMENDATION TO SOFTWARE ENGINEERING LABORATORY PRACTICE Authors: associate professor Melnyk Karina and assistant Kondratov Oleksii Department of software engineering and management information technologies, NTU “KhPI” Kharkiv, 2021

2. The Overall Description

2.1 Product Perspective

This product is independent and totally self-contained. This is a research-oriented project.

2.2.1 System Interfaces

The program shall be written in standard C++, as compiled by the GNU C++ compiler. The program shall use only standard C++ library functions. The program shall be usable on any system which supports the g++ compiler, and shall not require any particular hardware or software.

2.1.2 Interfaces

This is a description of how the system will interact with its users. There is a command line.

2.1.3 Hardware Interfaces

The system has no hardware interface requirements

2.1.4 Software Interfaces

Specify the use of required software products and interfaces with other application systems.

The system must use Microsoft Visual Studio 2019

2.2 Product functions

Provide a summary of the major functions that the software will perform. The application should also provide the data input from keyboard and file and output to screen and file. The application has to calculate the values by the following formula for the range with a predefined step. The results of each step should be displayed on the screen.

2.3 Constrains

The system has no constraints

2.4 Assumptions and Dependencies

This document assumes that the program is built for the operating system it is running on.

2.5 Apportioning of Requirements

The system has no apportioning of requirements

3. Specific Requirements

The system shall:

- get input from the user
  - input x
  - input n
- calculate expression based on user input
- display answer

Activity and use-case diagrams may be found in Appendix A

3.1 External Interfaces

Keyboard that the user can use in order to input values.

3.2 Functions

- Validity checks of the input values
- Calculation
- Answer output

3.3 Performance Requirements

There are no performance requirements for the system.

3.4 Logical Database Requirements

There are no logical database requirements for the system.

3.5 Design Constraints

3.5.1 Standards Compliance

There are no standards that the system has to comply with.

3.6 Software System Attributes

Program should run smoothly in the console window.

3.6.1 Reliability

The program is reliable enough if it is just working and not crashing

3.6.2 Availability

The system should run infrequently, on-demand only.

3.6.3 Security The software does not require any security features.

3.6.4 Maintainability

The software does not require any additional maintainability features.

3.6.5 Portability

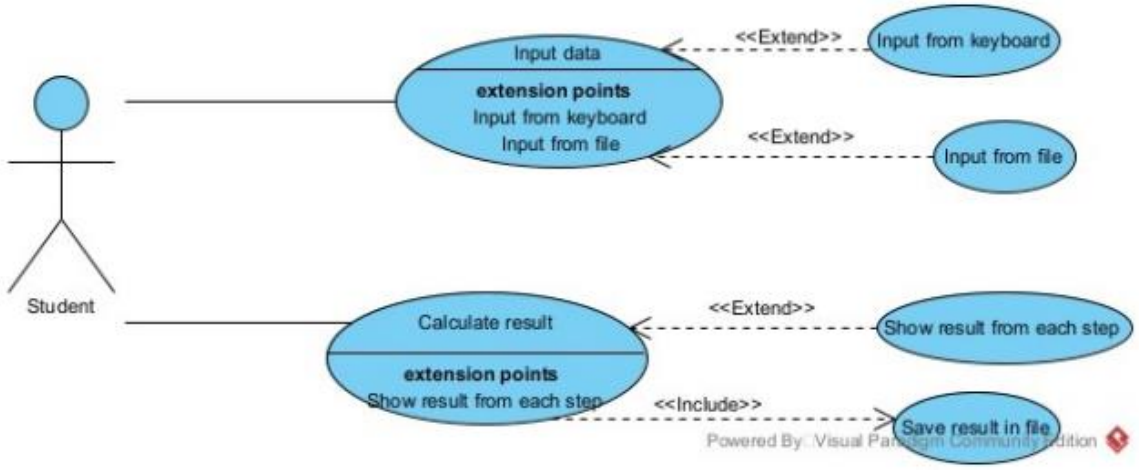
The software does not require any portability features.

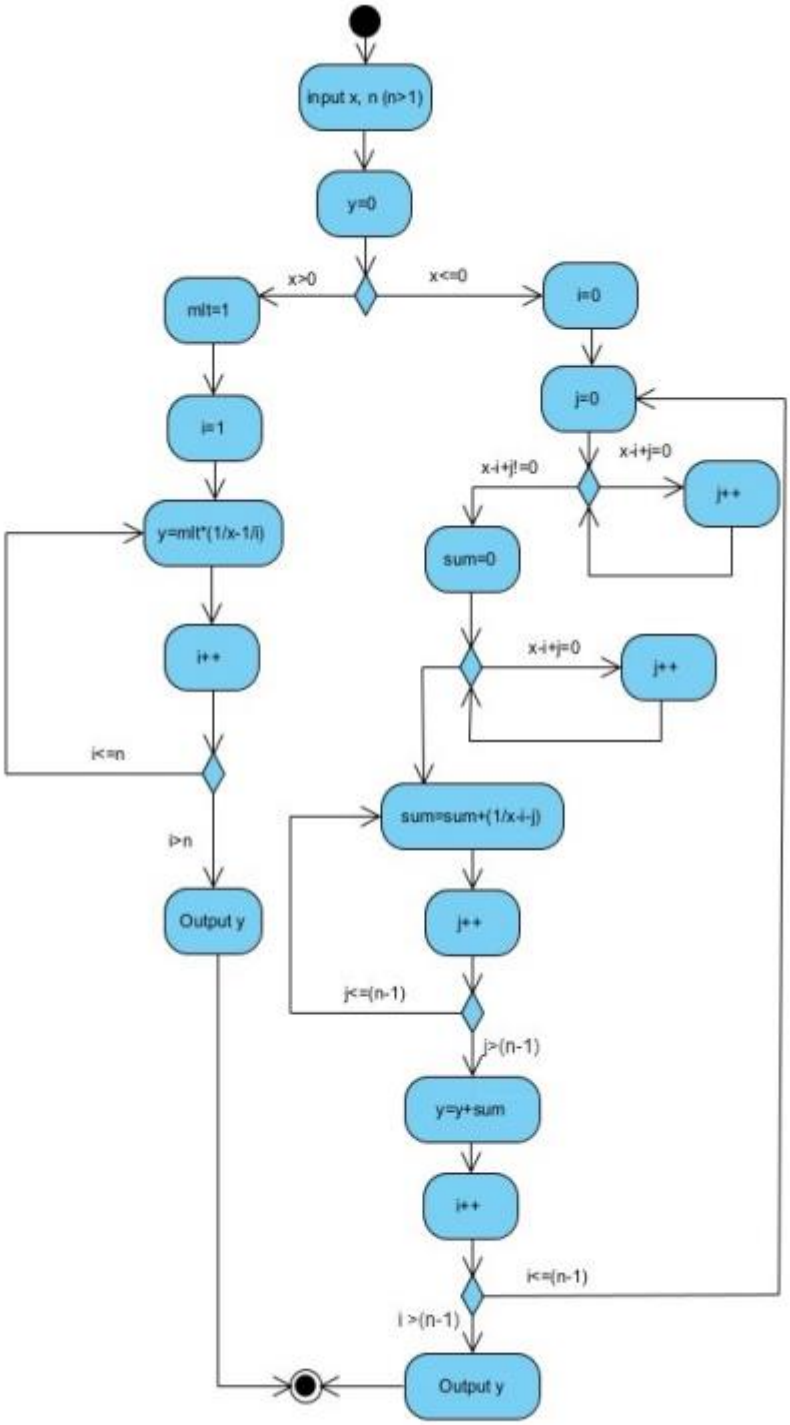
4. Change Management Process

The program will not change at all, change management is obsolete

5. Supporting information

Appendix A




input x, n (n>1)
y=0
x>0
x<=0
mlt=1
i=0
i=1
j=0
x-i+j!=0
x-i+j=0
j++
y=mlt*(1/x-1/i)
sum=0
i++
x-i+j=0
j++
i<=n
sum=sum+(1/x-i-j)
i>n
Output y
j++
j<=(n-1)
j>(n-1)
y=y+sum
i++
i<=(n-1)
i >(n-1)
Output y