

**DEVELOPMENT OF A NUMERICAL SOLVING SOFTWARE COMPLEX OF THE  
NESTING EQUATION***Abdusalimov Saidislom Abramatovich**Termez state universeti master of Applied Mathematics degree 2**Rakhmonov Zafar Ravshanovich**PhD scientific leader*

**Annotation:** solving a small software issue or problem is much simpler. But when large programs are created, it takes a large team and a lot of time to study their requirements, find solutions to the issue, develop algorithms. Today, when creating large programs, a system has been created for submitting programs at the deadline. This system is called the SDLC (Software development life cycle) program creation life cycle

**Keywords:** software, software development stages, project, SDLC

Together with the development of modern science and technology, the issues of mathematical modeling, in-depth analysis of physical processes and their solution using a computer are becoming relevant. In particular, the theory of heap equations (Navy-Stokes equations), which represent natural processes such as environments in motion, heat transfer, and fluid flows, is being applied in many fields of science. In cases where it is not possible to solve such complex differential equations exactly, finding a solution through numerical methods is widely used. This graduation work is devoted precisely to the issue of numerical solving of the heap equations, in which such stages as the analysis of the mathematical model of the differential equation, the selection of suitable numerical methods and the development of a software complex on their basis are covered. Based on numerical Differentiability, Chebyshev interpolation or numerical integralization methods, one of the most widely used solutions in the work, y

SDLC is a systematic process for creating software that ensures the quality and correctness of the software created. SDLC's goal is to produce high-quality software that meets customer requirements. The development of the system should be completed within a predetermined time and a fixed price. SDLC is considered to consist of a detailed plan, which explains the planning, creation and maintenance of specific software. Each stage of the SDLC life cycle will have its own process and results that go to the next stage<sup>2</sup>. SDLC ahamiyati

The main reasons that are important for the development of the SDLC software system are as follows. \* SDLC provides a framework for planning and evaluating a project • Provides the basis for the standard set of activities and results \* SDLC is a project monitoring and control mechanism • Increases visibility for all stakeholders in the project planning process \* Increases program development speed \* Ensures the regularity of customer and programmer contacts • Helps reduce additional costs of the project management plan 3. SDLC stages Stage 1: study and analysis of technical requirements Stage 2: development of technical and economic foundations (the total budget of the project (program) is determined) Stage 3:

design (algorithm creation) Stage 4: coding Step 5: Test (check whether each function works correctly) Stage 6: installation (process of installing the program on the client's device or hosting) Stage 7: Tex Requirements detection is the first step in the SDLC process. It is conducted with information from all stakeholders and industry professionals. At this stage, the study and planning of each request (request) of the program is carried out. This stage gives a clearer picture of the scale of the entire project and the problems, opportunities and guidelines that are expected when the project is launched. At the requirements collection stage, a team will be needed to obtain detailed and specific requirements. This will help companies organize the time period they need to finish the work of the new software project being created.

Stage 2: after the completion of the feasibility study requirements analysis stage, the next SDLC stage is the identification and documentation of software needs. This process is also known as the "SRS" document, using the "software requirements specification" document. He developed during the life cycle of the project includes everything that needs to be removed. The main benefit of this step is that it answers the question of whether the program that is planned to be developed can be implemented. This is also known as physicality. There are basically five types of feasibility studies: 1. Economic: can we complete the project within the budget or not? 2. Legal: can we consider this project as cyber law and other regulatory framework/compliance?' 3. Operational feasibility: can we create the operations that the customer expects? 4. Technique: support current device system software3- stage: design At this third stage, system and software design documentation is prepared according to the specification document of the requirement. This will help determine the overall system architecture. The design stage serves as an introduction for the next stage of the model. At the design stage, algorithms are also created. Two types of design documentation developed at this stage should be available: High-end design (HLD • Brief description and name of each module • Summary of the functionality of each module \* Interface connection and connections between modules • Tables of some of the data and their main elements • Complete architectural diagrams and technology details Lower level design (LLD \* Functional logic of modules \* Tables of some of the data containing the type and size \* Full interface details • List of error messages • Complete input and output data for each module Stage 4:

Stage 5: Test After the program codes are written and ready, it is checked at the testing stage. Usually the test is carried out using a separate firm/company service. The testing team begins testing the functionality of the entire newly created program. This is done to verify that the entire program works according to customer demand. At this stage, QA and the Test team can find some bugs/defects that inform the developers (developers). The development team corrects the error and sends it to the QA for retest. This process continues until the created program is error-free, stable and works according to the business needs of this system. Stage 6: installation/placement Once the program testing phase is complete and there are no errors left in the system, the final deployment process begins. Based on the feedback provided by the project manager, the final application version problems with the placement of te

Stage 7: maintenance After the created program is installed and customers start using the developed system, the following 3 actions occur. • Error correction-errors are reported due to

certain scenarios that have not been checked at all \* Update-update the program to new versions \* Improve-add some new features to existing software The main focus of this SDLC phase continues to meet needs it is calculated to ensure that the output and the program work according to the specification mentioned in the first step. Conclusion in this graduation work, the theoretical foundations of numerical solution of the nesting equations were covered and a software complex was developed to find practical solutions. Using algorithms compiled on the basis of a selected number of methods, solutions for various initial and boundary conditions were calculated. Results obtained through the software complex to the physical content of the heap equations

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