International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 08 Issue: 05 | May 2021 www.irjet.net p-ISSN: 2395-0072

AUTOMATIC CODE GENERATION FOR C AND C++ PROGRAMMING

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Abstract – *A flowchart can be a graphic diagram representation of programming logic. Some shapes and connectors represent the different types of actions or steps in a process. A flowchart is a very important tool in the planning phase in a program development cycle. Programmers can use it to design and develop an algorithm of a program. Moreover, a flowchart is also very effective for visual learners to write and comprehend algorithms in computer programming courses. This paper aims to provide a tool that serves as an automatic code generator using a structured Flowchart. The tool is composed of basic flowchart shapes to be combined into a structured flowchart that can be converted into source codes. In addition, the system's performance has been evaluated by two groups: 5 experts and 93 general users. The results showed the average values of the satisfaction levels were 4.48 and 4.27 with standard deviations at 0.59 and 0.64 for the experts and the general users respectively. It was found that the system performance of the tool reached an agreed level. It was revealed that the developed system can be used precisely as intended effectively.*

***Key Words*: Code Designer, Eclipse, Algorithm, Flowchart, Compile and Run.**

1. INTRODUCTION

In Automatic Code Generation, you can just simply draw the flowchart by using provided toolbar and some information such as several variables, type of variables, etc. Then you get the automatic Algorithm and C, C++ Code. You can also save the program, compile the program, and run the program. Generally for developing a C, C++ program we have to remember the syntax of methods, operators, keywords, etc. Which is very complex so we develop an application which will help you to easily develop C, C++ program with friendly GUI & within the less time? In this we have to just draw a flowchart with tools provided and the application will give out the algorithm and complete the program. It is easy to perform as the tools are inbuilt provided and error occurring chances are reduced.

1.1. Problem Statement

Generally for developing a C, C++ program we have to remember the syntax of methods, operators, keywords, etc. Which is very complex so we develop an application which will help you to easily develop C, C++ program with friendly GUI & within the less time? In this we have to just draw a flowchart with tools provided and the applications will give out the algorithm and complete the program. It is easy to perform as the tools are inbuilt provided and error occurring chances are reduced.

1.2. Objectives

The main objective of this project is to make the implementation of the C or C++ code easy. As it is very difficult for generating large codes.

1.3. Scope

The scope of the project is to make it users easy for to generate large codes. There is just a need to draw a flowchart of the code by using different shapes and it will automatically generate the code and also its algorithm which makes the user work easy and convenient.

1.4. Motivation

The main motivation of this paper is to make the process of coding generation easy and convenient for everyone. I was always curious to know how things work in java coding. This led me to develop this desktop application.

As coding is the main part of every I.T sector. Coding helps in making different applications, websites. It is the backbone of the software.

2. RELEATED WORK

Flowchart plays an important role in system requirements analysis, preliminary design, and detailed design aspects. It is particularly important when making communication and discussion, analysis and design of algorithms. But the traditional use of the flowchart is only limited to display, communication, description, and its role is only limited to graphical, intuitive, clear, and easy communication and

documentation compilation. So, automatic generation of a specific language code from a flowchart will be a very important practical significance, it allows the designer to design the system from high-level functions without concern for complicated code, and is more in line with the objective of MDA [10].

Recently, there are some reports about the automatic generation of code from the flowchart. However, these re-searches all have certain deficiencies, and the core algorithm and technologies are not public, so the accuracy and validity are hard to be convinced. More researches, such as " Athtek "Code to "Flow Chart", "Code to Chart", "Auto Flowchart" are just it's reverse engineering, that is automatic generation of flowchart from code.

Hemlata Dakhore presented a strategy based on an XML parser to generate code [11]. But the paper did not dis- cuss how to identify the semantic of a specific flowchart. That is, the identification method of selection and loop are not discussed. According to the method, it must first determine whether a judgment node is a loop or selection, this information must be specified in advance by the modeler. If so it will lose the flexibility and convenience of a flowchart model, and also lack automation and intelligence. And the paper only gives a sequence-selection simple example, for the algorithms of converting flowchart to XML and automatically generating code is not discussed. Martin C. Carlisle proposed a modeling and simulation system RAPTOR [12], which provides selection and loop primitives. So the RAPTOR is a specialized and non-standard graphical language. And this article only describes the functions of a system. Tia Watts gave a flowchart modeling tool SFC, which can be used to automatically generate code [13]. But its operation is mechanical, can only insert pre-standard graphical elements from fixed points, the flexibility is very low, an operation is not convenient, lack of scalability, do not support the component model. Most importantly, it does not support a nesting flowchart (processing nodes can be implemented as a sub-flow chart). Kanis Charntaweekhun simply introduced the methods of how to use a flow chart to program and its advantages and said that the developed system can transform flowchart into code. But, the conversion algorithm, key technologies, and data structures are not mentioned, and the examples given are very simple [14].

3. PROPOSED SYSTEM

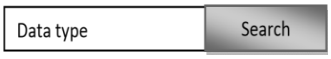
- In this project, we develop software that helps the user to easily create your C++ program.

This software will provide the following functionality as follows:

- The user has an option to search any concept of C++ language. E.g. data types, keywords, etc.

The user will get this facility by simply entering the text inside the given textbox & click on the search option.

e.g.:- Search:



After clicking on the search button user will get information about the topic which is entered inside the textbox. It should provide a toolbar that helps the user to construct a flowchart with the help of shapes which is used for looping statements, decision making statements & many other functions

Shapes for a flowchart:-

Start/End

Input /Output

Decision/Looping

Operation

Link

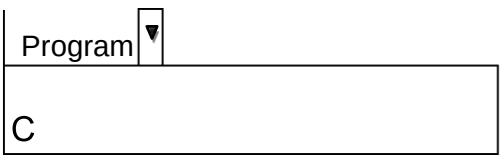
Connector

So, the user can easily drag & drop shapes from the toolbar & draw a flowchart, while drawing flowchart the software will accept information like which looping statement, which header file, which operates by using combo box/ list box as follows:-

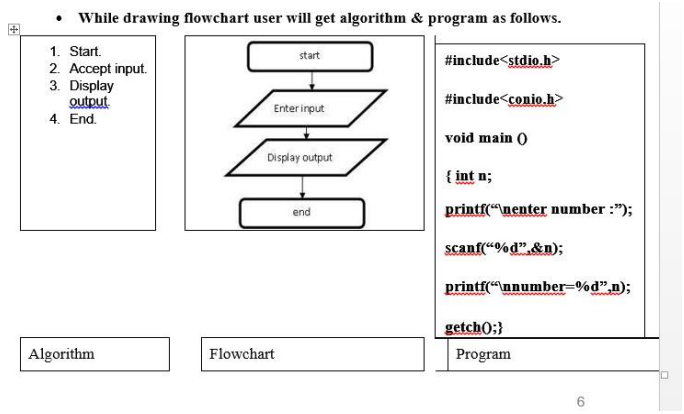
e.g.:-

If user drag option for start 

Then the software asks the user which type of program you want to do i.e. C/C++



While drawing flowchart user will get an algorithm & program as follows:-



It should provide a facility to save the program in a file with an extension or '.cpp '.

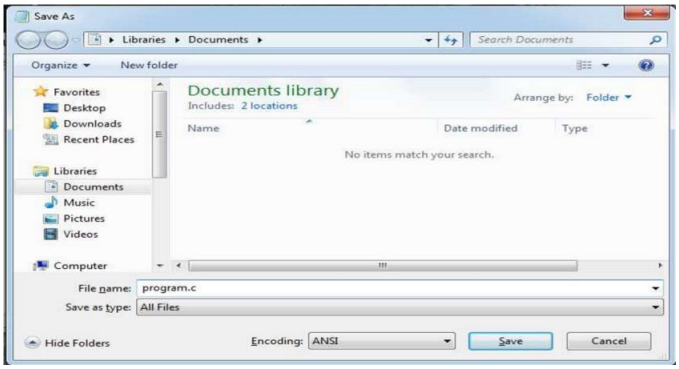


Fig.: Window for saving program

4. REQUIREMENT ANALYSIS

Requirements analysis in systems engineering and software engineering encompasses those task that determines the needs or condition to meet for a new or altered product, taking account of the possibly conflicting requirements of the various stakeholders, such as beneficiaries or users.

Requirement analysis is critical to the success of a development project. The requirement must be documented, actionable, measurable, testable, related to identified business needs or opportunities, and defined to a level of detail sufficient for system design.

Software /Hardware Requirements:-

Hardware Requirements:-

Processor: Pentium -II

RAM: 2 GB

Hard disk: 500 GB

Software Requirements:-

Operating System: Windows x p sp3

Software: JDK1.5.0

Tool: Eclipse

5. ALGORITHM

This software simply works as follows:

1. Start.
2. Ask the user for searching for any concept of C++.
3. Provide a toolbar to the user for drawing a flowchart with the help of some condition.
4. While drawing a flowchart it generates a program & algorithm at the same time.
5. Display algorithm & program.
6. Save the program in a file with extension or '.cpp '
7. End.

6. IMPLEMENTATION

6.1. User Flow

A use case diagram at its simplest is a representation of a user's interaction with the system that shows the relationship between the user and the different use cases in which the user is involved. A use case diagram can identify the different types of users of a system and the different use cases and will often be accompanied by other types of diagrams as well.

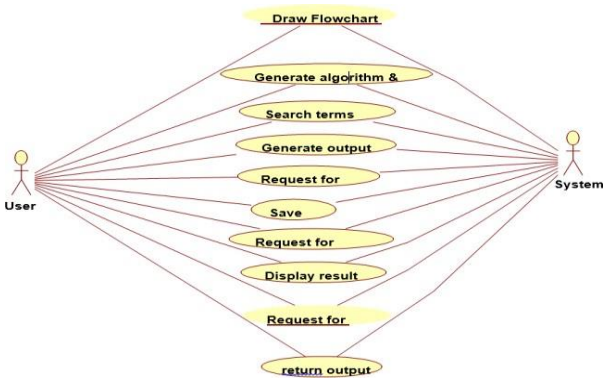
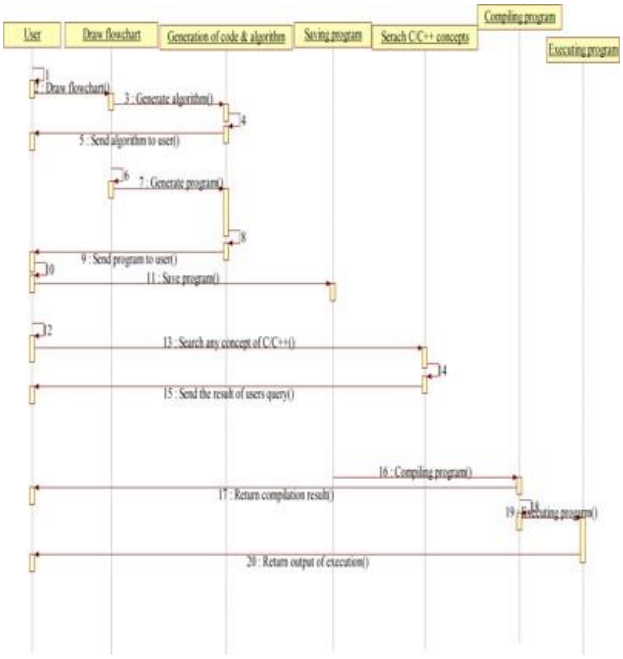


Fig6.1 Use Case Diagram

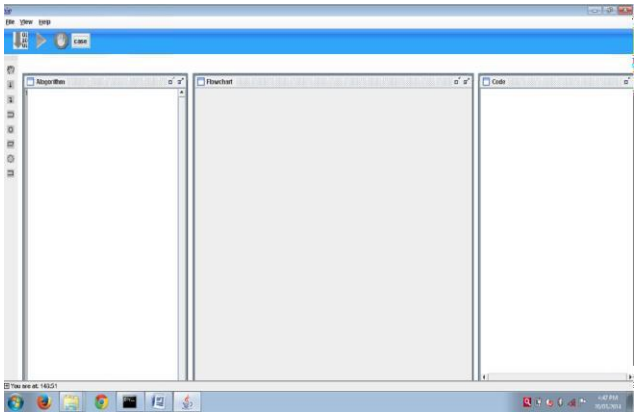
6.2. Sequence Diagram

A sequence diagram is a type of interaction diagram because it describes how—and in what order—a group of objects works together. These diagrams are used by software developers and business professionals to understand requirements for a new system or to document an existing process.

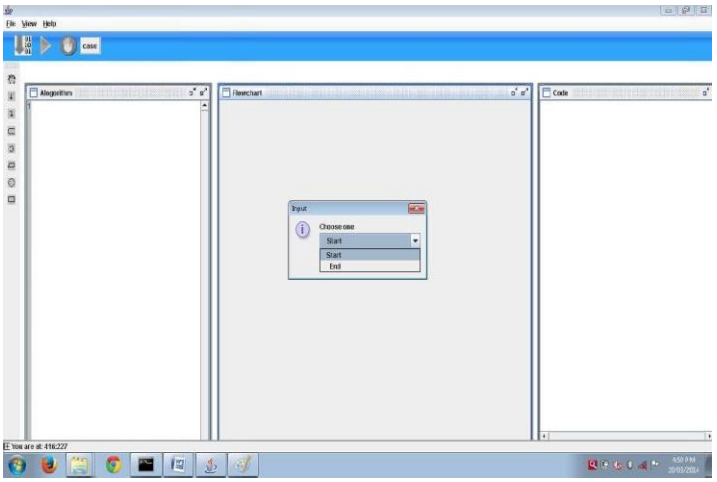


7. RESULT

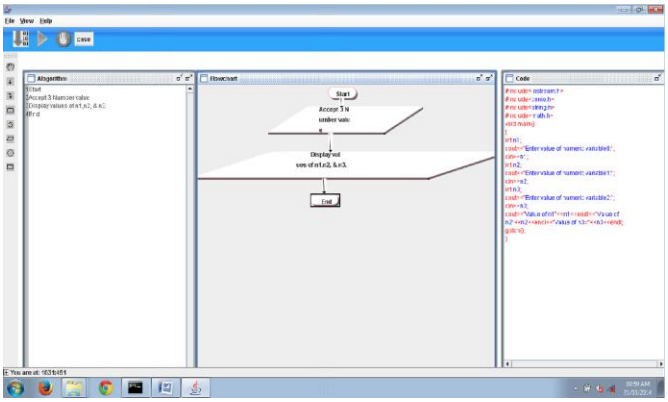
7.1. Main Frame



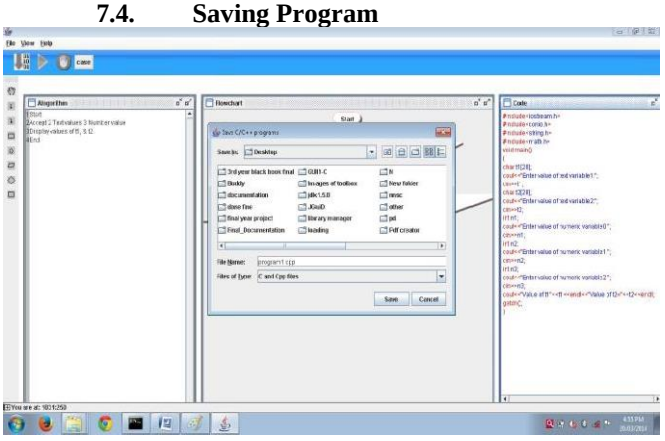
7.2. Drawing Flow Chart



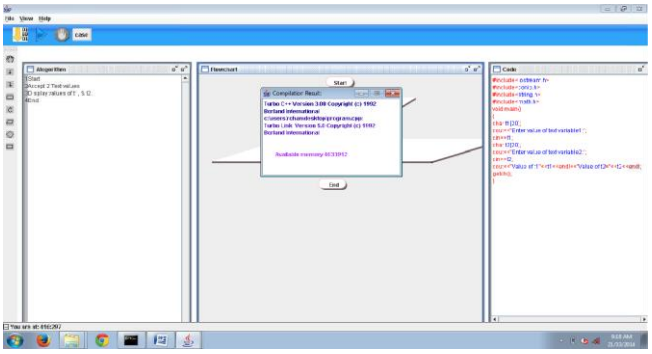
7.3. Code and Algorithm Generation



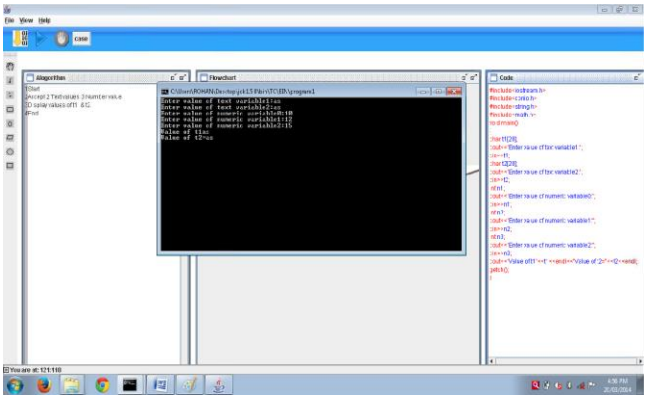
7.4. Saving Program



7.5. Compiling Program



7.6. Executing Program



8. SUMMARY

As the structure covers all nesting structures (continued nesting structure is only a combination of these structures), so we can say the algorithm can correctly generate the code for structured identified flow-chart.

- This deals with developing good quality software with affordable time and reasonable cost.
- We have to take a mature process to determine the time and requirements to produce the project.
- The software development life cycle is the key component of any software development process. This is a requirement phase, design phase, implementation phase, installation and checks out phase, operation, and maintenance phase, and sometimes retirement phase.

9. CONCLUSIONS

Automation is the mechanism to replace the human intervention in any process by the machine. Here we have considered the automation in the area of computer programming where researchers have tried to ease up the job of programmer by providing different tools and techniques to generate the programming code. This paper aims to give insight into the available automatic code generation methodologies for different types of input generating the code in the different programming languages.

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