

# CodeFlow Project

## Group Members:

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# Project Motivation

## Challenges in Programming Education

- Abstract nature of code.
- Complexity in creating logical program flows.
- Lack of user-friendly tools for beginners.

## Objective

- Simplify programming concepts.
- Improve comprehension and problem-solving skills.
- Boost confidence among novice programmers.

# Project Description

## CodeFlow

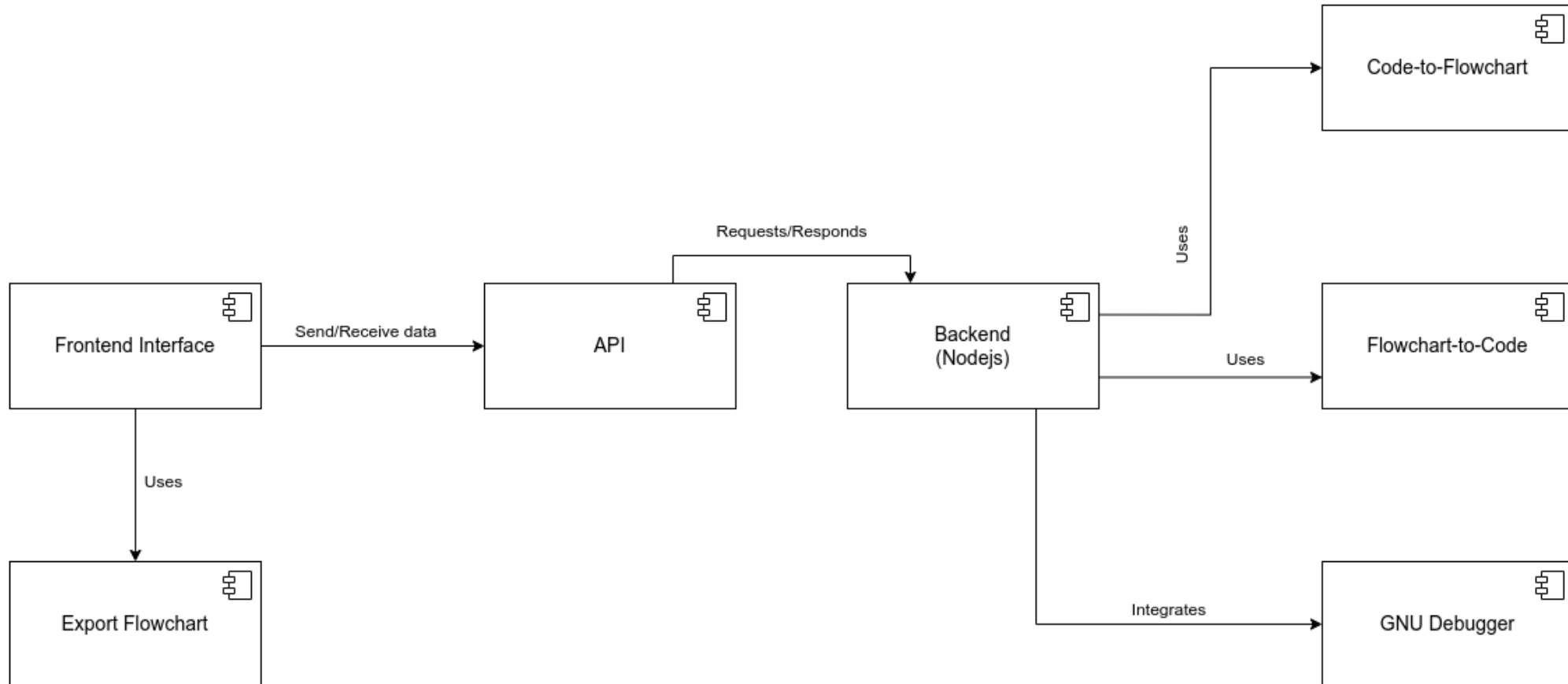
A web-based platform for novice programmers.

## Key Features

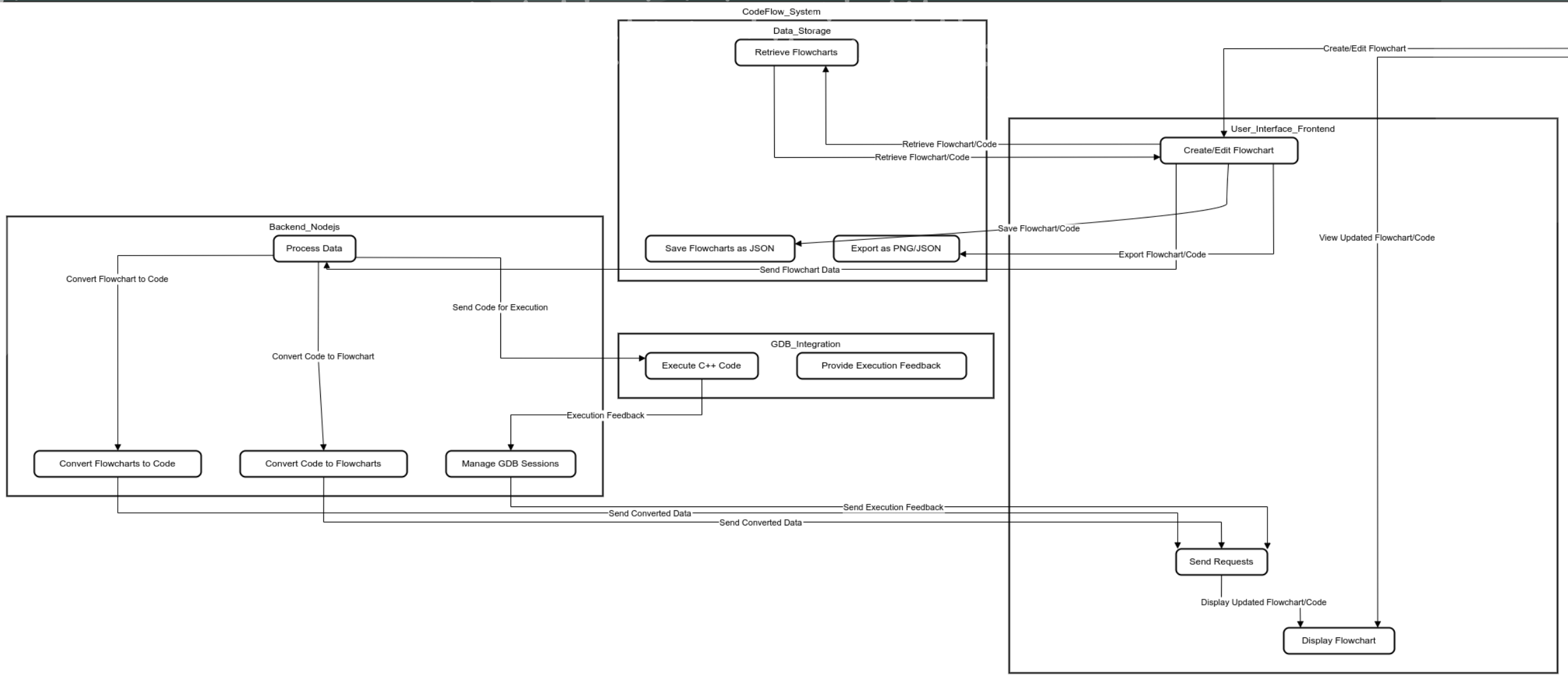
- Drag-and-drop flowchart creation.
- Accurate flowchart-to-code and code-to-flowchart Conversion.
- Step-by-step program execution with memory map visualization.

# Diagrams - Component Diagram

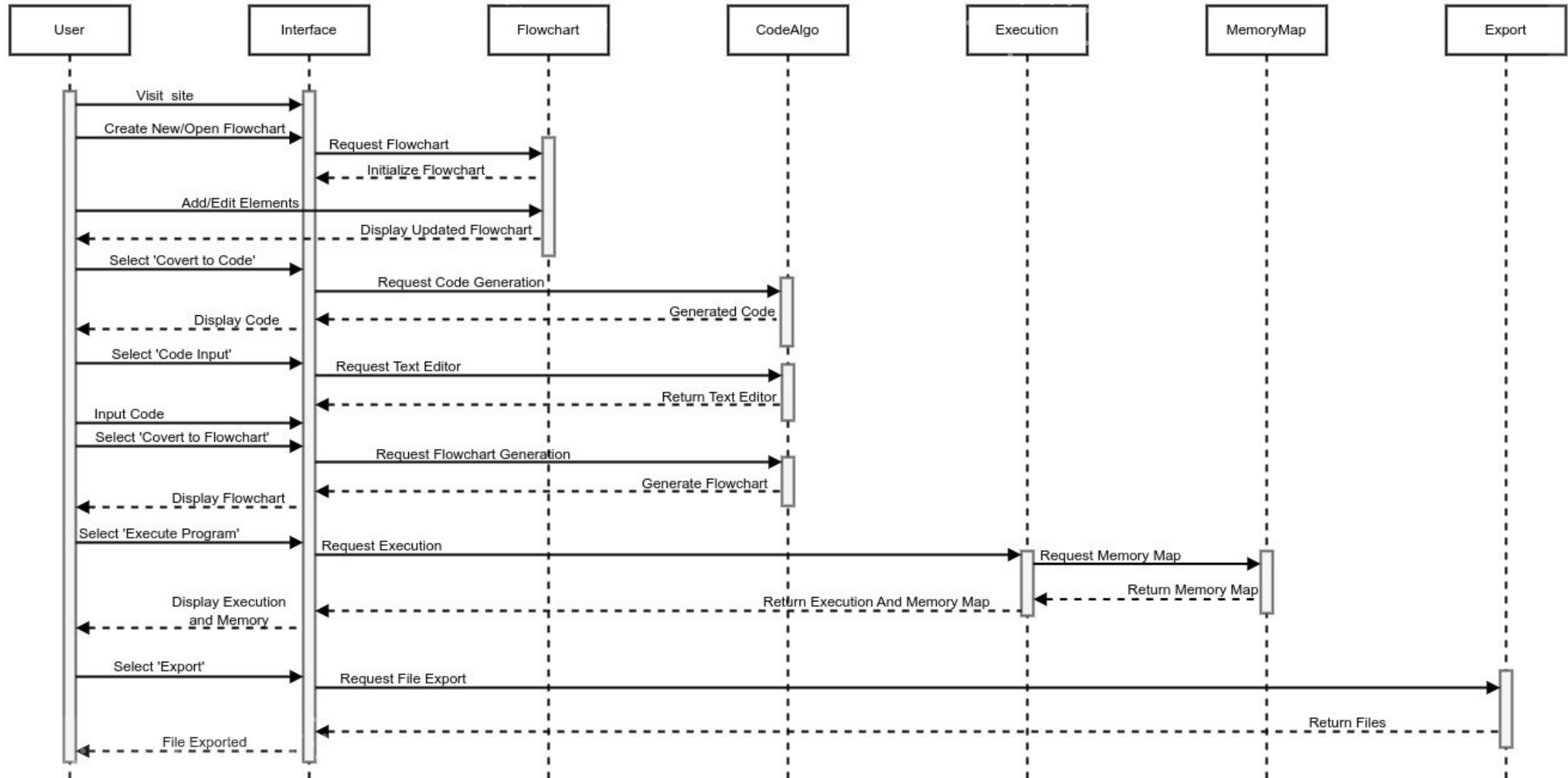
CodeFlow



# Diagrams - Data Flow Diagram (DFD)



# Diagrams - Sequence Diagram



# Screenshots

File Edit View

Start Process Input Decision Output End

Run Convert

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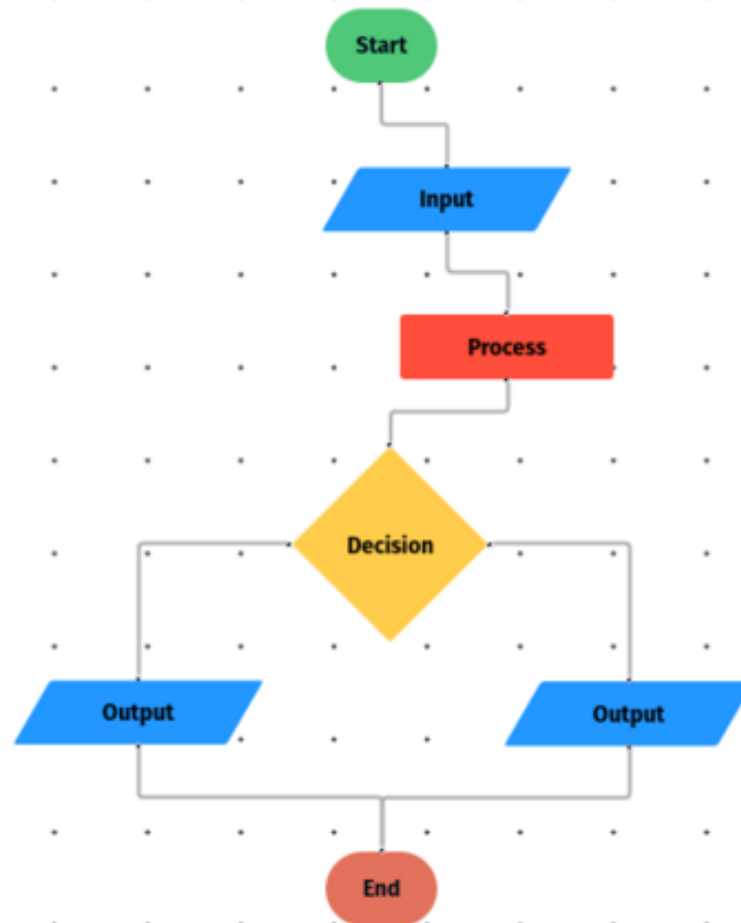
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Start

Hello World !!!

End

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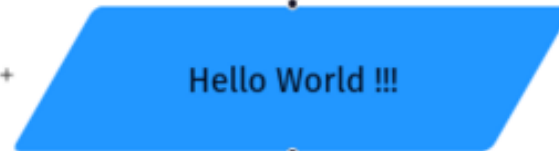
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```
1 #include <iostream>
2
3 int main() {
4     std::cout << "Hello, World!" << std::endl;
5     return 0;
6 }
7
```



File Edit View

Start Process Input Decision Output End

Run Convert

```
1 #include <iostream>
2
3 int main() {
4     int num1, num2, sum;
5
6     std::cout << "Enter integers: ";
7     std::cin >> num1;
8     std::cin >> num2;
9
10    sum = num1 + num2;
11
12    std::cout << "The sum is: " << sum << std::endl;
13
14    return 0;
15 }
16
```

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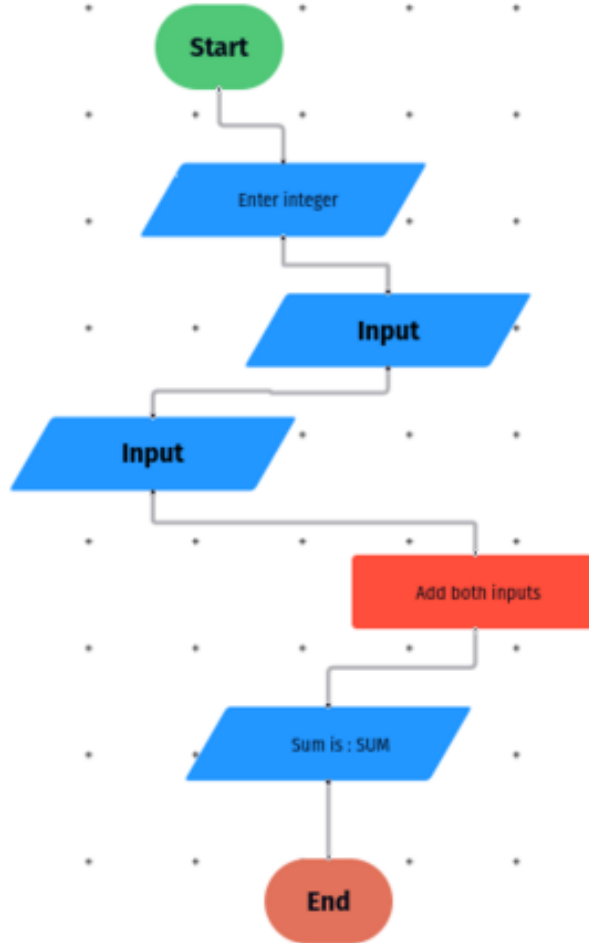
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12    std::cout << "The sum is: " << sum << std::endl;
13
14    return 0;
15 }
16 |
```



# Future Plans & Enhancements

## Short-Term Goals

- Enhance program execution functionality.
- Improve user interface based on feedback.
- Enhance flowchart-to-code conversion accuracy.

## Long-Term Goals

- Integrate additional programming languages.
- Develop mobile-friendly version. Add collaborative features for team projects.
- Implement AI-based code suggestion and error detection.

# Conclusion

## CodeFlow

- Innovative solution for programming education.
- Bridges gap between visual and textual programming.
- Empowers novice programmers with intuitive tools.

## Acknowledgments

Special thanks to project advisor Mohsin Sami for their support.