

**Assignment -2 : SparseMatrix**

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Advanced Algorithms

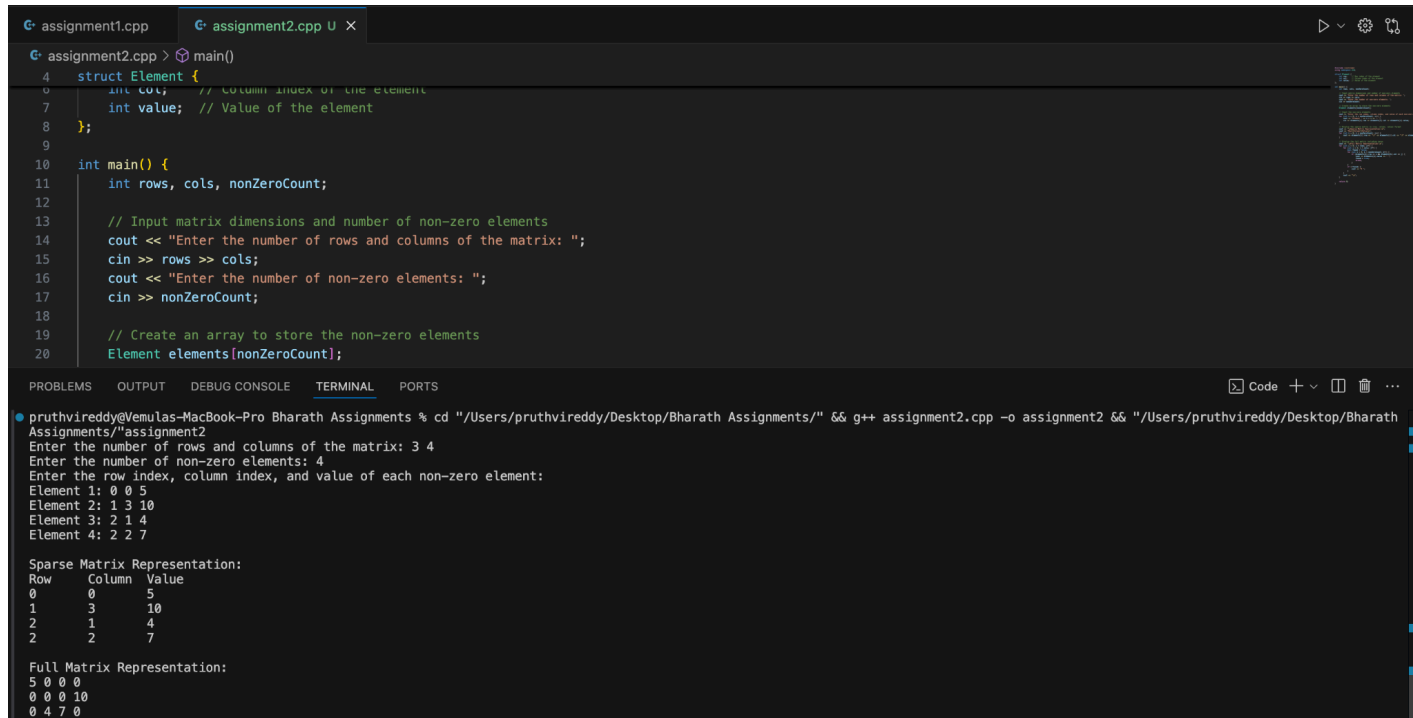
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GitHub repository : <https://github.com/RajaBharathReddyM/cpp/blob/main/assignment2.cpp>

## Assignment 2 : SparseMatrix

### Example 1:



```
4 struct Element {
5     int col; // Column index of the element
6     int value; // Value of the element
7 };
8
9
10 int main() {
11     int rows, cols, nonZeroCount;
12
13     // Input matrix dimensions and number of non-zero elements
14     cout << "Enter the number of rows and columns of the matrix: ";
15     cin >> rows >> cols;
16     cout << "Enter the number of non-zero elements: ";
17     cin >> nonZeroCount;
18
19     // Create an array to store the non-zero elements
20     Element elements[nonZeroCount];
```

pruthvireddy@Vemulas-MacBook-Pro Bharath Assignments % cd "/Users/pruthvireddy/Desktop/Bharath Assignments/" && g++ assignment2.cpp -o assignment2 && "/Users/pruthvireddy/Desktop/Bharath Assignments/"assignment2

Enter the number of rows and columns of the matrix: 3 4  
Enter the number of non-zero elements: 4  
Enter the row index, column index, and value of each non-zero element:  
Element 1: 0 0 5  
Element 2: 1 3 10  
Element 3: 2 1 4  
Element 4: 2 2 7

Sparse Matrix Representation:

Row	Column	Value
0	0	5
1	3	10
2	1	4
2	2	7

Full Matrix Representation:

```
5 0 0 0
0 0 0 10
0 4 7 0
```

## Example 2:

```
assignment2.cpp > main()
4 struct Element {
5     int col; // Column index of the element
6     int value; // Value of the element
7 };
8
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10 int main() {
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19     // Create an array to store the non-zero elements
20     Element elements[nonZeroCount];
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Assignments/"assignment2  
Enter the number of rows and columns of the matrix: 4 6  
Enter the number of non-zero elements: 4  
Enter the row index, column index, and value of each non-zero element:  
Element 1: 0 3 4  
Element 2: 1 0 2  
Element 3: 2 5 8  
Element 4: 3 2 1

Sparse Matrix Representation:

Row	Column	Value
0	3	4
1	0	2
2	5	8
3	2	1

Full Matrix Representation:

```
0 0 0 4 0 0
2 0 0 0 0 0
0 0 0 0 0 8
0 0 1 0 0 0
```

### 1) How long did you spend on this assignment ?

I spent approximately 3 hours working on this assignment, which included the time to understand the problem requirements, write the initial code, test the program, and troubleshoot errors that came up.

### 2) Based on your effort, What letter grade would you say you earned ?

Considering the effort I put into this assignment, I would give myself a grade A. I worked diligently, spent a significant amount of time learning and applying the concept and made a strong effort to meet the assignment requirements.

### 3) Based on your solution, what letter grade would you say you earned ?

Based on the functionality and completeness of my solution, I would rate it as a B. the program correctly implements the basic requirement and it runs without major issues.

However, there may be some minor inefficiencies or areas for improvement, such as optimizing the code for better performance.

**4) Provide a summary of what doesn't work in your solution, along with an explanation of how you attempted to solve the problem and where you feel you struggled ?**

My solution is working as per the requirements, but I faced a minor struggle with understanding some of the more advanced C++ features that could potentially simplify the code, such as using dynamic data structures or implementing error handling to manage edge cases better.