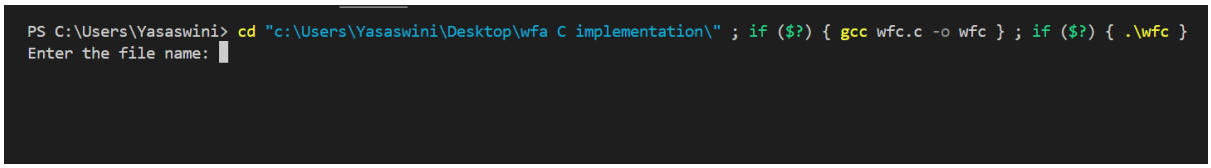
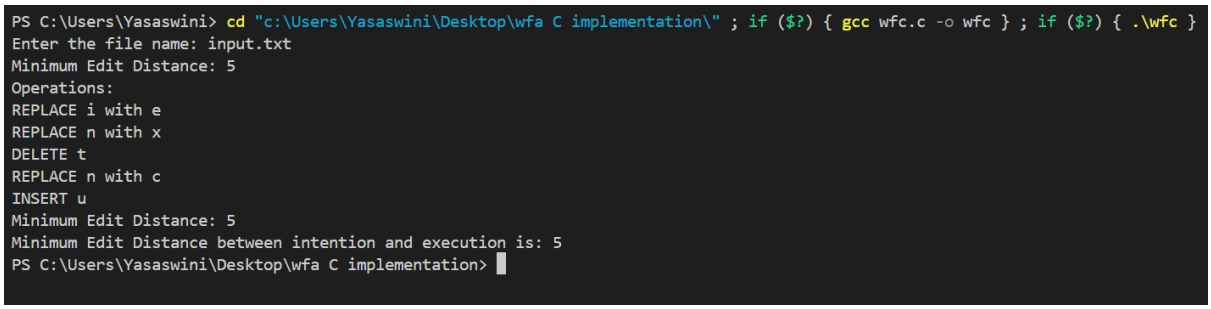
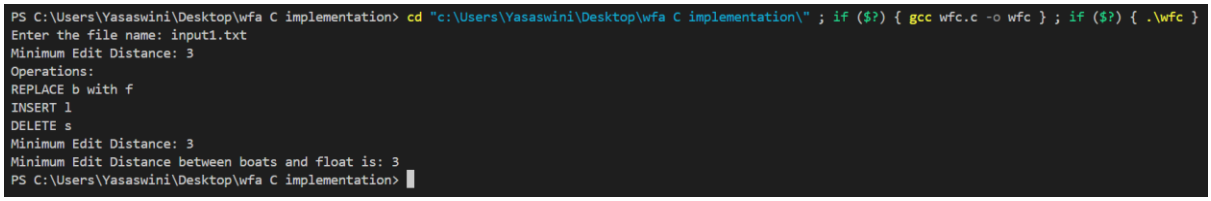
WAGNER-FISCHER ALGORITHM

Let’s examine the execution in various scenarios:

In the implementation, I have incorporated input retrieval from secondary storage. Additionally, I have included a user input prompt for entering a file name, allowing them to access different files in various program runs.







BEST CASE:

- strings are identical
- Example: str1 = "hello", str2 = "hello"
- Expected Output: Minimum Edit Distance: 0
- Explanation: Since the strings are already the same, no edits are needed, and the distance is 0.

```
PS C:\Users\Yasaswini\Desktop\wfa C implementation> cd "c:\Users\
Enter the file name: tc_best_case.txt
Minimum Edit Distance: 0
Operations:
Minimum Edit Distance: 0
Minimum Edit Distance between hello and hello is: 0
PS C:\Users\Yasaswini\Desktop\wfa C implementation>
```

WORST CASE:

- Input strings are completely different.
- Example: str1 = "hello", str2 = "world"
- Expected Output: Minimum Edit Distance: 4
- Explanation: The algorithm needs to change each character in str1 to match str2, which requires 4 edits.

```
PS C:\Users\Yasaswini\Desktop\wfa C implementation> cd "c:\Users\Ya
Enter the file name: tc_worst_case.txt
Minimum Edit Distance: 4
Operations:
REPLACE h with w
REPLACE e with o
REPLACE l with r
REPLACE o with d
Minimum Edit Distance: 4
Minimum Edit Distance between hello and world is: 4
```

AVERAGE CASE:

- Input strings are moderately different.
- Example: str1 = "kitten", str2 = "sitting"
- Expected Output: Minimum Edit Distance: 3
- Explanation: The algorithm needs to change 'k' to 's', 'e' to 'i', and add 'g' at the end of str1.

```
PS C:\Users\Yasaswini\Desktop\wfa C implementation> cd "c:\Users\
Enter the file name: tc_average_case.txt
Minimum Edit Distance: 3
Operations:
REPLACE k with s
REPLACE e with i
INSERT g
Minimum Edit Distance: 3
Minimum Edit Distance between kitten and sitting is: 3
```

CORNER CASE:

Similarity in strings:

- Input strings have some similar prefixes but differ later.
- Example: str1 = "abcdef", str2 = "abcxyz"
- Expected Output: Minimum Edit Distance: 3
- Explanation: The algorithm needs to substitute 'd', 'e', 'f' with 'x', 'y', 'z' to match str2.

```
PS C:\Users\Yasaswini> cd "c:\Users\Yasaswini\Desktop\wfa C impl
Enter the file name: similar_strings.txt
Minimum Edit Distance: 3
Operations:
REPLACE d with x
REPLACE e with y
REPLACE f with z
Minimum Edit Distance: 3
Minimum Edit Distance between abcdef and abcxyz is: 3
PS C:\Users\Yasaswini\Desktop\wfa C implementation>
```