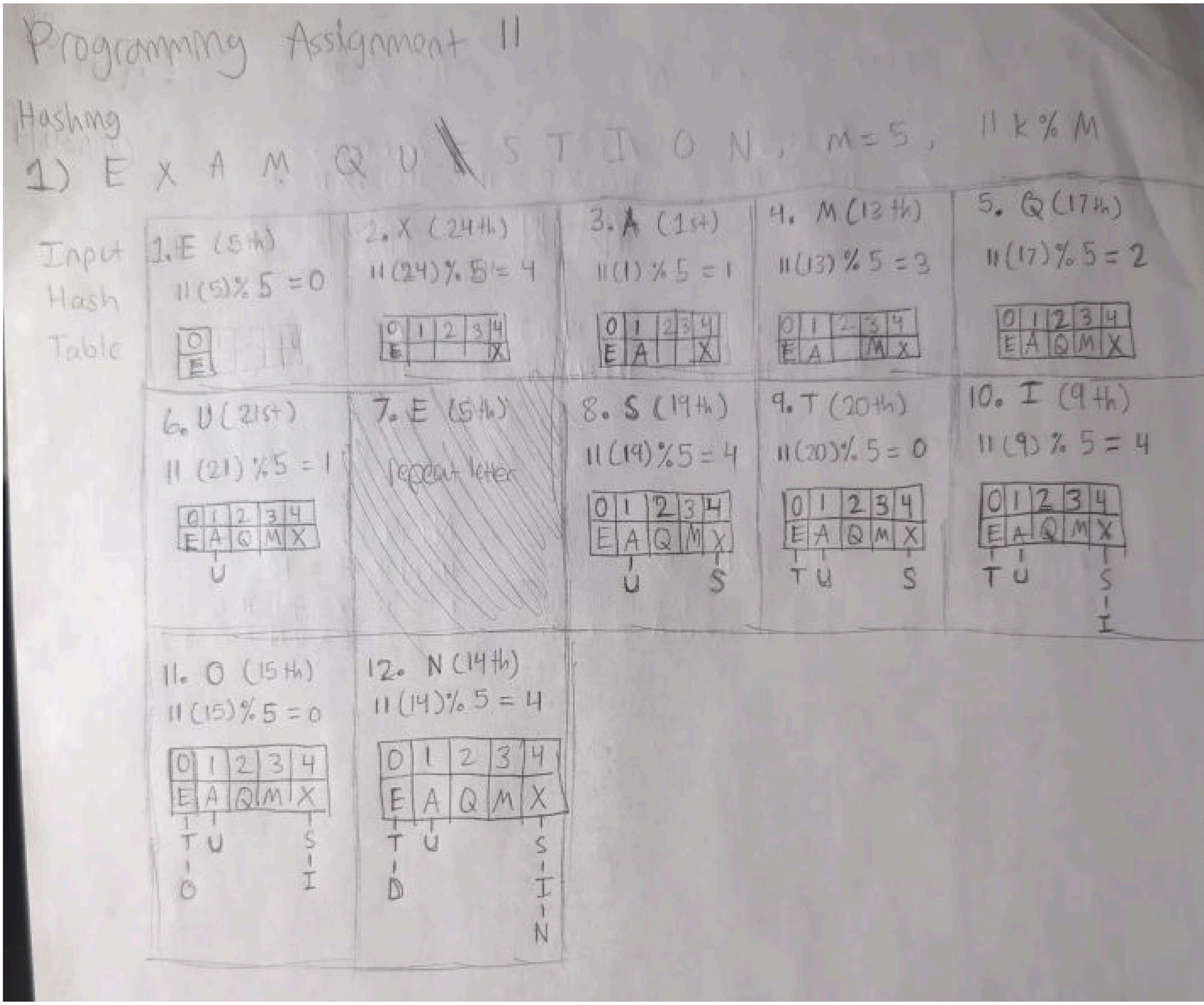


Programming Assignment 11

Hashing

1) E X A M Q U S T I O N, M=5, 11k%M

Input
Hash
Table

1. E (5th)
11(5)% 5 = 0

0
E

2. X (24th)
11(24)% 5 = 4

0	1	2	3	4
E				X

3. A (1st)
11(1) % 5 = 1

0	1	2	3	4
E	A			X

4. M (13th)
11(13) % 5 = 3

0	1	2	3	4
E	A		M	X

5. Q (17th)
11(17) % 5 = 2

0	1	2	3	4
E	A	Q	M	X

6. U (21st)
11 (21) % 5 = 1

0	1	2	3	4
E	A	Q	M	X
	U			

7. E (5th)

repeat letter

8. S (19th)
11(19)%5 = 4

0	1	2	3	4
E	A	Q	M	X
	U			S

9. T (20th)
11(20)% 5 = 0

0	1	2	3	4
E	A	Q	M	X
T	U			S

10. I (9th)
11(9) % 5 = 4

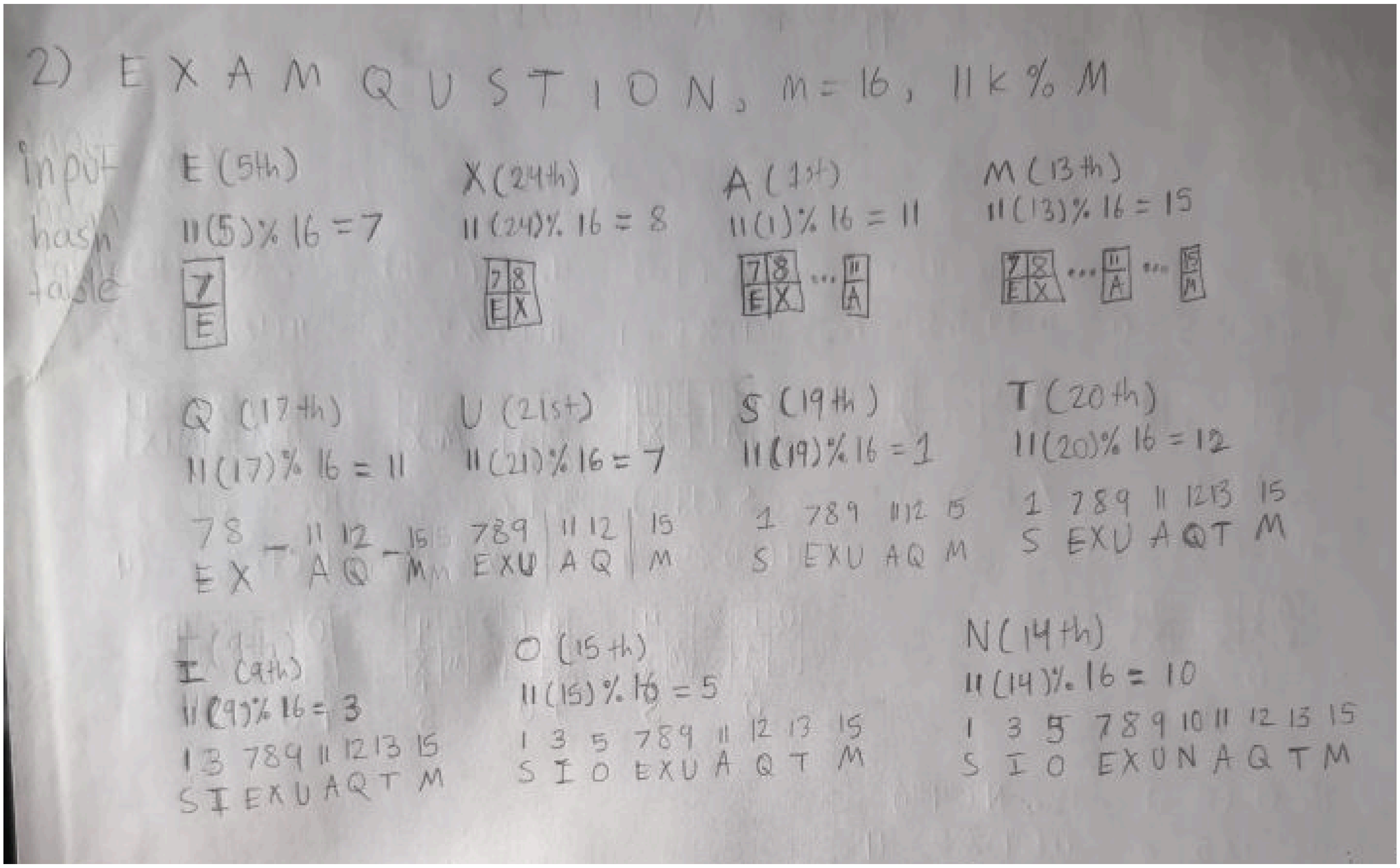
0	1	2	3	4
E	A	Q	M	X
T	U			S
				I

11. O (15th)
11(15)% 5 = 0

0	1	2	3	4
E	A	Q	M	X
T	U			S
O				I

12. N (14th)
11(14)% 5 = 4

0	1	2	3	4
E	A	Q	M	X
T	U			S
D				I
				N



2) E X A M Q U S T I O N, m= 16, 11k % M

input hash table

E (5th)
11(5)% 16 = 7

7
E

X (24th)
11 (24)% 16 = 8

7	8
E	X

A (1st)
11(1)% 16 = 11

7	8	…	11
E	X		A

M (13th)
11(13)% 16 = 15

7	8	…	11	…	15
E	X		A		M

Q (17th)
11(17)% 16 = 11

78 _ 11 12 _ 15
EX A Q M

U (21st)
11(21)% 16 = 7

789 | 11 12 | 15
EXU | A Q | M

S (19th)
11(19)% 16 = 1

1 789 11 12 15
S EXU AQ M

T (20th)
11(20)% 16 = 12

1 789 11 12 13 15
S EXU A Q T M

I (9th)
11(9)% 16 = 3

1 3 789 11 12 13 15
S I EXU A Q T M

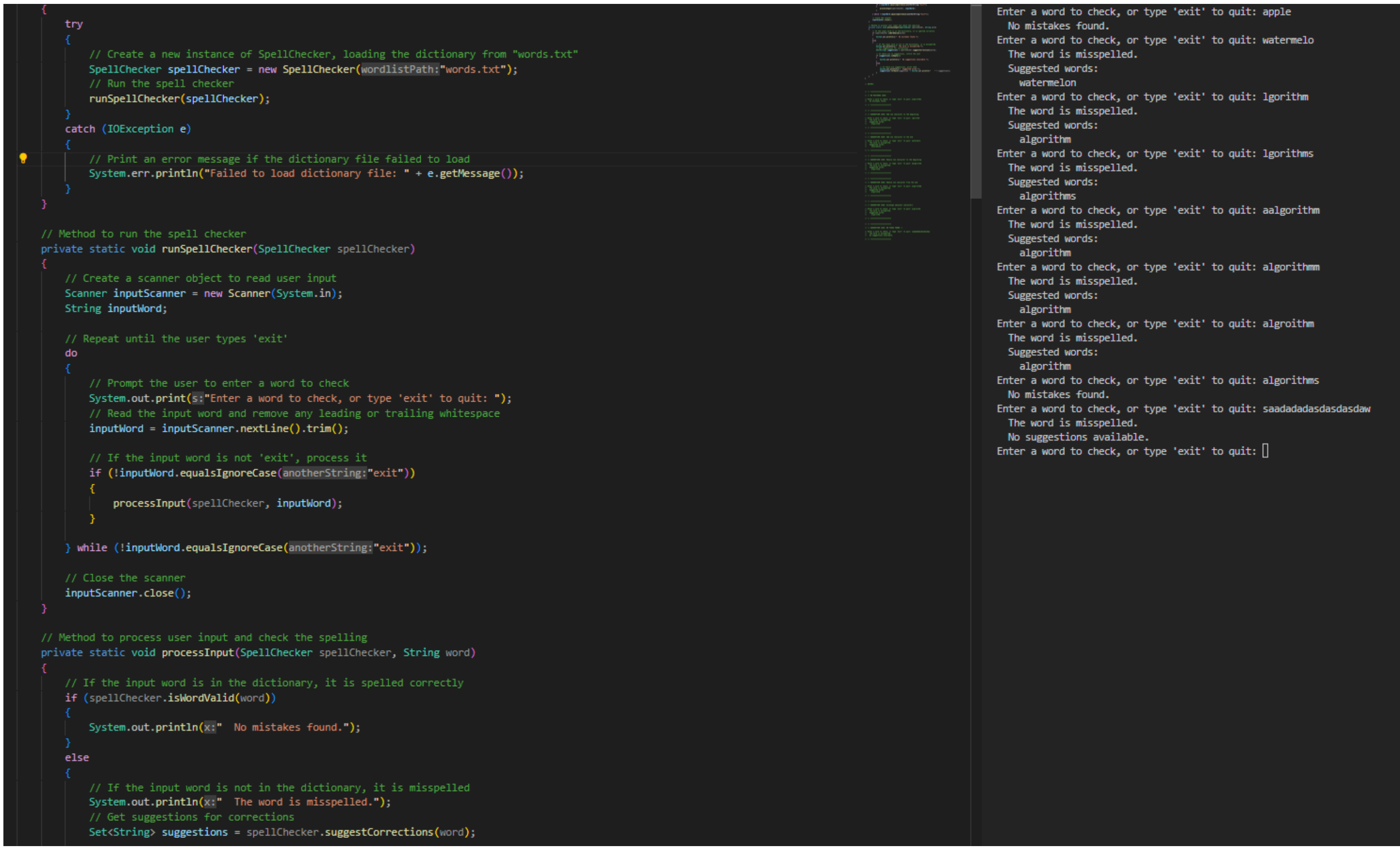
O (15th)
11(15)% 16 = 5

1 3 5 789 11 12 13 15
S I O EXU A Q T M

N(14th)
11(14)% 16 = 10

1 3 5 789 10 11 12 13 15
S I O EXU N A Q T M

Code output (INCLUDED IN SPELLCHECKERAPP.JAVA):



```java
    {
        try
        {
            // Create a new instance of SpellChecker, loading the dictionary from "words.txt"
            SpellChecker spellChecker = new SpellChecker(wordlistPath:"words.txt");
            // Run the spell checker
            runSpellChecker(spellChecker);
        }
        catch (IOException e)
        {
            // Print an error message if the dictionary file failed to load
            System.err.println("Failed to load dictionary file: " + e.getMessage());
        }
    }

    // Method to run the spell checker
    private static void runSpellChecker(SpellChecker spellChecker)
    {
        // Create a scanner object to read user input
        Scanner inputScanner = new Scanner(System.in);
        String inputWord;

        // Repeat until the user types 'exit'
        do
        {
            // Prompt the user to enter a word to check
            System.out.print(s:"Enter a word to check, or type 'exit' to quit: ");
            // Read the input word and remove any leading or trailing whitespace
            inputWord = inputScanner.nextLine().trim();

            // If the input word is not 'exit', process it
            if (!inputWord.equalsIgnoreCase(anotherString:"exit"))
            {
                processInput(spellChecker, inputWord);
            }

        } while (!inputWord.equalsIgnoreCase(anotherString:"exit"));

        // Close the scanner
        inputScanner.close();
    }

    // Method to process user input and check the spelling
    private static void processInput(SpellChecker spellChecker, String word)
    {
        // If the input word is in the dictionary, it is spelled correctly
        if (spellChecker.isWordValid(word))
        {
            System.out.println(x:"  No mistakes found.");
        }
        else
        {
            // If the input word is not in the dictionary, it is misspelled
            System.out.println(x:"  The word is misspelled.");
            // Get suggestions for corrections
            Set<String> suggestions = spellChecker.suggestCorrections(word);
```

```
Enter a word to check, or type 'exit' to quit: apple
  No mistakes found.
Enter a word to check, or type 'exit' to quit: watermelo
  The word is misspelled.
  Suggested words:
    watermelon
Enter a word to check, or type 'exit' to quit: lgorithm
  The word is misspelled.
  Suggested words:
    algorithm
Enter a word to check, or type 'exit' to quit: lgorithms
  The word is misspelled.
  Suggested words:
    algorithms
Enter a word to check, or type 'exit' to quit: aalgorithm
  The word is misspelled.
  Suggested words:
    algorithm
Enter a word to check, or type 'exit' to quit: algorithmm
  The word is misspelled.
  Suggested words:
    algorithm
Enter a word to check, or type 'exit' to quit: algroithm
  The word is misspelled.
  Suggested words:
    algorithm
Enter a word to check, or type 'exit' to quit: algorithms
  No mistakes found.
Enter a word to check, or type 'exit' to quit: saadadadasdasdasdaw
  The word is misspelled.
  No suggestions available.
Enter a word to check, or type 'exit' to quit: 
```