Program 1: Palindrome

Save the following program as: Palindrome.java

Words that are arranged the same way forwards as they are backwards called palindromes. For example, RADAR is a palindrome. Create a program that directs the user to enter a word. The program will print the word backwards, and then inform the user if it is a palindrome or not. Treat uppercase letters and lowercase letters as the same so the program should convert the letter to all uppercase or all lowercase.

Program 2: Palindrome as a Sentence

Save the following program as: Palindrome2.java

Make changes to Palindrome.java such that the program will allow the user to enter a sentence, and then count the number of words in the sentence that are palindromes.

Program 3: Palindrome as a Phrase

Save the following program as: Palindrome3.java

Make changes to Palindrome.java such that the program will allow the user to enter a phrase and determine if the phrase is a palindrome. For example, the phrases “Race car” and “Able was I ere I saw Elba” are palindromes.

Program 4: SimpleEncryption.java

Save the following program as: SimpleEncryption.java

A very simple encryption algorithm is alphabetic rotation. Consider the following example:

The encryption algorithm moves all letters one step “down” in the alphabet, changing “b” back to “a”, “n” back to “m” and so on.

Consider the following message, referred to as the plaintext: THIS A SECRET MESSAGE

The encrypted message, processed by the above encryption algorithm, changes “T” to “U”, “H” to “I”, etc, forming the cipher text: UIJT JT B TFDSFU NFTTBHF

Write a program that will encrypt a plaintext message using the simple encryption algorithm to create the cipher text. Allow the user to enter the rotation amount that the algorithm moves the letters. This amount should be a value from 1 to 25.

Your program should also be able to decipher a cipher text phrase to its original plaintext message.