**Analysis**

I added two additional set method in ShuffleCipher and SubstitutionCipher to set the shuffle and shift amount from the user. I have a private get method to return the values from the user. This program exits when user enter N or n. This program runs correctly as intended.

**UML design:**

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| --- |
| << Interface >>  MessageDecoder |
| +decode(cipherText : String):String |

|  |
| --- |
| << Interface >>  MessageEncoder |
| +encode(cipherText : String):String |

|  |
| --- |
| *Abstract class*  EncoderDecoder |

|  |
| --- |
| ShuffleCipher |
| + n : int |
| +ShuffleCipher(n : int) |
| +setN(n : int) : void |
| -getN(): int |
| +encode(cipherText : String):String |
| -shuffle(message : String ): String |
| +decode(cipherText : String):String |
| -unShuffle(s : String) : String |

|  |
| --- |
| SubstitutionCipher |
| + shift : int |
| +SubstitutionCipher(shift : int) |
| -shifter(letter : char) : char |
| +setShift(shift : int) : void |
| - getShift() : int |
| +encode(cipherText : String):String |
| +decode(cipherText : String):String |

Testing:



