Final Project: Data Encryption Tool

In this project, your goal is to develop a program to encrypt or decrypt data. You will do encoding using a table. In the table, all characters are mapped another character. Content will consist of 90 characters. Character table is below.! character is mapped g. You will get content from user. Then user enters that choice (encryption or decryption)

For encryption:

1- Get Content from user.
2- Get Choice from user.
3- Find your key from your student number. Key is last 5 digit of your student number. (if your student number is S010234, you will find 10234. Your key will be 10234.)
4- According to your key you will do encryption.
5- After the encryption you will write encrypted value to console.
6- For example, if user enters the content below

This is a sample content.

First Character=T
First Digit of Key = 1 => This digit will show how many times you will look map table. In this case, you will look one time.
T is mapped to N

Second Character=h
Second Digit of Key=0, you will not look map table.
h

Third Character=i
Third Digit of Key = 2, you will look 2 times
i is mapped 9
9 is mapped V you will use V

Fourth Character=s
Fourth Digit of Key = 3, you will look 3 times
s is mapped K
K is mapped 7
7 is mapped j you will use j

Fifth Character= (space)
Fifth Digit of Key=4
(space) is mapped 1
1 mapped c
c mapped #
mapped T
T mapped N

Sixth Character=i
Digit finished. When digits are finished. You will start from first digit again.
In this case digit = 1
i is mapped 9

You will continue to finish all characters in the content. For the sample content, encrypted content will be like NhVjN9……

For decryption:

1- Get Content from user.
2- Get Choice from user.
3- Find your key from your student number last 5 digit.
4- According to your key you will do decryption.
5- Decryption process is reverse of the encryption process.

For example,

For the encrypted NhVjN9…

For the first character N, you will look mapped N in the map table, and T is mapped to N. You will find T, according to key, this is one-time mapping, then T is decrypted value of N.

Chracter	Character Description	Mapped Character	Character Description
	space	**1**	digit one
!	exclamation mark	**g**	Latin small letter g
"	quotation mark	**q**	Latin small letter q
#	number sign	**T**	Latin capital letter T
$	dollar sign	**h**	Latin small letter h
%	percent sign	**b**	Latin small letter b
&	ampersand	**I**	Latin capital letter I
'	apostrophe	**F**	Latin capital letter F
(	left parenthesis	**M**	Latin capital letter M
)	right parenthesis	**y**	Latin small letter y
*****	asterisk	**W**	Latin capital letter W
+	plus sign	**]**	right square bracket
,	comma	**O**	Latin capital letter O
-	hyphen-minus	**)**	right parenthesis
.	full stop	**%**	percent sign
/	solidus	**$**	dollar sign
0	digit zero	**-**	hyphen-minus
1	digit one	**c**	Latin small letter c
2	digit two	**P**	Latin capital letter P
3	digit three	**n**	Latin small letter n
4	digit four	**H**	Latin capital letter H
5	digit five	**(**	left parenthesis
6	digit six	**!**	exclamation mark
7	digit seven	**j**	Latin small letter j
8	digit eight	****	reverse solidus
9	digit nine	**V**	Latin capital letter V
:	colon	**z**	Latin small letter z
;	semicolon	**t**	Latin small letter t
<	less-than sign	**k**	Latin small letter k

=	equals sign		space
>	greater-than sign	*****	asterisk
?	question mark	**S**	Latin capital letter S
@	commercial at	**5**	digit five
A	Latin capital letter A	**0**	digit zero
B	Latin capital letter B	**Y**	Latin capital letter Y
C	Latin capital letter C	**r**	Latin small letter r
D	Latin capital letter D	**@**	commercial at
E	Latin capital letter E	**.**	full stop
F	Latin capital letter F	**'**	apostrophe
G	Latin capital letter G	**x**	Latin small letter x
H	Latin capital letter H	**s**	Latin small letter s
I	Latin capital letter I	**6**	digit six
J	Latin capital letter J	**a**	Latin small letter a
K	Latin capital letter K	**7**	digit seven
L	Latin capital letter L	**"**	quotation mark
M	Latin capital letter M	**i**	Latin small letter i
N	Latin capital letter N	**v**	Latin small letter v
O	Latin capital letter O	**4**	digit four
P	Latin capital letter P	**^**	circumflex accent
Q	Latin capital letter Q	**,**	comma
R	Latin capital letter R	**m**	Latin small letter m
S	Latin capital letter S	**>**	greater-than sign
T	Latin capital letter T	**N**	Latin capital letter N
U	Latin capital letter U	**[**	left square bracket
V	Latin capital letter V	**Z**	Latin capital letter Z
W	Latin capital letter W	**L**	Latin capital letter L
X	Latin capital letter X	**2**	digit two
Y	Latin capital letter Y	**?**	question mark
Z	Latin capital letter Z	**C**	Latin capital letter C
[	left square bracket	**;**	semicolon
****	reverse solidus	**Q**	Latin capital letter Q
]	right square bracket	**3**	digit three
^	circumflex accent	**E**	Latin capital letter E
_	low line	**f**	Latin small letter f
a	Latin small letter a	**+**	plus sign
b	Latin small letter b	**d**	Latin small letter d
c	Latin small letter c	**#**	number sign
d	Latin small letter d	**e**	Latin small letter e
e	Latin small letter e	**D**	Latin capital letter D
f	Latin small letter f	**/**	solidus
g	Latin small letter g	**R**	Latin capital letter R
h	Latin small letter h	**&**	ampersand
i	Latin small letter i	**9**	digit nine
j	Latin small letter j	**A**	Latin capital letter A
k	Latin small letter k	**p**	Latin small letter p
l	Latin small letter l	**X**	Latin capital letter X
m	Latin small letter m	**G**	Latin capital letter G

n	Latin small letter n	**U**	Latin capital letter U
o	Latin small letter o	**w**	Latin small letter w
p	Latin small letter p	**u**	Latin small letter u
q	Latin small letter q	**:**	colon
r	Latin small letter r	**8**	digit eight
s	Latin small letter s	**K**	Latin capital letter K
t	Latin small letter t	**_**	low line
u	Latin small letter u	**o**	Latin small letter o
v	Latin small letter v	**=**	equals sign
w	Latin small letter w	**l**	Latin small letter l
x	Latin small letter x	**J**	Latin capital letter J
y	Latin small letter y	**B**	Latin capital letter B
z	Latin small letter z	**<**	less-than sign

Writing Report for Project

In this project, you will write a project report. Report will consist of following parts

Project Overview: In this part, you will explain the project briefly.

Object-Oriented Principles: In this part, you will explain how you used object-oriented principles (encapsulation, inheritance, polymorphism, abstraction) in your program. For this you should show profs from your code. Using your own code, you will explain how you used object-oriented principles in the project.

Sample Runs: You will execute your program for the following inputs /outputs. In your report, you should write inputs and outputs. I will execute your program and compare inputs/outputs with your report.

Sample Run Table.

Encrption/Decryption	Input	Output
encrpytpion	This is MIS104 final exam program.	?
encryption	In this project, I used object-oriented Java programming language.	?
decryption	?	I can use this program for secure communication with my friends.
decryption	?	Key must be secret to protect data from unauthorized access.

Directions

Construct the Java program according to standards

Project Name = MIS104AProjects
Package Name = homework5
Class Name = ContentEncoder + Your Student Number

Write a comment to your program that describes the flow and structure of your program. Comment must be more than 50 words.

Grading

10% Naming and Comments. (Write your code according to Java Naming Convention)
30% Object Oriented Principles Usage (encapsulation, inheritance, polymorphism, abstraction)
30% Output Validation
30% Project Report

Hints

You can store mapping table in collections structures (for example HashMap).