

**D.K.T.E. Society's Textile and Engineering Institute,
Ichalkaranji.**

(An Autonomous Institute, Affiliated to Shivaji University, Kolhapur)

Accredited with 'A+' Grade by NAAC

Department of Computer Science & Engineering

2020-2021



THE PROJECT REPORT ON

TALK IN NUMBERS

[ACM-ICPC]

Under The Guidance Of
Jayamala Pakhare Mam

DEVELOPED BY:

- | | |
|-----------------------|----------|
| 1. Dhairyashil Shinde | 19UCS122 |
| 2. Gajashree Teke | 19UCS129 |
| 3. Pritesh Shetty | 19UCS121 |
| 4. Gouri Sonavane | 19UCS127 |

**D.K.T.E. Society's Textile and Engineering Institute,
Ichalkaranji**

(An Autonomous Institute, Affiliated to Shivaji University, Kolhapur)

An Autonomous Institute with NAAC A+ grade

Department of Computer Science & Engineering

CERTIFICATE

This is to certify that

- | | |
|-----------------------|----------|
| 1. Dhairyashil Shinde | 19UCS122 |
| 2. Gajashree Teke | 19UCS129 |
| 3. Pritesh Shetty | 19UCS121 |
| 4. Gouri Sonavane | 19UCS127 |

Have successfully completed the project work, entitled,

TALKING IN NUMBERS

In partial fulfillment for the award of degree of Bachelor of Technology in Computer Science and Engineering. This is the record of their work carried out during academic year 2020-2021.

Date: 15/05/2021

Place: Ichalkaranji

[Project Guide]

Prof. Dr.D.V. Kodavade
[Head of Department]

[External Examiner]

Prof.Dr.P.V.Kadole
[Director]

DECLARATION

We the undersigned students of S.Y. C.S.E. declare that the Project work report entitled “Talk in Numbers” written and submitted under the guidance of Mrs.Jayamala Pakhare is our original work. The empirical findings in this report are based on the data collected by us. The matter assimilated in this report is not reproduction from any readymade report.

Date: 15/05/2021

Place: Ichalkaranji

Name

Signature

1. Dhairyashil Shinde
2. Gajashree Teke
3. Pritesh Shetty
4. Gouri Sonavane

INDEX

CONTENTS	PAGE
1. Abstract	5
2. Problem Statement	6
3. Problem Description	6
4. Requirement Specification	7
5. Requirement Analysis	7
6. Problem Solution	12
7. Flowcharts	13
8. Snap shot	14
9. Conclusion	18
10. References	19

ABSTRACT

We came across many ways in which a word is written. Sometimes, a word is written in form of symbol or in a code. Now, we come across an old manuscript which is written in number and we have to decode it. There is no means given in old manuscript through which we decode these numbers.

But, one way we get is decoding by the alphabets. Even while decoding by using alphabet there are two choices either by using small letters or by using capital letters.

PROBLEM STATEMENT:

We have to decode an old manuscript given entirely in the form of numbers into the alphabets in english.

PROBLEM DESCRIPTION:

You came across an old manuscript written entirely in numbers and thankfully, the instruction to decode it were included, but obviously not the means--it is an old manuscript after all and you would rather not decipher the document by hand. Each word has essentially been sorted first by length then alphabetically such that "a" is the first word followed by "b", etc. only the lowercase letter a..z are allowed. The decoding instruction that came with the manuscript included this subset of words as an

example:

a 1

b 2

c 3

...

z 26

aa 27

ab 28

....

zz 702

...

hello 3752127

REQUIREMENT SPECIFICATION:

1. n is always greater than 0.

REQUIREMENT ANALYSIS:

☐ Analysis of input test cases:

Test case 1:

$n = 13733$

$rem = n \% 26$

$13733 \% 26 = 5$

$String[i++] = (rem - 1) + 'a'$

$= (5 - 1) + 97$

$= 101$

$= e$

$n = n / 26 = 13733 / 26$

$= 528$

$rem = n \% 26$

$528 \% 26 = 8$

$String[i++] = (rem - 1) + 'a'$

$= 7 + 97$

$= 104$

$= h$

$n = n / 26 = 528 / 26$

=20

rem =n%26

=20%26

=20

String[i++]=(rem-1)+'a'

=19+97

=116

=t

n =20/26=0

=end

Reversing the string=the

Output=the

Test case 2:

n =8143861

rem=n%26

=8143861%26

=11

String[i+1]=(rem-1)+'a'

=10+97

=107

=k

n =8143861/26

=313225

rem =313225%26

=3

String[i++]=(rem-1)+'a'

=2+97

$$=99$$

$$=c$$

$$n=n/26=313225/26$$

$$=12047$$

$$\text{rem} = n \% 26 = 12047 \% 26$$

$$=9$$

$$\text{String}[i++] = (\text{rem} - 1) + 'a'$$

$$=(8)+97$$

$$=105$$

$$=i$$

$$n = 12047 / 26 = 463$$

$$\text{rem} = n \% 26 = 463 \% 26$$

$$=21$$

$$\text{String}[i++] = (\text{rem} - 1) + 'a'$$

$$=(21-1)+97$$

$$=117$$

$$=u$$

$$n = n / 26$$

$$=463 / 26$$

$$=17$$

$$\text{rem} = n \% 26$$

$$=17$$

$$\text{String}[i++] = (\text{rem} - 1) + 'a'$$

$$=16+97$$

$$=113$$

$$=q$$

$$n=n/26=17/26$$

$$=0$$

Reversing the string=quick

Ouput=quick

Test case3:

$$n=718$$

$$\text{rem}=n\%26$$

$$=718\%26$$

$$=16$$

$$\text{String}[i++]=(\text{rem}-1)+'a'$$

$$=(16-1)+97$$

$$=15+97$$

$$=112$$

$$=p$$

$$n=n/26=718/26$$

$$=27$$

$$\text{rem}=n\%26=27\%26$$

$$=1$$

$$\text{String}[i++]=(\text{rem}-1)+'a'$$

$$=(1-1)+97$$

$$=97$$

$$=a$$

$$n=n/26=27/26$$

$$=1$$

$$\text{rem}=n\%26=1\%26$$

$$=1$$

String[i++]=(rem-1)+'a'

=(1-1)+97

=97

=a

n=n/26=1/26

=0

end

Reversing string =aap

Output=aap

PROBLEM SOLUTION:

Algorithm

Step 1 : Start

Step 2: Declare a function having name 'decode' which takes argument of integer type

Step 3: Take a character array whose name is 'string' and of size 100 , i.e. string[100]

Step 4: Define variable of integer type I & n and initialize I = 0

Step 5 : Take the input 'n' from the user and read the input

Step 6: Call the function decode(n)

Step 7 : While $n > 0$,

Remainder = $n \% 26$

Step 8 : If remainder == 0 then,

string[i++] == 'z'

$n = (n / 26) - 1$

Here if $n > 0$ then repeat step 5

And if $n \leq 0$ then terminate the loop , Go to Step 10.

Step 9 : Else,

String [i++] == (rem - 1) + 'a',

$N = (n / 26)$

Here if $n > 0$ then repeat step 5

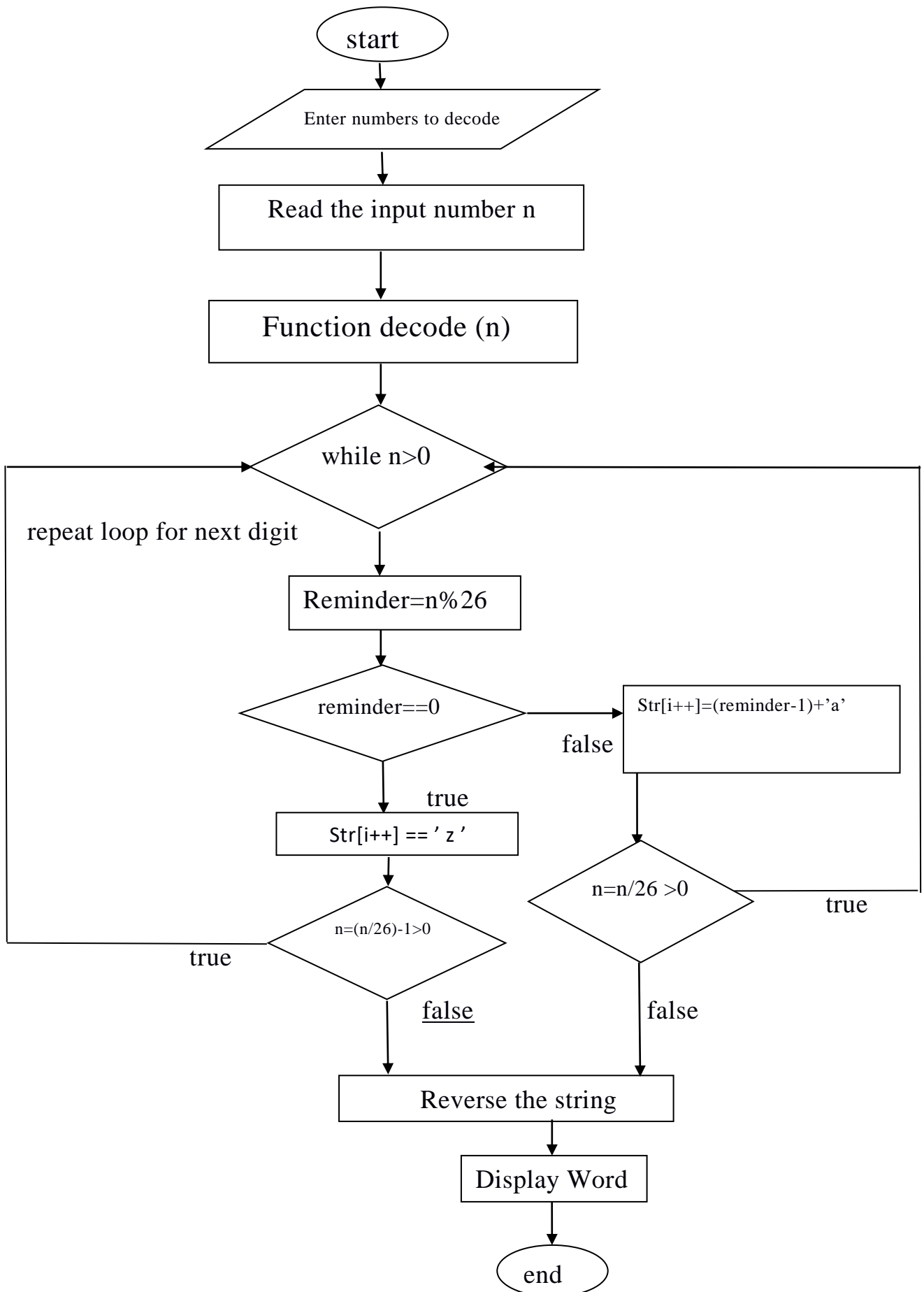
And if $n \leq 0$ then terminate the loop , Go to Step 10

Step 10: Reverse the string

Step 11: Display the Word i.e. string

Step 12: End

FLOWCHART



SNAP SHOT

Sample input

13733

814386

1241072

4470

4948079

278600

13733

212289

3101

Sample output

the

quick

brown

fox

jumps

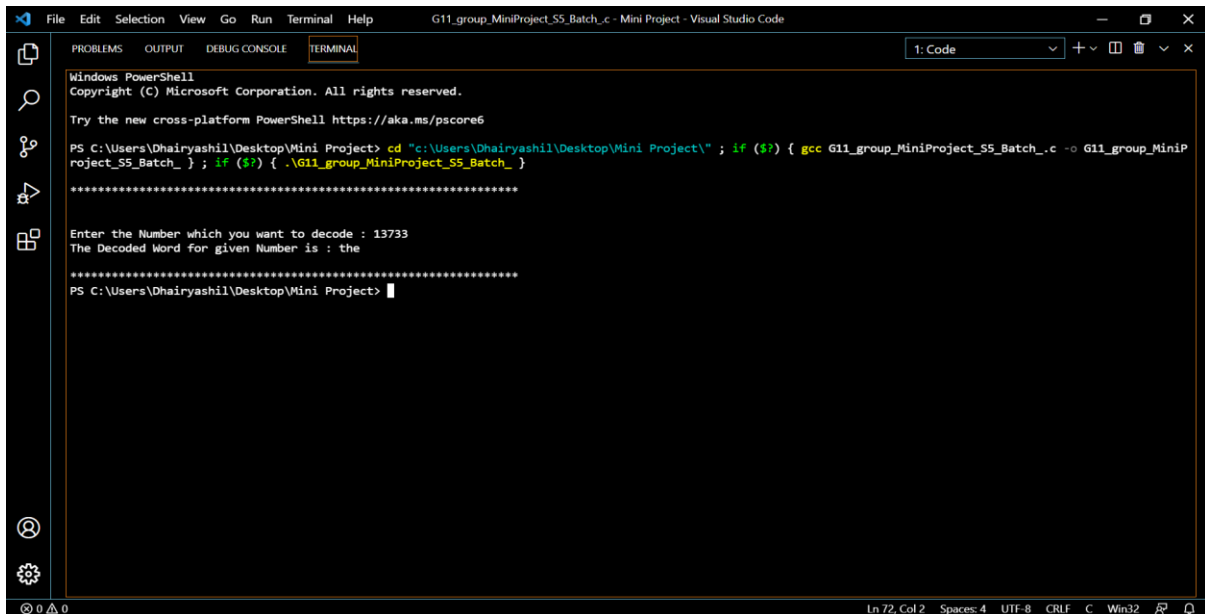
over

the

lazy

dog

Test case 1:



The screenshot shows a Visual Studio Code window with the terminal pane active. The terminal displays the output of a C program. The program prompts the user to enter a number, and the user enters 13733. The program then outputs the decoded word "the".

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Dhairiyashil\Desktop\Mini Project> cd "c:\Users\Dhairiyashil\Desktop\Mini Project\" ; if ($?) { gcc G11_group_MiniProject_S5_Batch._c -o G11_group_MiniP
roject_S5_Batch_ } ; if ($?) { .\G11_group_MiniProject_S5_Batch_ }

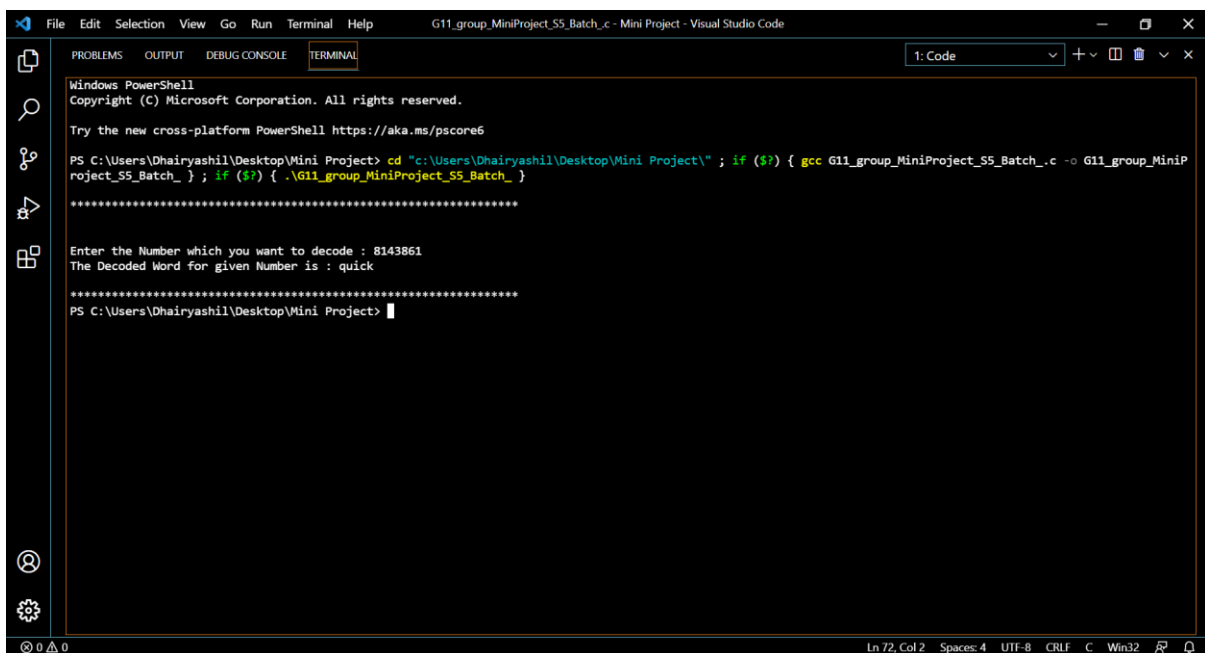
*****

Enter the Number which you want to decode : 13733
The Decoded Word for given Number is : the

*****

PS C:\Users\Dhairiyashil\Desktop\Mini Project> 
```

Test case 2 :



The screenshot shows a Visual Studio Code window with the terminal pane active. The terminal displays the output of a C program. The program prompts the user to enter a number, and the user enters 8143861. The program then outputs the decoded word "quick".

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Dhairiyashil\Desktop\Mini Project> cd "c:\Users\Dhairiyashil\Desktop\Mini Project\" ; if ($?) { gcc G11_group_MiniProject_S5_Batch._c -o G11_group_MiniP
roject_S5_Batch_ } ; if ($?) { .\G11_group_MiniProject_S5_Batch_ }

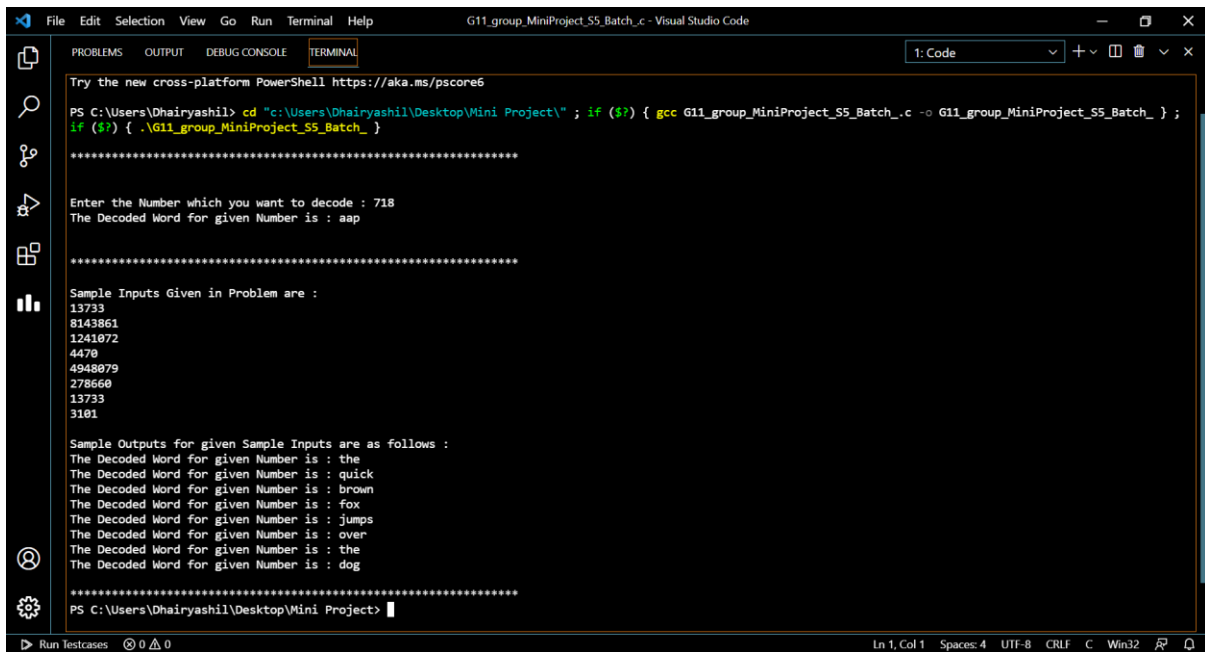
*****

Enter the Number which you want to decode : 8143861
The Decoded Word for given Number is : quick

*****

PS C:\Users\Dhairiyashil\Desktop\Mini Project> 
```

Test case 3 :



```
File Edit Selection View Go Run Terminal Help
G11_group_MiniProject_S5_Batch_c - Visual Studio Code

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
1: Code

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Dhairiyashil> cd "c:\Users\Dhairiyashil\Desktop\Mini Project\" ; if ($?) { gcc G11_group_MiniProject_S5_Batch_c -o G11_group_MiniProject_S5_Batch_ } ;
if ($?) { .\G11_group_MiniProject_S5_Batch_ }

*****

Enter the Number which you want to decode : 718
The Decoded Word for given Number is : aap

*****

Sample Inputs Given in Problem are :
13733
8143861
1241072
4470
4948079
278660
13733
3101

Sample Outputs for given Sample Inputs are as follows :
The Decoded Word for given Number is : the
The Decoded Word for given Number is : quick
The Decoded Word for given Number is : brown
The Decoded Word for given Number is : fox
The Decoded Word for given Number is : jumps
The Decoded Word for given Number is : over
The Decoded Word for given Number is : the
The Decoded Word for given Number is : dog

*****
PS C:\Users\Dhairiyashil\Desktop\Mini Project> |
```

Run Testcases 0 0 0 Ln 1, Col 1 Spaces: 4 UTF-8 CRLF C Win32

Conclusion

We can decode such old manuscript using valid method.

Referance

- Problem Statement :
https://icpcarchive.ecs.baylor.edu/index.php?option=com_onlinejudge&Itemid=8&category=723&page=show_problem&problem=5653
- What is Manuscript ? :
<https://en.wikipedia.org/wiki/Manuscript>
- How to Draw Flowchart ? :
<https://support.microsoft.com/en-us/office/create-a-basic-flowchart-in-visio-e207d975-4a51-4bfa-a356-eeec314bd276>

- The Software Used to Run and Compile the Code (Sanp Shots)

<https://code.visualstudio.com/download>

