1- The Program:

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#This program is the final project for students
#It contains few functions to do encryption and
#Decryption using XOR Cipher.
#The key is created by matching the student ID with the student Name.

import sys #Just to use the sys.exit function (optional, exit() can be used instead)


#--------------------------------------------------------------- GLOBALS -----------------
input_plain = key=''
variables=["","",""]
ID=0
ID=name=cipher=""

#-----------------------------------------------------------READ INPUT FILE -----------
#Function to read the input.txt file
def read_input():
    file1 = open('input.txt', 'r')
    Lines = file1.readlines()
    count = 0

# Strips the newline character
    for line in Lines:
        variables[count]=line.strip()
        count+=1
    ID = variables[0]
    name = variables[1]
    cipher = variables[2]
    no_of_itr = len(variables[2]) #Length of plain
    input_plain = variables[2] #Plaintext
    #Call the find_key function:
    find_key(ID, name, input_plain)

#-----------------------------------------------------------FIND KEY -------------------
def find_key(ID, name, input_plain):
    key=''
    counter=0
    for digit in ID:
        digit=int(digit)
        if digit==0: #Substitute each 0 in the ID with @ in the key
            key+='@'
        else:
            key += name[digit-1]
        counter+=1
    keyfile = open('key.txt', 'w')
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    keyfile.writelines(key)
    keyfile.close()
    #Call Encryption Function
    encr(len(input_plain), key, input_plain)


 #----------------------------------------------------------- ENCRYPTION ----------------
def encr(no_of_itr, key, input_plain):
    output_str = ''
    no_of_itr = len(input_plain)
    for i in range(no_of_itr):
        current = input_plain[i]
        #current_key = key[i%len(key)]
        output_str += chr(ord(current) ^ ord(key[i%len(key)]))
    print ("\n\nHere's the output ciphertext (Also stored in cipher.txt):\n\n ", output_str)
    file2 = open('cipher.txt', 'w')
    file2.writelines(output_str)
    file2.close()


#------------------------------------------------------------READ CIPHER-----------------
def read_cipher():
    file3 = open('cipher.txt', 'r')
    Lines = file3.readlines()
    return Lines


#------------------------------------------------------------READ KEY--------------------
def read_key():
    file4 = open('key.txt', 'r')
    key = file4.readlines()
    return key
#------------------------------------------------------------DECRYPTION----------------
def decrypt():
    input_cipher = read_cipher()
    key = read_key()
    key = ''.join(key)
    i=0
    output_plain = ''
    #no_of_itr = len(input_cipher)
    for line in input_cipher:
        for char in line:
            output_plain += chr(ord(char) ^ ord(key[i%len(key)]))
            i+=1
    print ("Here's the output plain (Also stored in plain.txt):\n",output_plain)
    file5 = open('plain.txt', 'w')
    file5.writelines(output_plain)
    file5.close()


#------------------------------------------------------------MAIN PROGRAM---------------
print("\n\n****** WELCOME TO THE CUSTOM CRYPTOSYSTEM! ******\n\n")
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print("Please make sure you have the plantext file (input.txt)")
print("And it should contain your personal information as follows:")
print("\tYour ID/n")
print("\tYour full name/n")
print("\tYour message that you want to encrypt")
print("For Encryption, please choose (1) \nFor decryption, choose (2)")
print("To Exit, press (0)\n\n\n")

#To keep the program running until the user chooses to exit
while True:
    choice = int(input("Enter Your Choice: "))
    if choice==1:
        read_input()
    elif choice==2:
        decrypt()
    elif choice==0:
        sys.exit("Good Bye!")
    else:
        print("Please enter 1,2, or 0!")
    print("\nTo continue, choose (1) or (2). To Exit, press (0)\n\n\n")
```

2- The input that should be in the input.txt file (students should include this file with the project code)

1606109
Maamoun Khalid Ahmed
My extremely secret message