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PROGRAM DESCRIPTION: A program used to decode or encode a plain text input from a user. The input would be run through a cipher that encodes or decodes the text, with a key value which indicates the number of times the cipher (substitution cipher) will run.

PROGRAM NAME: Encoding and Decoding Substitution Cipher

# Step 1: Output

The output of the program will be a string, displaying an encoded or decoded text according to the user choice during the run of the program.

## Step 2: Input

The input of the program will be a plain text as a string from the user.

### Step 3: Process

* + Define two functions for encoding and decoding a plain text with the parameters of the function being the text from user and a key from number of times encoding or decoding runs. The function would print an encoded text if encoding, a decoded text if decoding
  + Display a message welcoming user to program
  + Display a menu asking user either encoding, decoding, or exit program. The menu prompt would be displayed till user chooses to exit the program
  + If User chooses to encode, ask for the text to encode, and pass into the encoding function
  + If user chooses to decode, ask for the text to decode, and pass into the decoding function
  + Print the result as a string
  + Display initial prompt again to either encode, decode, or exit program. Run the same steps again until the user chooses to end the program.

#### Step 4: Pseudocode

Declarations:

english\_alphabets as a string

al\_bhed\_alphabets as a string

input\_selection as an integer

MINIMUM\_VALUE as a constant

float\_value as a float

input\_encode as a string

input\_decode as a string

* + Display a message welcoming the user to the program
  + Define function for encoding a text with parameters message and key. Function accesses two strings, english\_alphabets and al\_bhed\_alphabets with alphabet values in each list that corelate to each other. The key runs the encoding several times for the value of key. The function prints out encoded text.
  + Define function for decoding text with parameters message and key. Function accesses two strings, english\_alphabets and al\_bhed\_alphabets with alphabet values in each list that corelate to each other. The key runs the decoding several times for the value of key. The function prints out decoded text.
  + Input, Process and Output:
    - Display a menu, “1” to encode, “2” to decode and “3” to exit the program
    - Prompt the user to choose between 1 to 3 and validate the input as between “1” to “3” inclusive.
    - If the user chooses “1”, prompt user to input text to be encoded and store in input\_encode variable. Pass the variable into the encoding function and print the encoded text. Display the menu and prompt user to input choice again.
    - If the user chooses “2”, prompt user to input text to be decoded and store in input\_decode variable. Pass the variable into the decoding function and print the decoded text. Display the menu and prompt user to input choice again.
    - If user chooses “3”, prompt the user to press enter to end the program.

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| Menu selection | Input text | result |
|  | null | Program prompts for valid input if user presses enter at menu selection |
| jhgf | null | Program prompts for valid input if user inputs a string data type |
| -9 | null | Program prompts for valid input if user inputs a negative integer data type |
| 6 | null | Program prompts for valid input if user inputs an integer outside 1 to 3 inclusive |
| 1 | Hello, it’s nice to meet you. | Program runs successfully doing encryption and displays initial prompt again |
| 2 | Ramu, ed’c hela du saad oui. | Program runs successfully doing decryption and displays initial prompt again |
| 3 | null | Program prompts user to press enter to end |

##### Step 5: Desk Check