Fuctions

Functions are the block of codes

Syntax

def my_function():

```
    # Do this

    # Then do this

    # Finally do this
```

my_function()

In [1]:

```
# Example

# Create a Function called greet

def greet():

    # Write 3 print statements inside the function

    print("Hi")

    print("Hello")

    print("Welcome")

# Call the greet() function and run your code

greet()
```

```
Hi
Hello
Welcome
```

Fuctions with Inputs

Syntax

def my_function(Something):

```
    # Do this with something

    # Then do this with something

    # Finally do this with something
```

my_function(123) # now 123 be something

In [2]:

```
# Example

# Create a Function called greet with a input

def greet(name):

    # Write 3 print statements inside the function

    print(f"Hi {name}")                # the name will be the input here

    print(f"Hello {name}")

    print(f"Welcome {name}")

# assign a input variable for the function

a = "aswin"

# Call the greet() function and run your code

greet(a)     # now the 'a' value s replaced in the function which is called

# here in 'greet(name)' name is known as parameter
# a is the
```

```
Hi aswin
Hello aswin
Welcome aswin
```

In [3]:

```
# function with more than 1 input

def greet_with(name, location):

    print(f"hello {name}")

    print(f"what is it like in {location}")

greet_with("aswin", "Coimbatore")
```

```
hello aswin
what is it like in Coimbatore
```

In [5]:

```
# Positional arguments

def greet_with(name, location):

    print(f"hello {name}")

    print(f"what is it like in {location}")

print("positional arguments 1:", greet_with("aswin", "Coimbatore"))

# compare above and below.. it is meaningless it depends on position of the parameters

print("positional arguments 2:", greet_with("coimbatore", "aswin"))
```

```
hello aswin
what is it like in Coimbatore
positional arguments 1: None
hello coimbatore
what is it like in aswin
positional arguments 2: None
```

In [6]:

```
# Keyword argument

def greet_with(name, location):

    print(f"hello {name}")

    print(f"what is it like in {location}")

greet_with(name = "aswin", location = "Coimbatore")

# in keyword argument the value or the key of the parameter is

# assigned to the parameter.
```

```
hello aswin
what is it like in Coimbatore
```

Task

You are going to paint a wall. The instructions on the paint can says that 1 can of paint can cover 5 square meters of wall. given a random height and width of wall. Calculate how many cans of paint you'll need to buy.

no.of.cans = (wall height * wall width) / coverage per can

The output must be rounded

In [13]:

```
# write our code below the line

import math

def paint_calc(height, width, cover):

    area = height * width

    cans_needed = area / cover

    return math.ceil(cans_needed)          # math.ceil ==> rounds the float value

# write your code above the line

# ------------------------------------------

# don't change the code below

test_h = int(input("Height of the wall: "))

test_w = int(input("Width of the wall: "))

coverage = 5

paint_calc(height = test_h, width = test_w, cover = coverage)

# don't change the code above

# -----------------------------------------
```

```
Height of the wall: 2
Width of the wall: 4
```

Out[13]:

```
2
```

Task

Prime Number Checker

Complete the code below

In [17]:

```python
# Write you code below this line

def prime_checker(number):

    is_prime = True

    for i in range(2, number):

        if number % i == 0:

            is_prime = False

    if is_prime:

        print("the number is a prime number")

    else:

        print("the number is not a prime number")

# write your code above this line

# -------------------------

# don't change the code below

n = int(input("Check this number: "))

prime_checker(number = n)

# don't change the codde above

# --------------------------
```

```
Check this number: 4
the number is not a prime number
```

Ceaser - Cipher

https://www.geeksforgeeks.org/caesar-cipher-in-cryptography/ (https://www.geeksforgeeks.org/caesar-cipher-in-cryptography/)

Build a ceaser cipher code by following clue

Step - 1

TODO-1: Create a function called 'encrypt' that takes the 'text' and 'shift' as inputs.

```
TODO-2: Inside the 'encrypt' function, shift each letter of the 'text' forwards
in the alphabet by the shift amount and print the encrypted text.
#e.g.
#plain_text = "hello"
#shift = 5
#cipher_text = "mjqqt"
#print output: "The encoded text is mjqqt"

##HINT: How do you get the index of an item in a list:
#https://stackoverflow.com/questions/176918/finding-the-index-of-an-item-in-a-list

##🐛Bug alert: What happens if you try to encode the word 'civilization'?🐛
```

TODO-3: Call the encrypt function and pass in the user inputs. You should be able to test the code and encrypt a message.

step - 2

#TODO-1: Create a different function called 'decrypt' that takes the 'text' and 'shift' as inputs.

#TODO-2: Inside the 'decrypt' function, shift each letter of the 'text' *backwards* in the alphabet by the shift amount and print the decrypted text.
#e.g. #cipher_text = "mjqqt" #shift = 5 #plain_text = "hello" #print output: "The decoded text is hello"

#TODO-3: Check if the user wanted to encrypt or decrypt the message by checking the 'direction' variable. Then call the correct function based on that 'drection' variable. You should be able to test the code to encrypt *AND* decrypt a message.

In [47]:

```
# list of the alphabets

alphabet = ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j', 'k', 'l', 'm', 'n',
            'o', 'p', 'q', 'r', 's', 't', 'u', 'v', 'w', 'x', 'y', 'z', 'a', 'b',
            'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j', 'k', 'l', 'm', 'n', 'o', 'p',
            'q', 'r', 's', 't', 'u', 'v', 'w', 'x', 'y', 'z']
logo = """
 ,adPPYba, ,adPPYYba,  ,adPPYba, ,adPPYba, ,adPPYYba, 8b,dPPYba,
a8"     "" ""     `Y8 a8P_____88 I8[    "" ""     `Y8 88P'   "Y8
8b         ,adPPPPP88 8PP"""""""  `"Y8ba,  ,adPPPPP88 88
"8a,   ,aa 88,    ,88 "8b,   ,aa aa    ]8I 88,    ,88 88
 `"Ybbd8"' `"8bbdP"Y8  `"Ybbd8"' `"YbbdP"' `"8bbdP"Y8 88
            88             88
           ""             88
                          88
 ,adPPYba, 88 8b,dPPYba,  88,dPPYba,   ,adPPYba, 8b,dPPYba,
a8"     "" 88 88P'    "8a 88P'    "8a a8P_____88 88P'   "Y8
8b         88 88       d8 88       88 8PP""""""" 88
"8a,   ,aa 88 88b,   ,a8" 88       88 "8b,   ,aa 88
 `"Ybbd8"' 88 88`YbbdP"'  88       88  `"Ybbd8"' 88
              88
              88
"""


print(f"Welcome to \n{logo}")

#Encryption

def encrypt(text, shift):

    encrypted = []

    for i in text:

        index_i = alphabet.index(str(i))

        encrypted.append(alphabet[index_i + shift])

    enc_str = ''

    for i in encrypted:

        enc_str += i

    return enc_str

# Decryption

def decrypt(text,shift):

    decrypted =[]

    for i in text:

        index_i = alphabet.index(str(i))

        decrypted.append(alphabet[index_i - shift])
    dec_str = ''

    for i in decrypted:

        dec_str += i

    return dec_str

# combining encryption and decryption

def driver_code():

    direction = input("Type 'encode' to encrypt, type 'decode' to decrypt:\n")

    text = input("Type your message:\n").lower()

    shift = int(input("Type the shift number:\n"))

    if direction == "encode":

        print(f"the encrypted message is {encrypt(text, shift)}")

    if direction == 'decode':

        print(f"the decrypted message is {decrypt(text,shift)}")

should_end = False

while not should_end:

    driver_code()

    repeat = input("Enter 'Y' to repeat the task, else enter 'N' to end the task :")

    if repeat == 'Y':

        driver_code()

    if repeat == 'N':

        should_end = True

        print('Good bye..!')

    else:

        print("Enter the correct credentials: ")

        driver_code()
```

```
Welcome to

 ,adPPYba, ,adPPYYba,  ,adPPYba, ,adPPYba, ,adPPYYba, 8b,dPPYba,
a8"     "" ""     `Y8 a8P_____88 I8[    "" ""     `Y8 88P'   "Y8
8b         ,adPPPPP88 8PP"  `"Y8ba,  ,adPPPPP88 88
"8a,   ,aa 88,    ,88 "8b,   ,aa aa    ]8I 88,    ,88 88
 `"Ybbd8"' `"8bbdP"Y8  `"Ybbd8"' `"YbbdP"' `"8bbdP"Y8 88
            88             88
           ""             88
                          88
 ,adPPYba, 88 8b,dPPYba,  88,dPPYba,   ,adPPYba, 8b,dPPYba,
a8"     "" 88 88P'    "8a 88P'    "8a a8P_____88 88P'   "Y8
8b         88 88       d8 88       88 8PP" 88
"8a,   ,aa 88 88b,   ,a8" 88       88 "8b,   ,aa 88
 `"Ybbd8"' 88 88`YbbdP"'  88       88  `"Ybbd8"' 88
              88
              88

Type 'encode' to encrypt, type 'decode' to decrypt:
encode
Type your message:
Civilization
Type the shift number:
5
the encrypted message is hnanqnefynts
Enter 'Y' to repeat the task, else enter 'N' to end the task :N
Good bye..!
```