Program No.: 07

**Aim:**

Create a List and apply list operations in python.

**Topics covered:**

Implementing Lists in Python.

**Course Outcome**

CO2: Implement basic data structures in python

Cognitive Level: K3.

**Case Studies:**

***Case Study 01:***

***Problem Statement:***

Python Program to Read a List of Words and Return the Length of the Longest One.

***Problem Solution:***

1. Take the number of elements in the list and store it in a variable.

2. Accept the values into the list using a for loop and insert them into the list.

3. First assume that the first element is the word with the longest length.

4. Then using a for loop and if statement, compare the lengths of the words in the list with the first element.

5. Store the name of the word with the longest length in a temporary variable.

6. Display the word with the longest length

7. Exit..

***Program/Source Code:***

#Python Program to Read a List of Words and Return the Length of the Longest One.

"""

Case Study : 01

File Name : cse1.py

Topic : Lists

"""

n=int(input("Enter number of elements: "))

lis=[None]\*n

max=' '

for i in range(0,n):

lis[i]=input("Enter element: ")

if(len(max)<len(lis[i])):

max=lis[i]

print("The word with max length is ",max)

***Program Explanation:***

1. Take the number of elements in the list and store it in a variable.

2. Accept the values into the list using a for loop and insert them into the list.

3. First assume that the first element is the word with the longest length.

4. Then using a for loop and if statement, compare the lengths of the words in the list with the first element.

5. Store the name of the word with the longest length in a temporary variable.

6. Display the word with the longest length

7. Exit.

***Runtime Test Cases:***

1. Enter number of elements : 3

Enter element : Vijayawada

Enter element : Bangalore

Enter element : Chennai

The word with max length is Vijayawada

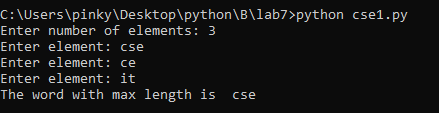
2. Enter number of elements : 2

Enter element : Hyderabad

Enter element : Goa

The word with max length is Hyderabad

**Output:**



***Case Study 02:***

***Problem Statement:***

Program to check for a Valid IMEI Number

***Problem Solution:***

1. Creating the list and taking the list of numbers.

2. Checking the given number is a IMEI number by the following conditions.

a. Starting from the rightmost digit, double the value of every second digit (e.g., 7 becomes 14).

b. If doubling of a number results in a two digit number i.e greater than 9(e.g., 7 × 2 = 14), then add the digits of the product (e.g., 14: 1 + 4 = 5), to get a single digit number.

c. Now take the sum of all the digits.

d. Check if the sum is divisible by 10 i.e.(total modulo 10 is equal to 0) then the IMEI number is valid; else it is not valid.

***Program/Source Code:***

#Program to check for a Valid IMEI Number

"""

Case Study : 02

File Name : cse2.py

Topic : Lists

"""

num=int(input("Enter a number :"))

lis=[0]\*16

i=0

while num>0:

t = num % 10

if i==0:

lis.append(t)

i=1

else:

t=2\*t

s=0

if t>9:

while t>0:

r=t%10

s+=r

t=t/10

t=s

lis.append(t)

i=0

num=num/10

s=0

for i in range(0,len(lis)):

s+=lis[i]

if s%10==0:

Print("Given IMEI number is valid")

else:

print("Given IMEI number is not valid")

***Program Explanation:***

1. Creating the list and taking the list of numbers.

2. Checking the given number is a IMEI number by the following conditions.

a. Starting from the rightmost digit, double the value of every second digit (e.g., 7 becomes 14).

b. If doubling of a number results in a two digit number i.e greater than 9(e.g., 7 × 2 = 14), then add the digits of the product (e.g., 14: 1 + 4 = 5), to get a single digit number.

c. Now take the sum of all the digits.

d. Check if the sum is divisible by 10 i.e.(total modulo 10 is equal to 0) then the IMEI number is valid; else it is not valid.

***Runtime Test Cases:***

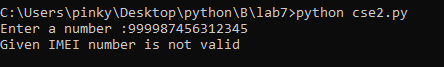
1.Enter a number :490154203237518

Given IMEI number is valid

2.Enter a number :123456789012345

Given IMEI number is not valid

**Output:**



**Result:**

Implementation of Creating a List and applying list operations in python done successfully.