Python Introduction Lab

Assignment 1

Submitted By :- Jaskaran Singh Kawatra

CSE - 1

(05313202717)

Q1. Create a program that asks the user to enter their name and their age. Print out a

message addressed to them that tells them the year that they will turn 100 years old.

Extras:

1. Add on to the previous program by asking the user for another number and

printing out that many copies of the previous message.

2. Print out that many copies of the previous message on separate lines. (Hint:

the string "\n is the same as pressing the ENTER button)

PSEUDOCODE

```
def printName():
name = input("Enter Your Name\t")
age = int(input("Enter You Age\t"))
age_100 = (datetime.datetime.now().year) + (100-age)
print("Hello! "+name+ ", you know you will celebrate your centennial in "+
str(age_100)+"\n")
number = int(input("Enter the Number of times you want to print this message
\t"))
for i in range(number):
print("\nHello! "+name+ ", you know you will celebrate your centennial in "+
str(age_100))
```

CODE & OUTPUT

```
##QUESTION 1
import datetime
def printName():
    name = input("Enter Your Name\t")
    age = int(input("Enter You Age\t"))
    age_100 = (datetime.datetime.now().year) + (100-age)
    print("Hello! "+name+ ", you know you will celebrate your centennial in "+ str(age_100)+"\n")
    number = int(input("Enter the Number of times you want to print this message \t"))
    for i in range(number):
        print("\nHello! "+name+ ", you know you will celebrate your centennial in "+ str(age_100))

printName()
```

```
Enter Your Name Jaskaran Singh Kawatra
Enter You Age    21
Hello! Jaskaran Singh Kawatra, you know you will celebrate your centennial in 2100

Enter the Number of times you want to print this message    3

Hello! Jaskaran Singh Kawatra, you know you will celebrate your centennial in 2100

Hello! Jaskaran Singh Kawatra, you know you will celebrate your centennial in 2100

Hello! Jaskaran Singh Kawatra, you know you will celebrate your centennial in 2100
```

Q2. Take a list, say for example this one:

a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]

and write a program that prints out all the elements of the list that are less than 5.

Extras:

1. Instead of printing the elements one by one, make a new list that has all the

elements less than 5 from this list in it and print out this new list.

2. Write this in one line of Python.

3. Ask the user for a number and return a list that contains only elements from the

original list a that are smaller than that number given by the user.

PSEUDOCODE

```
def printelements(lst):
# Printing Elements Less than 5
new_lst = []
for i in lst:
if i<5:
print(i)
##1. Appending in List
new_lst.append(i)
print("New List is {}".format(new_lst))
##2. Appending in one line
new_lst2 = [x for x in lst if x<5]
print("New List in one line is{}".format(new_lst2))
##3. Asking user and responding accordingly
number = int(input("Enter the number to find element smaller than the
number"))
new_lst3 = [x for x in lst if x<number]
print("Elements smaller than{} are {}".format(number, new_lst3))
a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]
printelements(a)
```

CODE & OUTPUT

```
##QUESTION 2

def printelements(lst):
# Printing Elements Less than 5
    new_lst = []
    for i in lst:
        if i<5:
            print(i)
    ##1. Appending in List
            new_lst.append(i)
    print("New List is {}".format(new_lst))

    ##2. Appending in one line
    new_lst2 = [x for x in lst if x<5]
    print("New List in one line is{}".format(new_lst2))

    ##3. Asking user and responding accordingly
    number = int(input("Enter the number to find element smaller than the number"))
    new_lst3 = [x for x in lst if x<number]
    print("Elements smaller than{} are {}".format(number, new_lst3))
a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]
printelements(a)
```

```
1
1
2
3
New List is [1, 1, 2, 3]
New List in one line is[1, 1, 2, 3]
Enter the number to find element smaller than the number4
Elements smaller than4 are [1, 1, 2, 3]
```

Q3. Write a program that asks the user how many Fibonacci numbers to generate and then generates them. Take this opportunity to think about how you can use functions.

Make sure to ask the user to enter the number of numbers in the sequence to generate.(Hint: The Fibonacci seqence is a sequence of numbers where the next number in the sequence is the sum of the previous two numbers in the sequence. The sequence looks like this: 1, 1, 2, 3, 5, 8, 13, ...)

PSEUDOCODE

def fibo(n):

  if n <= 1:

    return n

  else:

    return(fibo(n-1) + fibo(n-2))

nterms = int(input("Enter the number of numbers for seq."))

print("Fibonacci sequence:")

for i in range(nterms):

  print(fibo(i))

CODE & OUTPUT

```
## QUESTION 3

def fibo(n):
    if n <= 1:
        return n
    else:
        return(fibo(n-1) + fibo(n-2))
nterms = int(input("Enter the number of numbers for seq."))
print("Fibonacci sequence:")
for i in range(nterms):
    print(fibo(i))
```

```
Enter the number of numbers for seq.5
Fibonacci sequence:
0
1
1
2
3
```

Q4. Write a program (function!) that takes a list and returns a new list that contains all the

elements of the first list minus all the duplicates.

Extras:

● Write two different functions to do this - one using a loop and constructing a list, and another using sets.

PSEUDOCODE

```
def lst_unique(lst):
    unique = []
    for l in lst:
        if l not in unique:
            unique.append(l)
    for x in unique:
        print(x)


def using_set(lst):
    list_set = set(lst)
    unique_list = list(list_set)
    for x in unique_list:
        print(x)
```

a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 21, 89]

print("Without using Sets")

lst_unique(a)

print("\nUsing Sets")

using_set(a)

CODE & OUTPUT

```python
## QUESTION 4
def lst_unique(lst):
    unique = []
    for l in lst:
        if l not in unique:
            unique.append(l)
    for x in unique:
        print(x)

def using_set(lst):
    list_set = set(lst)
    unique_list = list(list_set)
    for x in unique_list:
        print(x)

a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 21, 89]
print("Without using Sets")
lst_unique(a)
print("\nUsing Sets")
using_set(a)
```

```
Without using Sets
1
2
3
5
8
13
21
34
55
89

Using Sets
1
2
3
34
5
8
13
21
55
89
```

Q5. Ask the user for a number and determine whether the number is prime or not. (For

those who have forgotten, a prime number is a number that has no divisors.). Use functions

PSEUDOCODE

```python
def isPrime():
    num = int(input("Enter Number you want to check \t"))
    flag = 1
    for i in range(2, int(num/2)):
        if(num%i == 0):
            flag = 0
            break
    if(flag==0):
        print("Number is not Prime")
    else:
        print("Number is Prime")


isPrime()
```

CODE & OUTPUT

```python
def isPrime():
    num = int(input("Enter Number you want to check \t"))
    flag = 1
    for i in range(2, int(num/2)):
        if(num%i == 0):
            flag = 0
            break
    if(flag==0):
        print("Number is not Prime")
    else:
        print("Number is Prime")

isPrime()
```

```
Enter Number you want to check  7
Number is Prime
```

GITHUB LINK:

https://github.com/JaskarannSingh/ML_PYTHON_LAB/blob/main/ML%20Lab.ipynb