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PYTHON INTRODUCTION LAB (ASSIGNMENT 1)

PROBLEM STATEMENT:

Create a program that asks users 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 a separate line. (Hint : the string "/n is the same as pressing the ENTER button)

PSEUDOCODE:

```python
import datetime
## Question1
def printName():
    name = input("Enter your name: \t")
    age = int(input("Enter your age: \t"))
    number = int(input("Enter the number of times you want to print the message addressed that tells you the year that you will turn 100 years old. \t"))
    age_100 = (datetime.datetime.now ().year) + (100-age)
    print("Hi! "+name+ ", and you will be turn 100 years old in "+ str(age_100)+"\n")

print("Printing Multiple Copies \n")
for i in range(number):
    print("Hi! "+name+ ", and you will be turn 100 years old in "+ str(age_100)+"\n")
printName()
```

PROGRAM SCREENSHOT:

```
In [2]: import datetime
        ## Question1
        def printName():
            name = input("Enter your name: \t")
            age = int(input("Enter your age: \t"))
            number = int(input("Enter the number of times you want to print the message addressed that tells you the year that you will turn 100
        years old. \t"))
            age_100 = (datetime.datetime.now().year) + (100-age)
            print("Hi! "+name+ ", and you will be turn 100 years old in "+ str(age_100)+"\n")

            print("Printing Multiple Copies \n")
            for i in range(number):
                print("Hi! "+name+ ", and you will be turn 100 years old in "+ str(age_100)+"\n")

        printName()
```

OUTPUT:

```
Enter your name:  Damandeep Singh

Enter your age:   21

Enter the number of times you want to print the message addressed that
tells you the year that you will turn 100 years old.      5

Hi!  Damandeep Singh,  and you will be turn 100 years old in 2100


Printing Multiple Copies


Hi!    Damandeep Singh,   and you will be turn 100 years old in 2100


Hi!    Damandeep Singh,   and you will be turn 100 years old in 2100


Hi!    Damandeep Singh,   and you will be turn 100 years old in 2100


Hi!    Damandeep Singh,   and you will be turn 100 years old in 2100


Hi!    Damandeep Singh,   and you will be turn 100 years old in 2100
```

Github Link of Jupyter Notebook:

https://github.com/Daman-x/ML_Works/Pythonlabassignment1

https://github.com/Daman-x/ML_Works/Pythonlabassignment1/blob/main/Question1.ipynb

PROBLEM STATEMENT:

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:

```python
## Question 2
def printele(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 ele 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]
printele(a)
```

PROGRAM SCREENSHOT:

```
In [2]:  ## Question 2
         def printele(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 ele 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]
         printele(a)
```

OUTPUT:

```
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 ele smaller than the number8
Elements smaller than 8 are [1, 1, 2, 3, 5]
```

Github Link of Jupyter Notebook:

https://github.com/Daman-x/ML_Works/Pythonlabassignment1
https://github.com/Daman-x/ML_Works/Pythonlabassignment1/blob/main/Question2.ipynb

PROBLEM STATEMENT:

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 sequence 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:

```
## Question 3 Fibonacci series

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))
```

PROGRAM SCREENSHOT:

```
In [2]: ## Question 2
        def printele(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 ele 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]
        printele(a)
```

OUTPUT:

```
Enter the number of numbers for seq.12
Fibonacci sequence:
0
1
1
2
3
5
8
13
21
34
55
89
```

Github Link of Jupyter Notebook:

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https://github.com/Daman-x/ML_Works/Pythonlabassignment1https://github.com/Daman-x/ML_Works/Pythonlabassignment1/blob/main/Question3.ipynb

PROBLEM STATEMENT:

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:

```
## 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)
```

PROGRAM SCREENSHOT:

```
In [1]: ## 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)
```

OUTPUT:

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

Github Link of Jupyter Notebook:

https://github.com/Daman-x/ML_Works/Pythonlabassignment1https://github.com/Daman-x/ML_Works/Pythonlabassignment1/blob/main/Question4.ipynb

PROBLEM STATEMENT:

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:

```
## Question 5
def prime_check():
    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")

prime_check()
```

PROGRAM SCREENSHOT:

```
In [1]:
## Question 5
def prime_check():
    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")

prime_check()
```

OUTPUT:

```
Enter Number you want to check      98
Number is not Prime
```

Github Link of Jupyter Notebook:

https://github.com/Daman-x/ML_Works/Pythonlabassignment1https://github.com/Daman-x/ML_Works/Pythonlabassignment1/blob/main/Question5.ipynb