

# **Machine Learning Assignment**

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## ASSIGNMENT

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)

Soln:

```
from datetime import date
name=input('please enter your name \n')
age=input('please enter your age \n')
print('Hey {0} you will turn 100 years old in {1}'.format(name,int(100-
int(age))+date.today().year))

n=int(input())
copy='Hey {0} you will turn 100 years old in {1} \n'.format(name,int(100-
int(age))+date.today().year)
print(n*copy)
```

program

```
from datetime import date
name=input('please enter your name \n')
age=input('please enter your age \n')
print('Hey {0} you will turn 100 years old in {1}'.format(name,int(100-int(age))+date.today().year))

n=int(input())
copy='Hey {0} you will turn 100 years old in {1} \n'.format(name,int(100-int(age))+date.today().year)
print(n*copy)
```

output

```

please enter your name
Avnish singh
please enter your name
23
Hey Avnish singh you will turn 100 years old in 2098
6
Hey Avnish singh you will turn 100 years old in 2098
Hey Avnish singh you will turn 100 years old in 2098
Hey Avnish singh you will turn 100 years old in 2098
Hey Avnish singh you will turn 100 years old in 2098
Hey Avnish singh you will turn 100 years old in 2098
Hey Avnish singh you will turn 100 years old in 2098

```

**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.

**Soln:**

```

## 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

```
## 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 number20
Elements smaller than20 are [1, 1, 2, 3, 5, 8, 13]
```

---

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 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, ...*)

soln:

```
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

```
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))
```

Output

```
Enter the number of numbers for seq.8
Fibonacci sequence:
0
1
1
2
3
5
8
13
```

**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.

**Sol:**

```
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**

```
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  
34  
55  
89

```
print("using sets")
```

using sets

```
print("Using Sets")  
using_set(a)
```

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**

**Soln**

```
def primeCheck():
```

```
    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("this Number is not Prime")  
    else:  
        print("this Number is Prime")  
primeCheck()
```

### Program

```
## Question 5  
def primeCheck():  
    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("this Number is not Prime")  
    else:  
        print("this Number is Prime")  
primeCheck()
```

### Output

```
Enter Number you want to check 20  
this Number is not Prime
```

---

```
primeCheck()
```

```
Enter Number you want to check 17  
this Number is Prime
```