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1.Create a program that asks the user to enter their name and their age.
Print out a message that tells them the year that they will turn 100 years old.

```
from datetime import datetime                          #import date time in library
name = input('What is your name? \n')     #creating the variable name and dynamic user defined function
age = int(input('How old are you? \n')) #input statement is one of the inbuilt function(This takes the input from the user)
hundred = int((100-age) + datetime.now().year) #give the condition.The datetime is used to calculate the year that they will turn 100years
print ('Hello %s. You are %s years old. You will turn 100 years old in %s.' % (name, age, hundred)) #print the output statement
```

Output:

```
What is your name?
hariharasudhan
How old are you?
20
Hello hariharasudhan. You are 20 years old. You will turn 100 years old in 2100.
```

2.Create a program that asks the user for a number and prints out a list of all the divisors of that number.

```
choice=1                                                    #value 1 stored to be choice variable name
while choice == 1:                                          #using while loop choice == 1
    i=1                                                     # i is equivalent to 1
    num=int(input("Enter Test Number: "))                   #using a user defined function
    while i<(num/2+1):                                      #give the while condition i less than num
        if num%i==0:
            print(i)
        i=i+1
    try:                                #try block lets you test a block of code, try block will generate an exeption because num is defined
        print(num)
        choice=int(input("Try Again ?[1=Yes,0=No] Choice: "))#displayed try again in the choice statement after given value executes
    except:                                                 #the exception can be handled using the try statement
        print("Invalid Choice")                             #print the given one
        choice=1
```

Output:

```
Enter Test Number: 30
1
2
3
5
6
10
15
30
Try Again ?[1=Yes,0=No] Choice:
```

3.Take a string and check whether the string is a palindrome or not

```
def isPalindrome(str):
                                                #Run loop from 0 to len/2
    for i in range(0, int(len(str)/2)):         #using  for loop int the len of string divided by2
        if str[i] != str[len(str)-i-1]:         #if string of i not equavalent to str of len(str)-i-1
            return False
    return True

                                                # main function
s = "malayalam"
ans = isPalindrome(s)

if (ans):                                       # check if the condition is match&correct print
    print("Yes")                                # print the given statement print("yes")
else:                                           # otherwise going to else statement
    print("No")                                 # print the given statement print("No")
```

Output:

Yes

4.Create a list a = [1, 4, 9, 16, 25, 36, 49, 64, 81, 100].
Write one line of Python that takes this list a and makes a new list that has only the odd elements of this list in it.

(Use list comprehension)

```
a = [1, 4, 9, 16, 25, 36, 49, 64, 81, 100]        #given the elements and storing the value to a
b = [i for i in a if i % 3 == 0]                    #using for loop and using if condition and given the logic i%3 == 0 for odd elements
print(b)                                            #print the output statement of print(b)
```

Output:

```
[9, 36, 81]
```

5.) Write a Python program that accepts a string and calculate the number of digits and letters.

```
s = input("Input a string:")              #given a input and user defined function and user can enter the string
d=l=0
for c in s:                                   #using for statement
    if c.isdigit():                        #if the c.is digit() d=d+1 >> yes go to digit
        d=d+1
    elif c.isalpha():                      #no digit its go to c.isalpha() l=l+1
        l=l+1
    else:                                  #otherwise given the else statement
        pass
print("Letters", l)                       #print the given output statements
print("Digits", d)
```

Output:

```
Input a string: hariharasudhan9597ispassword
Letters 24
Digits 4
```

6.) Write a function to compute maximum of 3 numbers

```
def max_of_two( x, y ):                  #create function and give variable name
    if x > y:                             #given x and y
        return x
    return y
def max_of_three( x, y, z ):            #and add the another one value of z and max_of_three function
    return max_of_two( x, max_of_two( y, z ) )  #and compare the value which one is maximum in return function
print(max_of_three(9, 16, 12))                  #print the value and return the value as a result which number is maximum
```

Output:

```
16
```

7.) Write a Python function that accepts a string and calculate the number of upper case letters and lower case letters

```
def string_test(s):                              #using function
    d={"UPPER_CASE":0, "LOWER_CASE":0}     #given the variable name
    for c in s:                                  #using for statement
        if c.isupper():                         #character is uppercase execute if statement and using operators
            d["UPPER_CASE"]+=1
        elif c.islower():                       #character is lowercase execute elif statement and using operators
            d["LOWER_CASE"]+=1
        else:                                    #otherwise given else statement
            pass
    print ("Original String : ", s)        #print the given output statement
    print ("No. of Upper case characters : ", d["UPPER_CASE"])
    print ("No. of Lower case Characters : ", d["LOWER_CASE"])
string_test('Welcome to Our Data Science Course')                #string will be displayed
```

Output:

```
Original String :  Welcome to Our Data Science Course
No. of Upper case characters :  5
No. of Lower case Characters :  24
```

***8.)*Write a Python function that takes a list and returns a new list with unique elements of the first list.**

```
def unique_list(l):                                  #using a function    and create a unique_list
   x = []
   for a in l:                                        #using for statement
      if a not in x:                                  # a values not in x
         x.append(a)                                   #using method of append:its used to add the element in the end of the list
   return x                                           #the value x will be return
print(unique_list([1,2,3,3,3,3,4,5,5,7,7,8,8,8,9,9]))     #print the output statement and given unique_list
```

Output:

```
[1, 2, 3, 4, 5, 7, 8, 9]
```
