Student id: 20625630

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Program : A1Q1

#This program will result in the multiplication of (x\*y)  
  
#Taking input from the user and coverting them into float  
X = float(input("Enter the value of X = "))  
Y = float(input("Enter the value of Y = "))  
Sum = 0  
  
#Main logic of program using while loop  
while Y>0:  
 Sum = Sum+X  
 Y = Y-1  
  
#Final result of multiplication through addition that is stored in "Sum" variable  
print(Sum)

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Program : A1Q2

#Program to find nth root of a given number by user  
  
#Input taken from user for getting "n" value and "number" value  
X = float(input("Enter a number = "))  
Root = float(input("Enter the nth root = "))  
  
#Main logic of the program  
Ans = X \*\* (1 / Root)  
  
#Final result after finding nth root of a number  
print(Ans)

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Program : A1Q3

#Program that finds length of string and the number of vowels occurs in string is printed in output  
user\_name = input("Enter the user name = ")  
counter = 0  
vowels= "aeiou"  
v\_counter = 0  
  
  
#Main logic of program in that I used nested for loop  
for z in user\_name:  
 counter = counter + 1  
 for x in vowels:  
 if z == x:  
 v\_counter = v\_counter + 1  
  
#Printing the length of string  
print("Length = ", counter)  
  
#Printing the number of vowels occurs in the string  
print("Vowels = ", v\_counter)

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Program : A1Q4\_A

import random  
  
#This code will take command "flip" from user  
y = input("To flip the coin type flip = ")  
flip = y.upper()  
  
#The flip command entered by user will flip the coin  
if (flip=="FLIP"):  
 # Here random function will generate only two values "1" and "2"  
 x = random.randrange(1,3)  
  
 # Main logic  
 '''  
 When random function will generate "1" it will consider "Heads"   
 and when it will generate 2 it will consider "Tails"   
 '''  
 #Head: True  
 if (1 == x):  
 print("Result = True")  
 #Tails: False  
 elif (2 == x):  
 print("Result = False")  
else:  
 print("Wrong Command!")

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Program : A1Q4\_B

import random  
  
#Taking probability from user of coins flip for heads  
p = float(input("Enter the probablity of heads occur in coin flip between 0 to 1 = "))  
  
#Main logic of program  
def Biased\_coin():  
  
 #Random function is used for coin flip  
 y = random.randint(0, 1)  
  
 #The heads outcome in coin flip is taken upon the probability entered by user  
 if p>y:  
 print("Coin flip has a value of heads = True")  
 else:  
 print("Coin flip has a value of heads = False")  
  
  
#Here the coin flips are tossed four times  
for x in range(4):  
 if p<=1 and p>=0:  
 Biased\_coin()  
 else:  
 print("Invalid input !")  
 exit()

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Program : A1Q4\_C

import random  
  
#This input tells how many times the coin will flip  
n = int(input("How many times would you like to flip the coin ? "))  
  
#Main logic of program  
for z in range(n):  
 # Random function is used for coin flip  
 y = random.randint(0, 1)  
  
  
#When 0 will come it will consider heads  
 if 0==y:  
 print("The Coin came up = Heads")  
  
#When 1 will come it will consider heads  
 elif 1==y:  
 print("The Coin came up = Tails")

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Program : A1Q4\_D

import random  
  
#Taking input from user to flip the coin  
n = int(input("How many times would you like to flip the coin ? "))  
  
No\_of\_heads = 0  
No\_of\_tails = 0  
  
#Main logic of program  
for z in range(n):  
 # Random function is used for coin flip  
 y = random.randint(0,1)  
  
 if 0 == y:  
 print("The Coin came up = Heads")  
 No\_of\_heads = No\_of\_heads + 1  
  
 elif 1 == y:  
 print("The Coin came up = Tails")  
 No\_of\_tails = No\_of\_tails + 1  
  
print("Total Number of Heads = ", No\_of\_heads)  
print("Total Number of Tails = ", No\_of\_tails)  
Ratio1 = No\_of\_heads/n  
print("Ration = ", Ratio1)  
  
  
p = float(input("Probability of coming heads = "))  
print("Change in ratio after changing probability = ")  
No\_of\_heads = n / p  
Ratio2 = float(No\_of\_heads/n)  
  
print("Ration = ", Ratio2)  
  
print("P = ", p)  
  
'''  
1st example..  
When the user flip the coin (fifteen times) then the ratio will (0.6)  
but when the user increase the probability of heads outcomes by : 10 then the   
ratio will be (0.1). So the old ratio is 0.6 and after increase in probability the ratio becomes 0.1  
'''  
  
  
'''  
2nd example..  
When the user flip the coin (thirteen times) then the ratio will (0.38461538461538464)  
but when the user increase the probability of heads outcomes by : 9 then the   
ratio will be (0.1111111111111111). So the old ratio is 0.38461538461538464 and after increase in probability the ratio becomes 0.1111111111111111  
'''  
  
  
'''  
3rd example..  
When the user flip the coin (ten times) then the ratio will (0.4)  
but when the user increase the probability of heads outcomes by : 6 then the   
ratio will be (0.16666666666666669). So the old ratio is 0.4 and after increase in probability the ratio becomes 0.16666666666666669  
'''  
  
  
'''  
4th example..  
When the user flip the coin (five times) then the ratio will (0.8)  
but when the user increase the probability of heads outcomes by : 3 then the   
ratio will be (0.33333333333333337). so the old ratio is 0.8 and after increase in probability the ratio becomes 0.33333333333333337  
'''

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Program : A1Q4\_E

import random  
  
#Taking input from user to flip the coin  
n = int(input("How many times would you like to flip the coin = "))  
  
No\_of\_heads = 0  
No\_of\_tails = 0  
Side3 = 0  
  
#Main logic of program  
for z in range(n):  
 # Random function is used for coin flip  
 y = random.randrange(0,3)  
  
 if 0 == y:  
 print("The Coin came up = Heads")  
 No\_of\_heads = No\_of\_heads + 1  
  
 elif 1 == y:  
 print("The Coin came up = Tails")  
 No\_of\_tails = No\_of\_tails + 1  
  
 elif 2 == y:  
 print("The coin came up = side3")  
 Side3 = Side3 + 1  
  
print("Total heads = ", No\_of\_heads)  
print("Total tails = ", No\_of\_tails)  
print("Side3:", Side3)  
  
#Finding the ratio of total number of heads tossed  
Ratio = No\_of\_heads/n  
print("No\_of\_heads ration is = ", Ratio)

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Program : A1Q5\_A

#Taking input of cents that user will enter  
c = int(input("cents: "))  
  
#Main logic of program  
def adjust(cent):  
 for x in range(10):  
 if cent <=2:  
 cent = 0  
 elif cent>=3 and cent<=7:  
 cent = 5  
 elif cent==8 or cent==9:  
 cent = 10  
 return cent  
  
  
#Final result after rounding  
print("cent after round: ",adjust(c))

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Program : A1Q5\_B

Dollars = float(input("Enter money amount in Dollars = "))  
  
#Logic of rounding cents  
def roundoff(cent):  
 for x in range(10):  
 if cent <=2:  
 cent = 0  
 elif cent>=3 and cent<=7:  
 cent = 5  
 elif cent==8 or cent==9:  
 cent = 10  
 return cent  
  
#Main logic of program  
original\_copy = Dollars  
copy1 = int(original\_copy)  
result = str(original\_copy - copy1)  
print("decimal value of dollar amount before round:", result)  
r = result.replace("0.","")  
r1 = r[:1]  
r2 = r[1:2]  
  
#Rounding of cents  
r3 = roundoff(int(r2))  
if r3 == 10:  
 r3 = int(r1) + 1  
 r4 = "0." + str(r3)  
else:  
 r4 = "0." + r1 + str(r3)  
final\_result = float(copy1) + float(r4)  
  
#Final result after rounding the dollar amount  
print("Dollar amount after round: ",final\_result)