Luke Scott

COSC 311

Dr. Wang

Homework 1

1. **Triangular Number Sequence**

“TNS.py”

# Luke Scott

# COSC 311

# Homework 1 - Question 1

# Dr. Wang

def generate\_triangular\_sequence(triangular\_sequence):

temp = 0

for i in range(20):

if (i == 0):

continue

temp += i

triangular\_sequence.append(temp)

print(triangular\_sequence)

def print\_odd(triangular\_sequence):

sum\_odd = 0

for i in triangular\_sequence:

if (i % 2 != 0):

sum\_odd += i

print("Sum of Odd Integers in the triangular sequence = ", sum\_odd)

def print\_even(triangular\_sequence):

sum\_even = 0

for i in triangular\_sequence:

if (i % 2 == 0):

sum\_even += i

print("Sum of Even Integers in the triangular sequence = ", sum\_even)

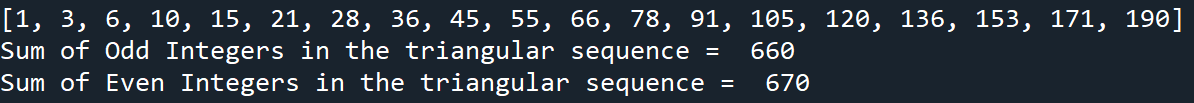
triangular\_sequence = list()

generate\_triangular\_sequence(triangular\_sequence)

print\_odd(triangular\_sequence)

print\_even(triangular\_sequence)

**Results for TNS.py**

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1. **Construct Decision Tree Model Using Nested If-Statement**

“weather.py”

# Luke Scott

# COSC 311

# Dr. Wang

# Homework 1

def play\_tennis(outlook, humidity, wind):

if (outlook == 'Overcast'):

return False

elif (outlook == 'Sunny'):

if (humidity == 'High'):

return False

else:

return True

else:

if (wind == 'strong'):

return False

else:

return True

outlook = input("What is the outlook for today? 'Sunny', 'Overcast', or 'Rainy' : ")

humidity = input("What is the humidity for today? 'High' or 'Normal' : ")

wind = input("How windy is it today? 'Strong' or 'Weak' : ")

if (play\_tennis(outlook, humidity, wind)):

print("You can play tennis today.")

else:

print("You cannot play tennis today.")

**Results for weather.py**

**Text

Description automatically generated**

1. **Draw an Octagon**

“octagon.py”

# Luke Scott

# COSC 311

# Dr. Wang

# Homework 1

def octagon(o):

for i in range(o\*2):

if (i < o):

a = ""

for k in range(o - i):

a += " "

for k in range(o + i\*2):

a += "\*"

for k in range(o - i):

a += " "

print(a)

else:

a = ""

for k in range(o \* 3):

a += "\*"

print(a)

for i in range(o):

a = ""

for k in range(i+1):

a += " "

for k in range((o\*3) - ((i+1)\*2)):

a += "\*"

for k in range(i+1):

a += " "

print(a)

o = int(input("Enter the size of your octagon : "))

octagon(o)

**Results for octagon.py**

Text

Description automatically generated

1. **Monte Carlo Simulation**

“dice.py”

# Luke Scott

# COSC 311

# Dr. Wang

# Homework 1

from random import randint

def calculate(times, total):

return float((times / total)\*100)

def roll(times\_to\_roll):

rolls = [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 ]

for i in range(times\_to\_roll):

total = (randint(1,6) + randint(1,6))-2

rolls[total] += 1

for i in range(11):

print("The percentage of", i+2, "'s rolled is %", round(calculate(rolls[i], times\_to\_roll),4))

n = int(input("Enter how many times you would like to roll the dice : "))

roll(n)

**Results for dice.py**

Text

Description automatically generated