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# Developer---Abel Gonzalez

# Course------CS1213-01

# Project-----Project #7

# Due---------November 14,2018

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# This program uses a user created function to compute

# an approximation of sin(x). It prompts the user to

# enter the name of an input file and an output file.

# The input file will contain a list of floating-point

# numbers, one number per line. The program should input

# each number, compute its sine, and write the sine

# (rounded to five decimal places)approximated to 20

# terms to the output file.

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# Factorial using while-loop (WORKS)

# ----------------------------------------------------

def fact(n):

factorial = 1

count = 2

while count <= n:

factorial \*= count

count += 1

return factorial

# ----------------------------------------------------

# Taylor series using for-loop;must use fact function

# (WORKS)

# ----------------------------------------------------

def sin(x,n):

sine = 0

for count in range(n+1):

sign = (-1)\*\*count

pi = 22/7

sine += sign\*((x\*\*((2\*count)+1))/(fact((2\*count)+1)))

return sine

# ----------------------------------------------------

# MAIN PROGRAM

# ----------------------------------------------------

filename = input("Enter source file name: ")

outname = input("Enter output file name: ")

infile = open(filename,"r")

outfile= open(outname,"w")

for line in infile:

x = float(line)

n = 20

app = sin(x,n)

outfile.write('%8.5f \n'%app)

infile.close()

outfile.close()

# I added this part to signal that the program finished.

print("Computation is complete.Please check your file directory.")