Pseudo Code:

Import math module

Enter Numerator
Enter Denominator

Check if denominator is zero
    Output if it is zero

Store absolute values of numerator and denominator

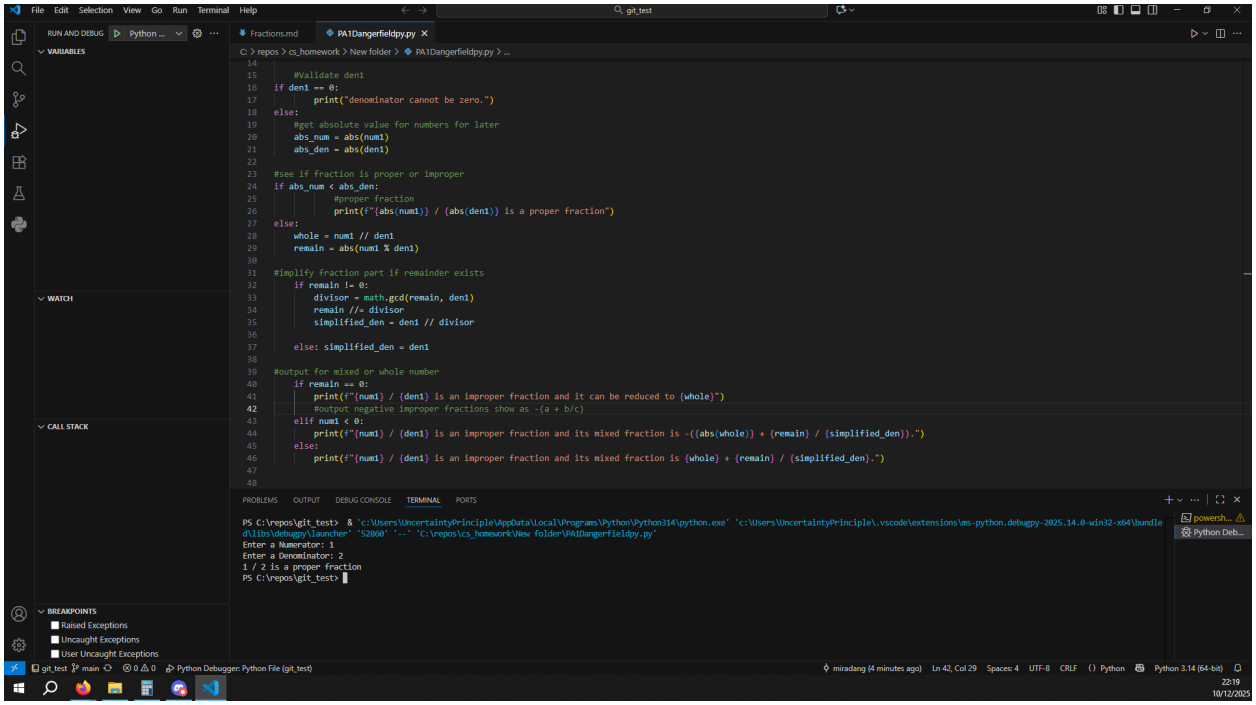
Check if its a proper fraction first by checking absolute value of numerator is smaller than denominator

    Calculate modulus of numerator and denominator, then store modulus in a variable
    Calculate output denominator by dividing by gcd

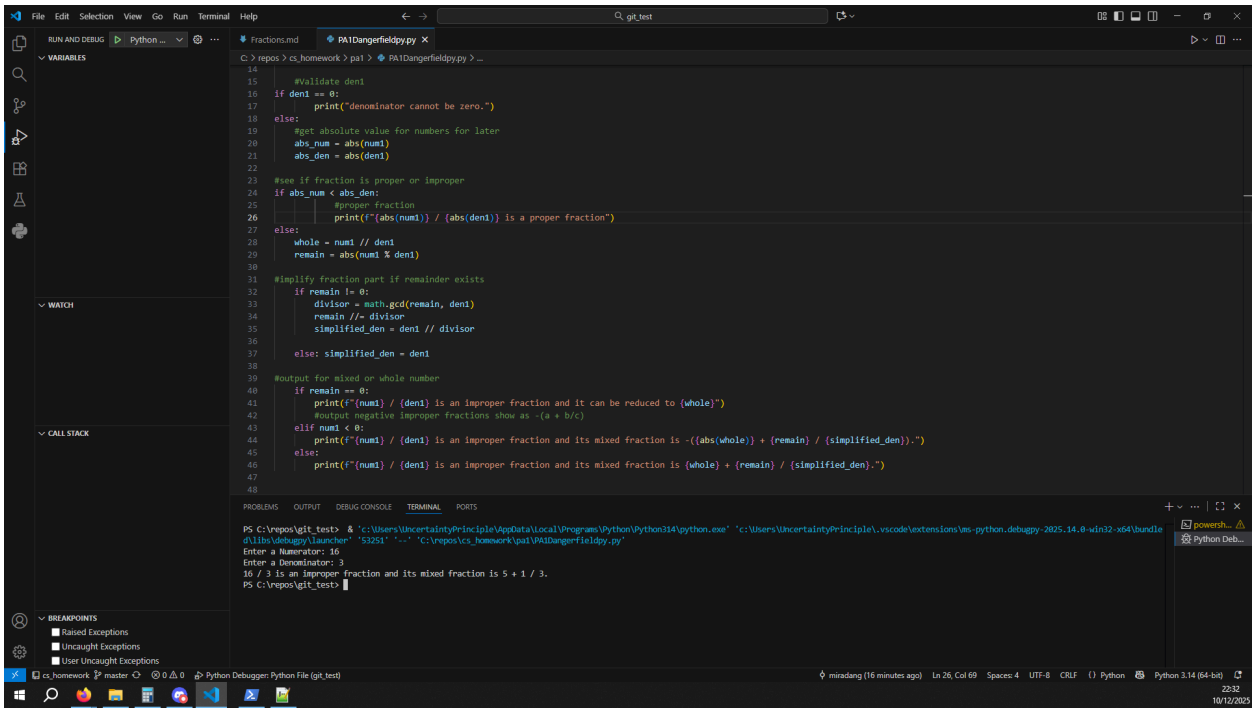
Output the final fractions

Test Run Screenshots:

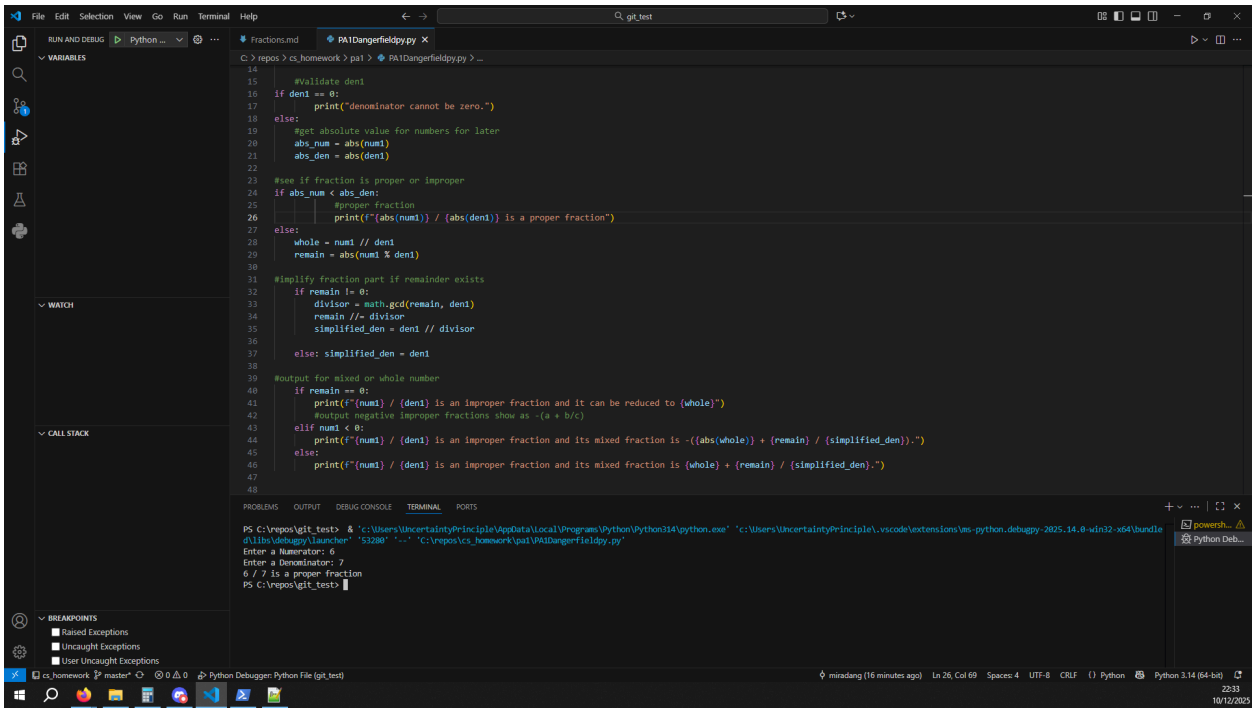
Run1:



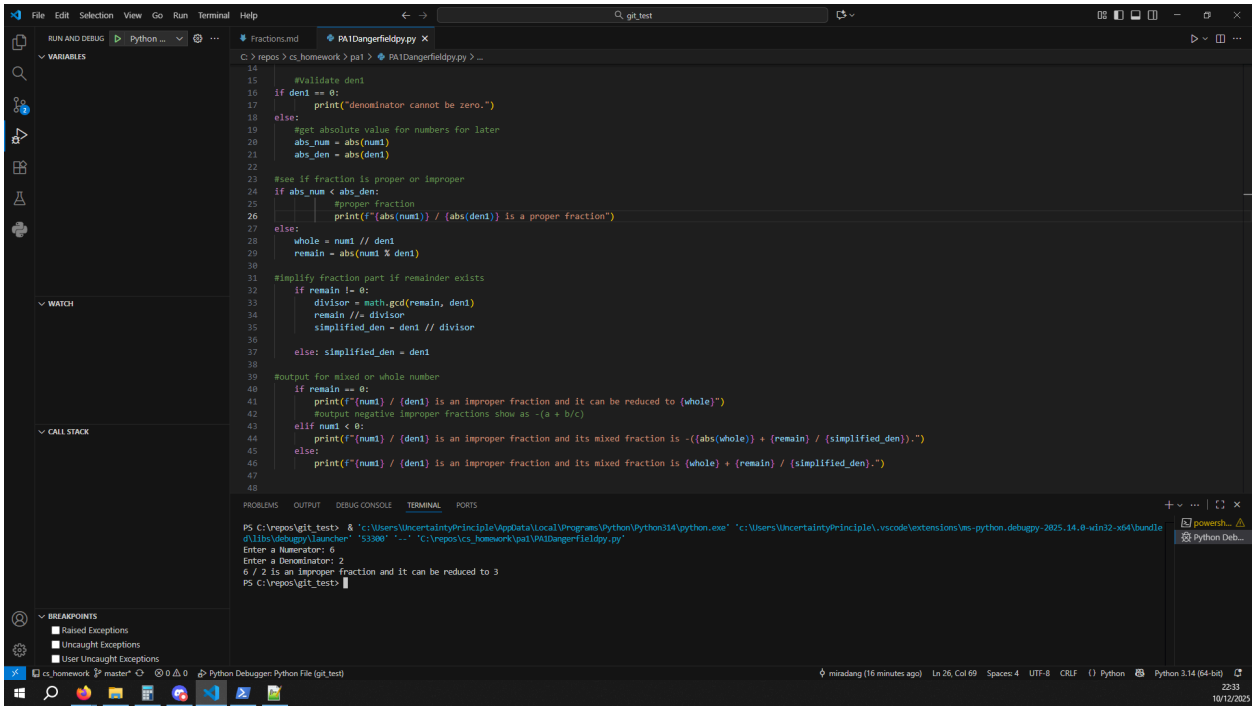
Run2:



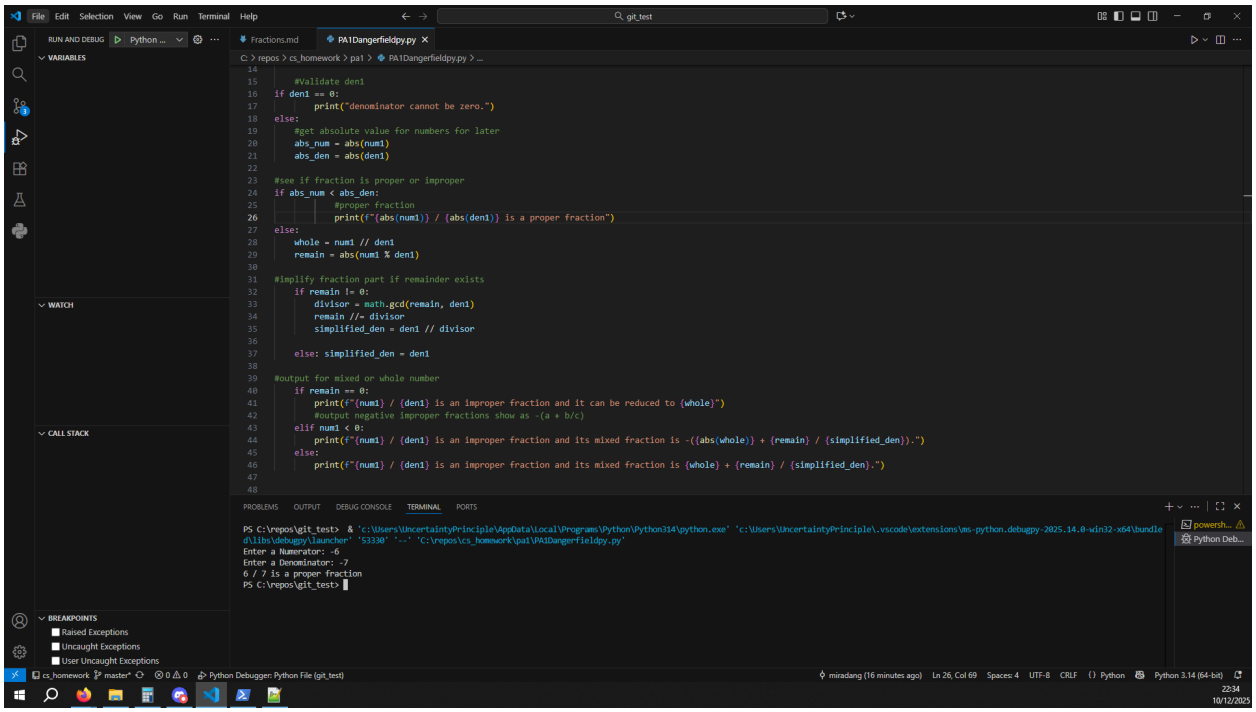
Run3:



Run4:


File Edit Selection View Go Run Terminal Help
git_test
RUN AND DEBUG
Python ...
VARIABLES
WATCH
CALL STACK
BREAKPOINTS
Raised Exceptions
Uncaught Exceptions
User Uncaught Exceptions
Fractions.md
PA1Dangerfieldpy.py
C: > repos > cs_homework > pa1 > PA1Dangerfieldpy.py > ...
#Validate den1
if den1 == 0:
print("denominator cannot be zero.")
else:
#get absolute value for numbers for later
abs_num = abs(num1)
abs_den = abs(den1)
#see if fraction is proper or improper
if abs_num < abs_den:
#proper fraction
print(f"{abs(num1)} / {abs(den1)} is a proper fraction")
else:
whole = num1 // den1
remain = abs(num1 % den1)
#implify fraction part if remainder exists
if remain != 0:
divisor = math.gcd(remain, den1)
remain //= divisor
simplified_den = den1 // divisor
else: simplified_den = den1
#output for mixed or whole number
if remain == 0:
print(f"{num1} / {den1} is an improper fraction and it can be reduced to {whole}")
#output negative improper fractions show as -(a + b/c)
elif num1 < 0:
print(f"{num1} / {den1} is an improper fraction and its mixed fraction is -({abs(whole)} + {remain} / {simplified_den}).")
else:
print(f"{num1} / {den1} is an improper fraction and its mixed fraction is {whole} + {remain} / {simplified_den}.")
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\repos\git_test> & 'c:\Users\UncertaintyPrinciple\AppData\Local\Programs\Python\Python314\python.exe' 'c:\Users\UncertaintyPrinciple\.vscode\extensions\ms-python.debugpy-2025.14.0-win32-x64\bundled\libs\debugpy\launcher' '53300' '--' 'C:\repos\cs_homework\pa1\PA1Dangerfieldpy.py'
Enter a Numerator: 6
Enter a Denominator: 2
6 / 2 is an improper fraction and it can be reduced to 3
PS C:\repos\git_test>
powersh...
Python Deb...
cs_homework master* 0 0 Python Debugger: Python File (git_test)
miradang (16 minutes ago) Ln 26, Col 69 Spaces: 4 UTF-8 CRLF Python Python 3.14 (64-bit)
22:33
10/12/2025

Run 5:


File Edit Selection View Go Run Terminal Help
git_test
RUN AND DEBUG
Python ...
VARIABLES
WATCH
CALL STACK
BREAKPOINTS
Raised Exceptions
Uncaught Exceptions
User Uncaught Exceptions
Fractions.md
PA1Dangerfieldpy.py
C: > repos > cs_homework > pa1 > PA1Dangerfieldpy.py > ...
#Validate den1
if den1 == 0:
print("denominator cannot be zero.")
else:
#get absolute value for numbers for later
abs_num = abs(num1)
abs_den = abs(den1)
#see if fraction is proper or improper
if abs_num < abs_den:
#proper fraction
print(f"{abs(num1)} / {abs(den1)} is a proper fraction")
else:
whole = num1 // den1
remain = abs(num1 % den1)
#implify fraction part if remainder exists
if remain != 0:
divisor = math.gcd(remain, den1)
remain //= divisor
simplified_den = den1 // divisor
else: simplified_den = den1
#output for mixed or whole number
if remain == 0:
print(f"{num1} / {den1} is an improper fraction and it can be reduced to {whole}")
#output negative improper fractions show as -(a + b/c)
elif num1 < 0:
print(f"{num1} / {den1} is an improper fraction and its mixed fraction is -({abs(whole)} + {remain} / {simplified_den}).")
else:
print(f"{num1} / {den1} is an improper fraction and its mixed fraction is {whole} + {remain} / {simplified_den}.")
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\repos\git_test> & 'c:\Users\UncertaintyPrinciple\AppData\Local\Programs\Python\Python314\python.exe' 'c:\Users\UncertaintyPrinciple\.vscode\extensions\ms-python.debugpy-2025.14.0-win32-x64\bundled\libs\debugpy\launcher' '53330' '--' 'C:\repos\cs_homework\pa1\PA1Dangerfieldpy.py'
Enter a Numerator: -6
Enter a Denominator: -7
6 / 7 is a proper fraction
PS C:\repos\git_test>
powersh...
Python Deb...
cs_homework master* 0 0 Python Debugger: Python File (git_test)
miradang (16 minutes ago) Ln 26, Col 69 Spaces: 4 UTF-8 CRLF Python Python 3.14 (64-bit)
22:34
10/12/2025