ECE-C301 Advanced Programming for Engineers
Homework Assignment: Week 2

Implement a class called **`Fraction`** that defines an immutable rational number. Users of your class should be able to work with fractions using the traditional operators—specifically your class should implement the following "magic methods":

- **`__init__`** – Construct a rational number with a given numerator and denominator
- **`__add__`** – Add two Fraction instances
- **`__sub__`** – Subtract two Fraction instances
- **`__eq__`** – Check if two Fraction instances are equal
- **`__lt__`** – Check if one Fraction instance is less than the other
- **`__ne__`** – Check if two Fraction instances are not equal
- **`__le__`** – Check if one Fraction instance is less than or equal to the other
- **`__gt__`** – Check if one Fraction instance is greater than the other
- **`__ge__`** – Check if one Fraction instance is greater than or equal to the other
- **`__float__`** – Gets a floating point representation of a Fraction instance, called by **`float()`**
- **`__repr__`** – Gets a string representation of the Fraction instance, called by **`str()`**

– Save your **`Fraction`** class implementation in a file called **`fraction.py`**.

Write a small test program that imports **`fraction.py`** as follows:

```
1 from fraction import Fraction
```

and use your **`Fraction`** class to clearly demonstrate that all of your magic methods work properly.

– Save your test program in a file called **`test.py`**

– Save the output of your test program in a file called **`output.txt`**

Submitting Your Assignment

Create a zip file containing the following files:

- **`fraction.py`** – contains your **`Fraction`** class implementation
- **`test.py`** – contains your test program for the **`Fraction`** class
- **`output.txt`** – contains the output of **`test.py`**

name your zip file using your Drexel user id. For example: **`HW2_abc123.zip`**. Upload your zip file to **`learn.drexel.edu`** using the assignment submission link.