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1  """
2  CS241 Team Activity 03 - Stretch
3  Written by Chad Macbeth
4  """
5
6  class Rational:
7
8      ### Initialize a Rational number
9      def __init__(self):
10         self.numerator = 0
11         self.denominator = 1
12
13     ### Display the Rational number
14     def display(self):
15         # Check for improper fraction
16         if self.numerator > self.denominator:
17             # Perform integer division using //
18             whole_number = self.numerator // self.denominator
19             new_numerator = self.numerator % self.denominator
20             print("{} {}/{}".format(whole_number, new_numerator,
21                                     self.denominator))
22         else:
23             print("{} / {}".format(self.numerator, self.denominator))
24
25     ### Prompt for the Rational number
26     def prompt(self):
27         self.numerator = int(input("Enter the numerator: "))
28         self.denominator = int(input("Enter the denominator: "))
29
30     ### Display the Rational number as a decimal
31     def display_decimal(self):
32         decimal = self.numerator / self.denominator
33         print(decimal)
34
35     ### Reduce the Rational number
36     def reduce(self):
37         # Use the min function since we don't know if the
38         # numerator or denominator is bigger. The loop will
39         # run from min(numerator, denominator) down to 1 looking
40         # for the largest common factor.
41         for factor in range(min(self.numerator, self.denominator), 0, -1):
42             # Check if we found a number that divides both
43             # the numerator and denominator evenly.
44             if ((self.numerator % factor == 0) and
45                 (self.denominator % factor == 0)):
46                 self.numerator //= factor
47                 self.denominator //= factor
48                 break # Don't need to check anymore
49
50     ### Multiply two Real Number
51     def multiply_by(self, rational):
52         self.numerator *= rational.numerator
53         self.denominator *= rational.denominator
54
55     ### Driver
56     def main():
57         rational = Rational()
58         rational.display()
59         rational.prompt()
60         rational.display()
61         rational.display_decimal()
62         rational.reduce()
63         rational.display()
64         rational2 = Rational()
65         rational2.prompt()
66         rational2.display()

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67
68     rational.multiply_by(rational2)
69     rational.display()
70     rational.reduce()
71     rational.display()
72
73 if __name__ == "__main__":
74     main()
75
76
77
```