

Computer Science and Programming Homework October 26th, 2020

Task 1 *Class for rational numbers*

With the concept of object-oriented programming, you need to implement an own class for rational numbers, i.e., numbers which can be represented by an integer nominator and integer denominator. Python does not support such data types by default.

1. Create a class named *Rational* and initialize the rational number object by a given pair of nominator and denominator.
2. Implement a method to print out the rational number object. **Hint:** You need to use the built-in function name `__str__`, and return the string representation of this rational number in this method.
3. Implement addition, subtraction, multiplication and division between two rational number objects. Note that in each method you need to return a rational number object. **Hint:** The corresponding built-in function names for these operators are shown in the following code. For instance, when Python finds an arithmetic expression such as $r1 + r2$, where $r1$ and $r2$ are both objects of class *Rational*, then, it executes the code `r1.__add__(r2)`. An overview of operators and their corresponding functions can be found at <https://docs.python.org/3/library/operator.html>.
4. Calculate the following expression by your class, and then print the result though the method in subtask 2.

$$\left(\frac{1}{2} + \frac{3}{4} - \frac{5}{6}\right) \times \frac{7}{8} \div \frac{9}{10}$$

```
class Rational:
    def __init__(self,n,d):

    def __str__(self):

    def __add__(self,other):

    def __sub__(self,other):

    def __mul__(self,other):

    def __truediv__(self,other):
```