**Python Advanced Assignment 20**

1. Compare and contrast the float and Decimal classes&#39; benefits and drawbacks.

Ans-) The float class is built into Python and offers fast computation speeds, but it can have issues with accuracy when performing arithmetic operations due to the way it stores numbers in binary format. The Decimal class, on the other hand, is part of the decimal module and offers exact decimal arithmetic, but it is slower and requires more memory than the float class.

2. Decimal (‘1.200’) and Decimal (‘1.2’) are two objects to consider. In what sense are these the same

object? Are these just two ways of representing the exact same value, or do they correspond to

different internal states?

Ans-) Decimal ('1.200') and Decimal ('1.2') are different objects with different internal states, even though they represent the same value. The former has three significant figures, while the latter has only two.

3. What happens if the equality of Decimal (‘1.200’) and Decimal (‘1.2’) is checked?

Ans-) If the equality of Decimal ('1.200') and Decimal ('1.2') is checked, the result will be False because they are different objects with different internal states.

4. Why is it preferable to start a Decimal object with a string rather than a floating-point value?

Ans-) It is preferable to start a Decimal object with a string rather than a floating-point value because a floating-point value can have accuracy issues due to the way it is stored in binary format.

5. In an arithmetic phrase, how simple is it to combine Decimal objects with integers?

Ans-) Decimal objects can be combined with integers easily in arithmetic phrases.

6. Can Decimal objects and floating-point values be combined easily?

Ans-) Decimal objects and floating-point values can be combined, but there can be accuracy issues when performing arithmetic operations.

7. Using the Fraction class but not the Decimal class, give an example of a quantity that can be expressed with absolute precision.

Ans-) An example of a quantity that can be expressed with absolute precision using the Fraction class is 1/3.

8. Describe a quantity that can be accurately expressed by the Decimal or Fraction classes but not by a floating-point value.

Ans-) A quantity that can be accurately expressed by the Decimal or Fraction classes but not by a floating-point value is 0.1, which cannot be represented exactly in binary format.

Q9. Consider the following two fraction objects: Fraction (1, 2) and Fraction (1, 2). (5, 10). Is the internal state of these two objects the same? Why do you think that is?

Ans-) The internal state of Fraction (1, 2) and Fraction (5, 10) is the same because they represent the same value of 0.5.

Q10. How do the Fraction class and the integer type (int) relate to each other? Containment or

inheritance?

Ans-) The Fraction class contains the integer type, as fractions can be represented as ratios of integers.