Graded Programming Assignment 4 | Graded Programming Assignment (GPA 04) | CS101.1x Courseware

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Problem Definition: A rational number is represented as ***numerator / denominator***. We need to identify whether two rational numbers are equal or not. For example, consider two rational numbers '**1 / 4**' and '**4 / 16**'. Both of them are equal, as, '**4 / 16**' if reduced to lowest terms is '**1 / 4**'.

Consider the following structure 'rational' that has member variables 'numerator' and 'denominator'.

struct rational {
int numerator;
int denominator;
} ;You are required to write 2 functions:Function 1: reduceThis function has two parameters:

1. **struct rational *inputrational**: *inputrational is a pointer to the structure rational, which is the actual rational number to be reduced
2. **struct rational *outputrational**: *outputrational is a pointer to the structure rational, which will store the rational number in its lowest form

The function should do the following

1. It should reduce the number i.e. numerator and denominator to its lowest form, where the original number is stored in inputrational
2. The reduced (output) number should be stored in outputrational.

The function is given below, in which you need to write your code void reduce(struct rational *inputrational, struct rational *outputrational) {

}Function 2: equalThis function has two parameters:

1. **struct rational *rational_number1**: *rational_number1 is a pointer to the structure rational, which denotes the first rational number
2. **struct rational *rational_number2**: *rational_number2 is a pointer to the structure rational, which denotes the second rational number

The function should do the following

1. This function should call the function 'reduce' twice. The first time with the first rational number, and the second time, with the second rational

number.

2. Thereafter, the function should check whether both the rational numbers obtained in the lowest form are equal or not. If yes, then it should return boolean value '**true**', else, it should a boolean value '**false**'.

The function is given below, in which you need to write your code bool equal (struct rational *rational_number1, struct rational *rational_number2) {

}

In the '**main**' program, the function '**equal**' is called using two arguments, num1 and num2 which are passed by reference, both of type '**struct rational**'

Sample Examples are given below: `Example 1`

```
Details of Number 1
Numerator :
3
Denominator :
9
Details of Number 2
Numerator :
1
Denominator :
3
Both rational numbers are equal
```

Example 2:

Details of Number 1

Numerator :

1

Denominator :

4

Details of Number 2

Numerator :

1

Denominator :

3

Both rational numbers are not equal Click on the next unit (visible at the top of your screen), to follow the instructions and write your code in the space provided.