

PROGRAMMING IN JAVA LAB-7

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PRN-21070126026

Name- Dhrubo Bhattacharjee

Batch-AIML A2

Write a Java application that will be able to add, subtract, multiply, divide, compare, convert to floating point, and find absolute value for rational numbers, with exception handling. The operations class with the functions are programmed in operations.java file. The driver class with implementing the code with functions from operations are programmed in rational.java file.

//

CODE: `import java.lang.Math;`

```
public class operations{
```

```
    // one rational number will be input as "num1/den1" and the other as  
    "num2/den2" int num1, num2, den1, den2;
```

```
    int num_result, den_result;
```

```
public operations(int num1, int num2, int den1, int den2){ this.num1 = num1; this.num2  
    = num2; this.den1 = den1; this.den2 = den2;  
}
```

```
    // add two rational numbers and return the result in the same format
```

```
"num/dem" public String add(){ if (den1 == den2){  
    num_result = num1 + num2; den_result =  
    den1;
```

```
    } else{ num_result = (num1*den2) + (num2*den1);  
    den_result = den1*den2;
```

```
    }  
    return num_result+"/"+den_result;
```

```
    }
```

```
    // subtract two rational numbers and return the result in the same format
```

```
"num/dem" public String subtract(){ if (den1 ==  
    den2){ num_result = num1 - num2;  
    den_result = den1;
```

```
    } else{ num_result = (num1*den2) - (num2*den1);  
    den_result = den1*den2;
```

```
    }  
    return num_result+"/"+den_result;
```

```
    }
```

```
    // multiply two rational numbers and return the result in the same format
```

```
"num/dem" public String multiply(){ num_result =  
    num1*num2; den_result = den1*den2; return  
    num_result+"/"+den_result;
```

```
    }
```

```
    // divide two rational numbers and return the result in the same format
```

```
"num/dem" public String divide(){
```

```
    //throwing divideByZero exception is the denominator is zero if (den2 == 0){ throw  
    new ArithmeticException("Divide by zero");
```

```

    } else{ num_result = num1*den2; den_result =
    den1*num2; return num_result+"/"+den_result;
    }
}

// compare two rational numbers and return the result in the same format
"num/den" public String compare(){ if (num1/den1 ==
num2/den2){ return "Both numbers are equal";
    }
    else if (num1/den1 > num2/den2){ return "First number
    is greater";
} else{ return "Second number is greater";
    }
}

// convert both rational numbers to floating point and return the result public String convert(){ return
"First number in floating point: "+(float)num1/den1+" Second
number in floating point: "+(float)num2/den2;
    }

// find absolute value of both rational numbers and return the result public String absolute(){
return "Absolute value of first number: "+Math.abs(num1/den1)+" Absolute value of second number:
"+Math.abs(num2/den2);
    }
}

```

rational.java

```

public class rational { public static void main(String[] args) {
    // get the input from command line arguments with try catch block to handle strings words as
    input try{ int num1 = Integer.parseInt(args[0]); int den1 = Integer.parseInt(args[1]); String operator =
    args[2]; int num2 = Integer.parseInt(args[3]); int den2 = Integer.parseInt(args[4]);
    operations op = new operations(num1, num2, den1, den2);
    switch(operator){ case "+":
        System.out.println(op.add()); break;
    case "-":
        System.out.println(op.subtract()); break;
    case "x":
        System.out.println(op.multiply()); break;
    case "/":
        System.out.println(op.divide()); break;
    case "compare":

    }
    System.out.println(op.compare()); break;
    case "abs":
        System.out.println(op.absolute()); break;
    case "convert":
        System.out.println(op.convert()); break;
    default:

```

```
        System.out.println("Invalid operation");
    }
}
catch(Exception e){
    System.out.println("Invalid input");
    System.exit(0);
}
}
```

OUTPUT:

```
'Assign7_calc.rational' 4 2 + 4 5
28/10
```

```
'Assign7_calc.rational' 2 4 compare 6 12
Both numbers are equal
```

```
'Assign7_calc.rational' 2 3 x 6 2
12/6
```

GITHUB LINK: <https://github.com/Dhrubo2003/JAVA>