

```
class RationalNumbers
{
def displayrn(p: Int, q: Int ): String = {p.toString()+"/"+q.toString}
def add (p1: Int, q1: Int,p2: Int, q2: Int ): String =
{
val a=(p1*q2)+(p2*q1)
val b=q1*q2
normalize(a,b)
}
def multiply (p1: Int, q1: Int,p2: Int, q2: Int ) : String =
{
val a=p1*p2
val b=q1*q2
normalize(a,b)
}
def subtract (p1: Int, q1: Int,p2: Int, q2: Int ) : String =
{
val a=(p1*q2)-(p2*q1)
val b=q1*q2
normalize(a,b)
}
def min (p1: Int, q1: Int,p2: Int, q2: Int ): String=
{
If ((p1/q1)>(p2/q2)) then
displayrn(p2,q2)
else displayrn(p1,q1)
}
def max (p1: Int, q1: Int,p2: Int, q2: Int ): Int =
{
if ((p1/q1)>(p2/q2)) then
displayrn(p1,q1)
else displayrn(p2,q2)
}
def normalize (p1: Int, q1: Int): String=
{
var largest:int
var smallest:int
var gcd:int
if p1 > q1 {
largest=p1
smallest=q1}
else {
largest=q1
smallest=p1 }

for (a<=smallest until largest)
{
if(largest%i==0 && smallest%i==0)
{
gcd=i;}
}
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}

displayrn(p1%gcd,q1%gcd)
}

object Main
{

    def printOptions (): Unit =
    {
        println ( "1. Display" )
        println ( "2. Add" )
        println ( "3. Multiply" )
        println ( "4. Subtract" )
        println ( "5. Min" )
        println ( "6. Max" )
        println ( "7. Normalize" )
        println ( "8. Exit" )
    }

    def Display (result: Int ): Unit = {
        println ( "Result - " + result.toString)}

    def Process(answer: String, option: Int, func : RationalNumber): String=
    {
        var result = 0

        option match {
            case 1 =>
                val p = scala.io.StdIn.readInt()
                val q = scala.io.StdIn.readInt()
                result = func.display(p , q)
            case 2 =>
                val p1 = scala.io.StdIn.readInt()
                val q1 = scala.io.StdIn.readInt()
                val p2 = scala.io.StdIn.readInt()
                val q2= scala.io.StdIn.readInt()
                result = func.add(p1 , q1, p2, q2)
            case 3 =>
                val p1 = scala.io.StdIn.readInt()
                val q1 = scala.io.StdIn.readInt()
                val p2 = scala.io.StdIn.readInt()
                val q2= scala.io.StdIn.readInt()
                result = func.multiply(p1, q1, p2, q2)
            case 4 =>
                val p1 = scala.io.StdIn.readInt()
                val q1 = scala.io.StdIn.readInt()
                val p2 = scala.io.StdIn.readInt()
                val q2= scala.io.StdIn.readInt()
                result = func.subtract(p1, q1, p2, q2)
            case 5 =>
                val p1 = scala.io.StdIn.readInt()
                val q1 = scala.io.StdIn.readInt()
                val p2 = scala.io.StdIn.readInt()
                val q2= scala.io.StdIn.readInt()
                result = func.min(p1, q1, p2, q2)
        }
    }
}

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    case 6 =>
    val p1 = scala.io.StdIn.readInt()
    val q1 = scala.io.StdIn.readInt()
    val p2 = scala.io.StdIn.readInt()
    val q2 = scala.io.StdIn.readInt()
    result = func.max(p1, q1, p2, q2)
    case 7 =>
    val p = scala.io.StdIn.readInt()
    val q = scala.io.StdIn.readInt()
    result = func.normalize(p, q)
    case _ =>
    // _ means default. for any value for option other than 1 to 6, do nothing
    }
    Display(result)
    result
  }

  def main (args: Array[ String ]): Unit =
  {
    val functions = new RationalNumbers
    var answer: Int = 0
    var input = 0

    do {
      printOptions ()
      //read from console using scala.io.StdIn.readInt()
      input = scala.io.StdIn.readInt()
      answer = Process(answer, input, functions)
    } while (input != 8 )
  }
}

```