**Assignment 14.1**

/\*\*

\* Created by shivkr on 12-10-2017.

\*/

class Rational(n: Int, d: Int) {

require(d != 0)

private val g = gcd(n.abs, d.abs)

val numer = n / g

val denom = d / g

def this(n: Int) = this(n, 1)

def add (that: Rational): Rational =

new Rational(

numer \* that.denom + that.numer \* denom,

denom \* that.denom

)

def add (i: Int): Rational =

new Rational(numer + i \* denom, denom)

def subtraction (that: Rational): Rational =

new Rational(

numer \* that.denom - that.numer \* denom,

denom \* that.denom

)

def subtraction (i: Int): Rational =

new Rational(numer - i \* denom, denom)

def multiply (that: Rational): Rational =

new Rational(numer \* that.numer, denom \* that.denom)

def multiply (i: Int): Rational =

new Rational(numer \* i, denom)

def division (that: Rational): Rational =

new Rational(numer \* that.denom, denom \* that.numer)

def division (i: Int): Rational =

new Rational(numer, denom \* i)

override def toString = numer +"/"+ denom

private def gcd(a: Int, b: Int): Int =

if (b == 0) a else gcd(b, a % b)

}

object RationalMain {

def Options() = {

println("1. Add a rational")

println("2. Subtract a rational")

println("3. Multiply a rational")

println("4. Divide a rational")

println("5. Add a number")

println("6. Subtract a number")

println("7. Multiply a number")

println("8. Divide a number")

println("9. Exit")

}

def Compute(rational: Rational, input: Int): Rational = input match {

case 1 =>

val p = scala.io.StdIn.readInt()

val q = scala.io.StdIn.readInt()

rational.add(new Rational(p, q))

case 2 =>

val p = scala.io.StdIn.readInt()

val q = scala.io.StdIn.readInt()

rational.subtraction(new Rational(p, q))

case 3 =>

val p = scala.io.StdIn.readInt()

val q = scala.io.StdIn.readInt()

rational.multiply(new Rational(p, q))

case 4 =>

val p = scala.io.StdIn.readInt()

val q = scala.io.StdIn.readInt()

rational.division(new Rational(p, q))

case 5 =>

val p = scala.io.StdIn.readInt()

rational.add(new Rational(p))

case 6 =>

val p = scala.io.StdIn.readInt()

rational.subtraction(new Rational(p))

case 7 =>

val p = scala.io.StdIn.readInt()

rational.multiply(new Rational(p))

case 8 =>

val p = scala.io.StdIn.readInt()

rational.division(new Rational(p))

case \_ =>

rational

}

def main(args: Array[String]): Unit = {

var rationalNumber: Rational = new Rational(0)

var input = 0

do {

Options()

input = scala.io.StdIn.readInt()

rationalNumber = Compute(rationalNumber, input)

println("Output is : " + rationalNumber.toString)

} while (input != 9)

}

}

