Problem 3.1

图片包含 文字

描述已自动生成

Problem 3.2:

a)

Irreflexive. a!=a is false.

Symmetric. a!=b and b!=a both are true.

Not transitive. a!=b and b!=c, a=c can still be a case.

b)

Reflexive. a-a is always 0, which is <=3.

Symmetric. |a-b|<=3 means the distance between a and b is less than or equal to 3. Therefore, |b-1|<=3 does not contradict because for this the distance is also less than or equal to 3.

Not transitive. While the distance between a and b is 3, the distance between b and c is 3, which means the distance betwene a and c can be at most 6.

c)

Reflexive. (a mod 10)=(a mod 10)

Symmetric. (a mod 10)=(b mod 10) can be also written as (b mod 10)=(a mod 10)

Transitive. (a mod 10)=(b mod 10) and (b mod 10)=(c mod 10) can be written as (a mod 10)=(b mod 10)=(c mod 10)

Problem 3.3:

a)

isPrime :: Int -> Bool

isPrime x = one x 2

one :: Int -> Int -> Bool

one x y

| x == 1 = False

| x == 2 = True

| y == x `div`2 = True

| x `mod` y /= 0 = one x (y+1)

| x `mod` y == 0 = False

b)

isPrime :: Int -> Bool

isPrime x = one x 2

one :: Int -> Int -> Bool

one x y

| x == 1 = False

| x == 2 = True

| y == x `div`2 = True

| x `mod` y /= 0 = one x (y+1)

| x `mod` y == 0 = False

rotate :: Int -> [a] -> [a]

rotate x [] = []

rotate 0 list = list

rotate 1 list = tail list ++ [head list]

rotate x list = rotate (x-1) (tail list ++ [head list])

show :: Show a => a -> String

read :: Read a => String -> a

isCircPrime :: Integer -> Bool

isCircPrime x

| a == length (show x) = True

| isPrime x == True = isCircPrime (read (rotate (a+1) (show x) ) :: Integer)

| isPrime x == False = False

where a = 0