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Question 1

1. def move():

Set a as the direction the of a single mouse move

if the mouse want to move south (a=S) , move (S) move one step in front to south

elif:

if the mouse want to move north (a=N) , move (N) move one step in front to north

elif:

if the mouse want to move west (a=W), move (W) move one step in front to west

else:

the mouse move east (a=E), move(E) move one step in front to east

1. def findCheese():

while false:

Start look at North and find Cheese

if the mouse finds the Cheese

return true

else:

return false

Look at North-East and find Cheese

if the mouse finds the Cheese

return true

else:

return false

Look at East and find cheese

if the mouse finds the Cheese

return true

else:

return false

Look at North-East and find Cheese

if the mouse finds the Cheese

return true

else:

return false

Look at East and find cheese

if the mouse finds the Cheese

return true

else:

return false

Look at South-East and find Cheese

if the mouse finds the Cheese

return true

else:

return false

Look at South and find cheese

if the mouse finds the Cheese

return true

else:

return false

Look at South-West and find Cheese

if the mouse finds the Cheese

return true

else:

return false

Look at West and find cheese

if the mouse finds the Cheese

return true

else:

return false

Look at North-West and find Cheese

if the mouse finds the Cheese

return true

else:

return false

1. def main():

while false

randomly choose a=N,S,E,W, and move(a)

Then findCheese()

if Cheese is found:

move to the position of the Cheese

return true

else:

return false

Question 2:

a)

input: A

output: length m and n

if A>=0

m= count the length of A

Take the bits from the original number

Append n-m bits of storage to the most significant end of the number being extended.

The value of each appended bit is set to zero.

Set new extended number as A’

n=count the length of A’

if A<0

m=count the length of A

Take the bits from the original number

Append n-m bits of storage to the most significant end of the number being extended.

The value of each appended bit is set to one.

n=count the length of A’

b)

if n>m, A and B are positive numbers

To convert length m equals to n

Append B-A bits of storage to the most significant end of the A

The expending value is 0

if m>n A and B are positive numbers

To convert length n equals to m

Append A-B bits of storage to the most significant end of the B

The expending value is 0

if n>m, A and B are negative numbers

To convert length m equals to n

Append B-A bits of storage to the most significant end of the A

The expending value is 1

if m>n A and B are negative numbers

To convert length n equals to m

Append A-B bits of storage to the most significant end of the B

The expending value is 1

if n>m, A is negative number and B is positive number

To convert length m equals to n

Append B+A bits of storage to the most significant end of the A

The expending value is 0

if m>n A is negative number and B is positive number

To convert length n equals to m

Append A+B bits of storage to the most significant end of the B

The expending value is 1

if n>m, B is negative number and A is positive number

To convert length m equals to n

Append B+A bits of storage to the most significant end of the A

The expending value is 1

if m>n A is negative number and B is positive number

To convert length n equals to m

Append A+B bits of storage to the most significant end of the B

The expending value is 0

After converting m=n

Def add2small (A,B):

look up addition table for row A and column B

let n be the entry

set n10 to be the first (left) digit of n

set n1 to be the second (right) digit of n

return the pair n10 , n1

Def add3small(A,B,c):

a10, a1 = add2small(A, B)

b10, b1 = add2small(a1 , c)

d10, d1 = add2small(a10, b10)

set n1 to be b1

set n10 to be d1

return the pair n10, n1

return the number cp+1npnp-1…n1

def sum(A,B):

set N= maximum of m and n

Set c1=0

For each digit i running from 1 to N

a10, a1 = add3small(Ai,Bi,,Ci )

set ci+1 = a10

set ni = a1

return the number cp+1spsp-1…s1

The final function is sum(A,B)