n = int(input())

# Start point slightly below the grid

print(0, -1)

# Move right along the bottom row

x = 0

y = -1

for i in range(n):

x += 1

print(x,y)

#Move up along the right column to the top

for i in range(n-1):

y += 1

print(x,y)

#Move left one step

x -= 1

print(x,y)

# Move down to the second row from bottom

for i in range(n-2):

y -= 1

print(x,y)

# Move left one step

x -= 1

print(x, y)

#Continue pattern until done

for i in range(n - 3):

if (i+1) % 2 == 0: #move down then right

for j in range(n-2-i):

y -= 1

print(x,y)

for j in range(n-2-i):

x+= 1

print(x,y)

else: #move right then down

for j in range(n-2-i):

x+= 1

print(x,y)

for j in range(n-2-i):

y -= 1

print(x,y)