Analysis Questions for part 1 – submit as a pdf or word document  
1. Let’s try an experiment where s (scale factor) remains constant and n (number of  
lines) is allowed to vary. Comment on your results by using various constant  
values of s for changing n. You may attach results, plot charts etc. to qualify your  
results.

Comment:

When I keep increasing N and keep the scale factor the same, the effects of aliasing become more pronounced as N increases. When N is relatively low, the only few noticeable artifacts are the diagonals which appear to be broken. However, as N increases, the aliasing effect becomes more pronounced such that we can see some new patterns appear which were not even originally present in the input.

Evidence:

(Next page)

When N is low (10)

Shape, polygon

Description automatically generated

When N is relatively high (100)

Diagram

Description automatically generated

When N is really high (500)

Background pattern

Description automatically generated

Let’s try another experiment, this time keep n (number of lines) constant and  
varying s (scale factor). Comment on your results by using various constant  
values of n for changing s. You may attach results, plot charts etc. to qualify your  
results.

Comment:

Keeping N same and changing S has a different effect from above. When S initially has a small value, the aliasing effects are more pronounced. However, as S increases to a value close to 1, we start to eliminate the aliasing effect slowly till when S is 1, the aliasing is removed entirely. This is because as S increases, we have more pixels to represent the original image, reducing the aliasing effect.

Evidence:

When S is 0.1Diagram

Description automatically generated

We don’t even see the radial lines but just sporadic dots

When s is 0.5

Diagram

Description automatically generated

We still see aliasing present but this is not as bad as when S was 0.1

When S is 1

A screenshot of a web

Description automatically generated with low confidence

As expected we see a 1:1 copy with no aliasing as we have enough pixels to present every pixel from the input

Analysis Questions for part 2 – submit as a pdf or word document  
Let’s try an experiment where s (speed of rotation) remains constant and fps (number of  
lines) is allowed to vary. Study the value of the os (observed speed of rotation) ,  
especially when there is temporal aliasing.  
1. Can you design a formula relating s, fps and os.  
Evaluate if your formula works for certain values of s and fps. If s = 10 rotations per  
second,  
2. What is the observed speed os for an fps of 25?  
3. What is the observed speed os for an fps of 16?  
4. What is the observed speed os for an fps of 10?  
5. What is the observed speed os for an fps of 8?

When s =10, rotations/sec = 10

Degrees/sec = 10\*360

Degrees/frame = 10\*360/fps

Net turn/frame = 360 – (10\*360/fps)

Total turn/sec = (360 – (10\*360/fps)) \* fps

Total rotations/sec = ( (360 – (10\*360/fps) ) \* fps ) /360

Simplifying, we have observed speed = fps – s

My formula is as such. OS = S (if fps > 2s)

Else: OS = fps – S

When fps = 25 and s = 10, OS = 25-10 = 15

When fps = 16 and s = 10, OS = 16-10 = 6

When fps = 10 and s = 10, OS = 10-10 = 0

When fps = 8 and s = 10, OS = 8-10 = -2 (moving backwards)