EECS 101
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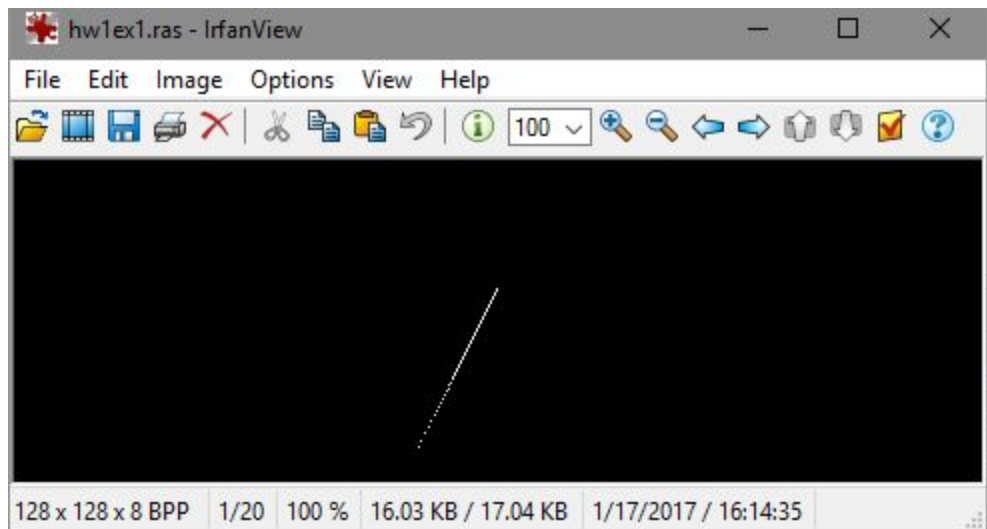<center>Homework1</center>

1.

$X = 0.5$, $Y = -1 + t$, $z = -t$

Perspective Image:

Xprime = (f/z) * x = - (1/2t)
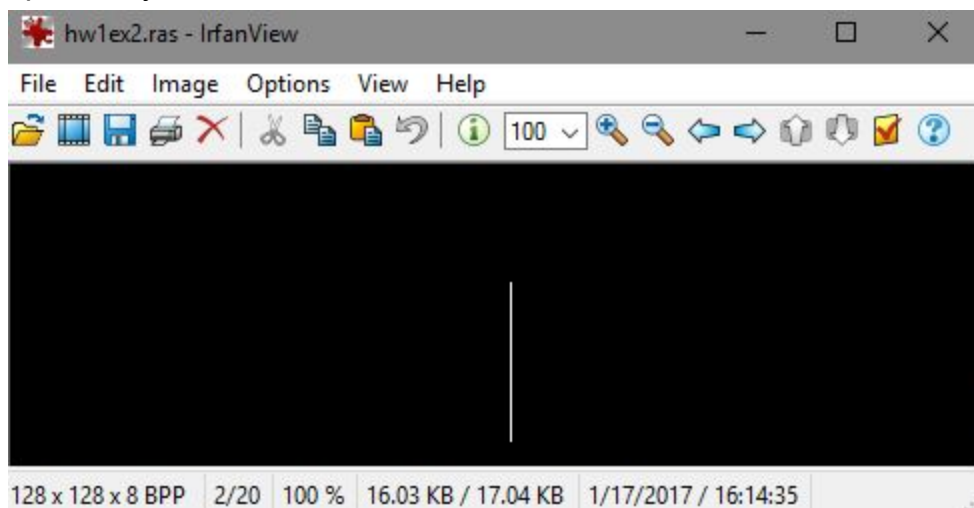
Yprime = (f/z) * y = (-1+t)/ (-t)

Orthographic Image:

Xprime = x = 0.5

Yprime = y = -1+t

Range of t:
Perpective: (0.125,infinity)
Orthographic:(-3,5)

2.1
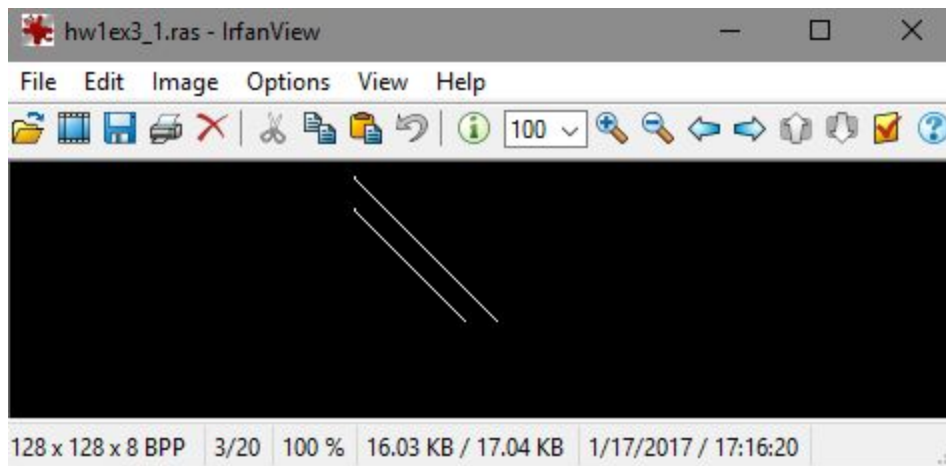X = .5, Y = -1 , Z -1,-2 ,-3
X1 = -.5, y2 = -1

Perspective Image:
Xprime = fx/z
Yprime = fy/z
X1prime = fx1/z
Y1prime = fy1/z
Z value = -1

Z value = -2
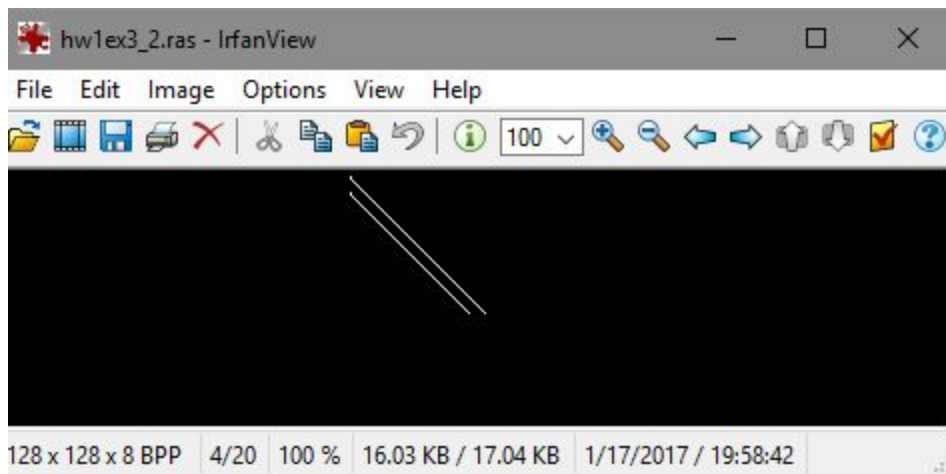
Zvalue = -3
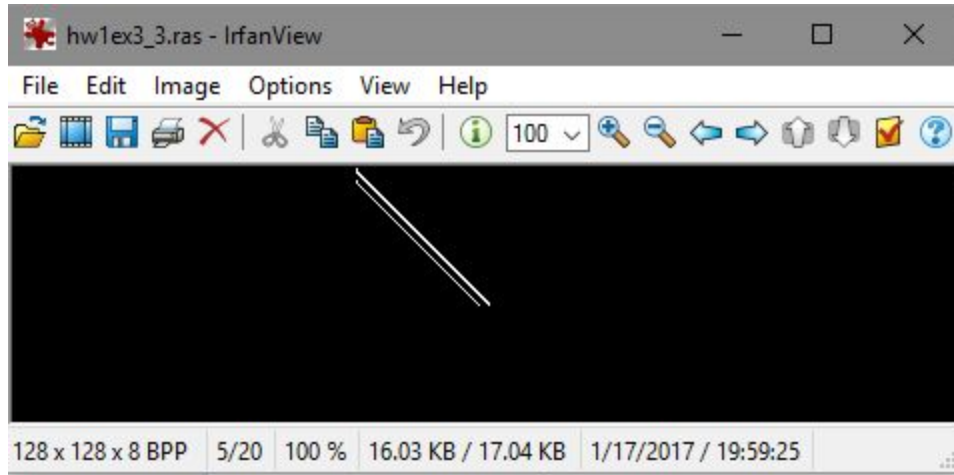
Orthographic Image:

Xprime = x

X1prime = x1

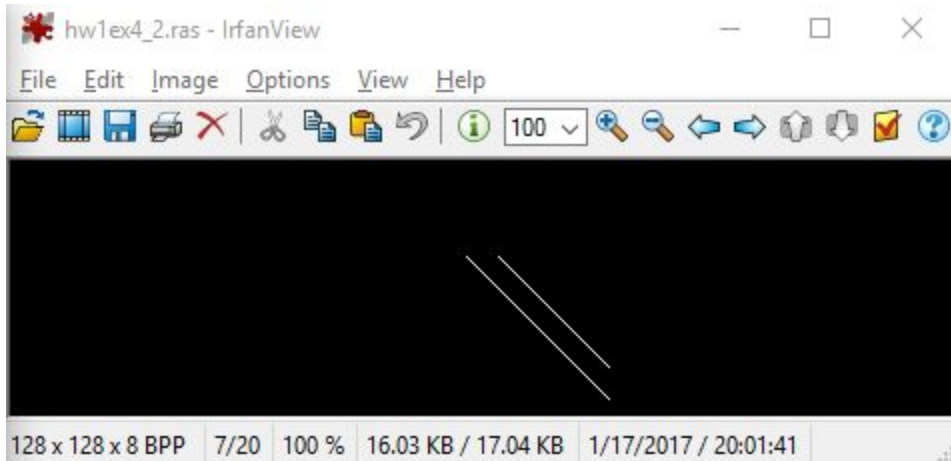Yprime = y

Y1prime = y1
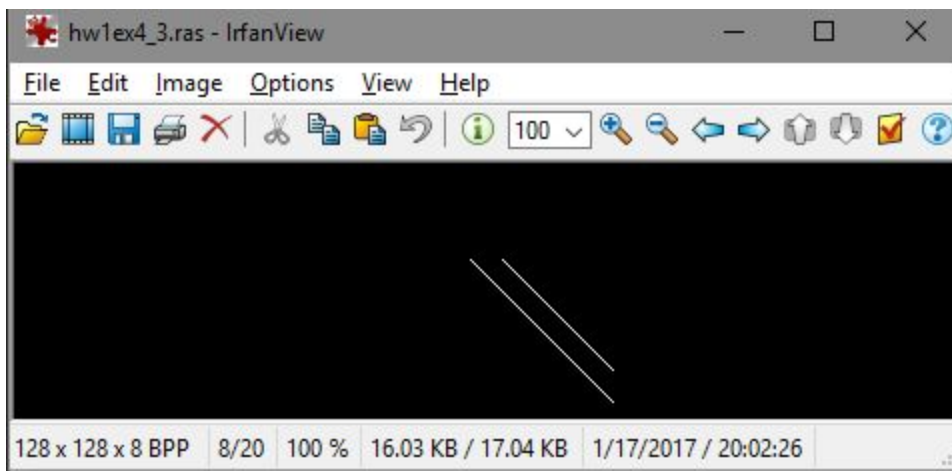
Z value = -1
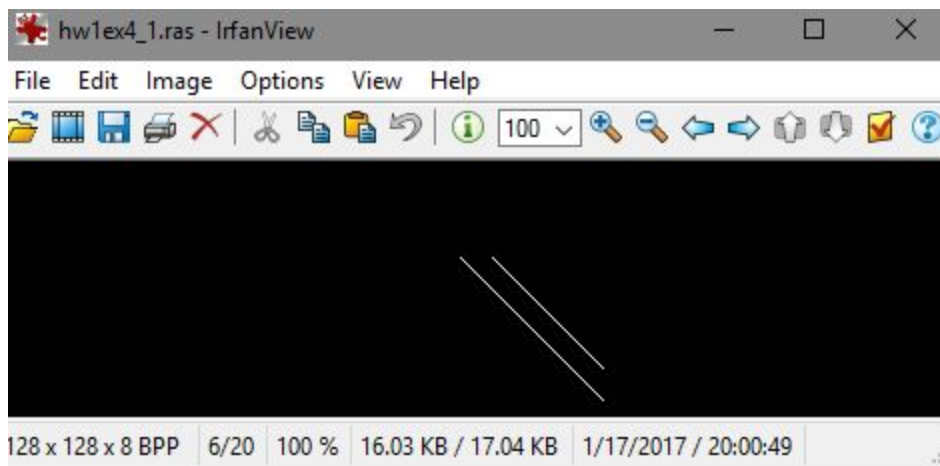
Z value = -2

Zvalue = -3

Magnification is basically f/z and we can see from the formula that they are the same for both the images so they are parallel (as shown above).

If z is a small constant value, then it will be a good approximation.

If u make f = z, then basically x1 = x as f/z =1 which makes perspective = orthographic image.

3.

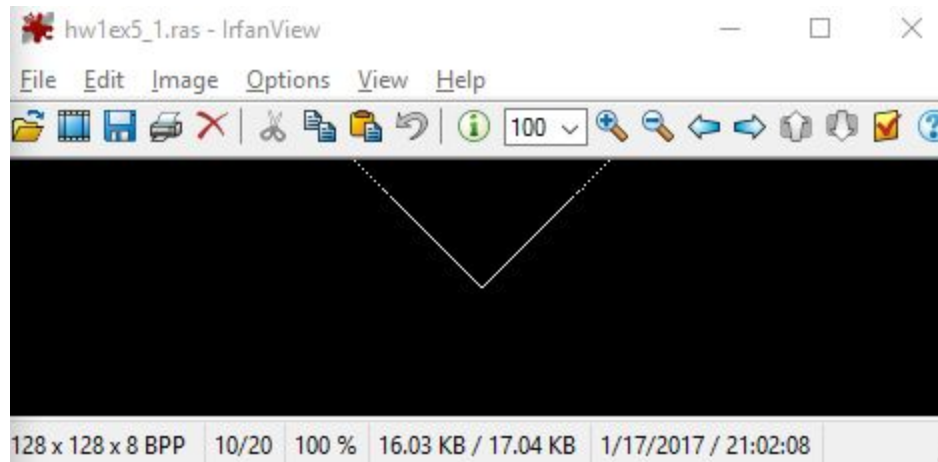X = -1, Y = -1 , Z = 0

X1 = 1,

B = 0, 1, -1, C = 1, -1, f = 1

Perspective:

Xprime = fx/z = -1/((1,-1)t)

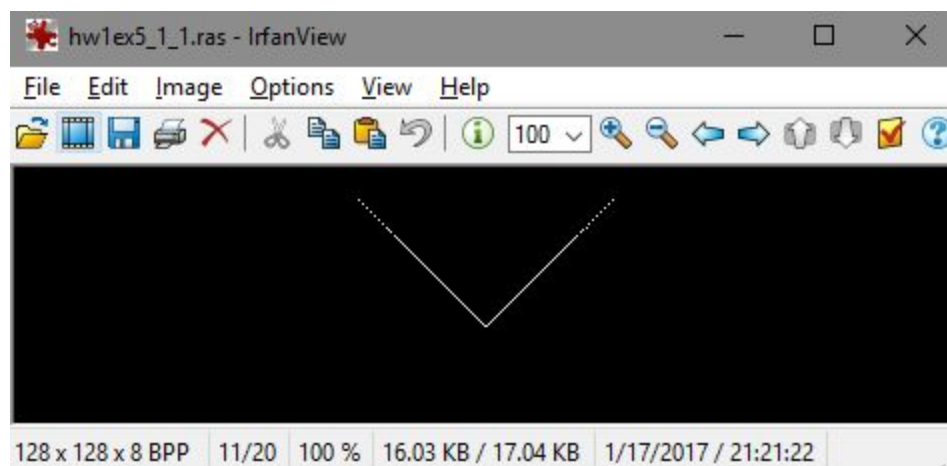Yprime = fy/z = (-1+(0,1,-1)t) / ((1,-1)t)

$X1prime = fx1/z = 1/((1,-1)t)$

Case 1: b =0, c = 1

Case 2: b =1, c =1

Case 3: b = -1, c =1

Case 4: b =0, c =-1

Case 5: b =1, c =-1

Case 6: b =-1, c =-1

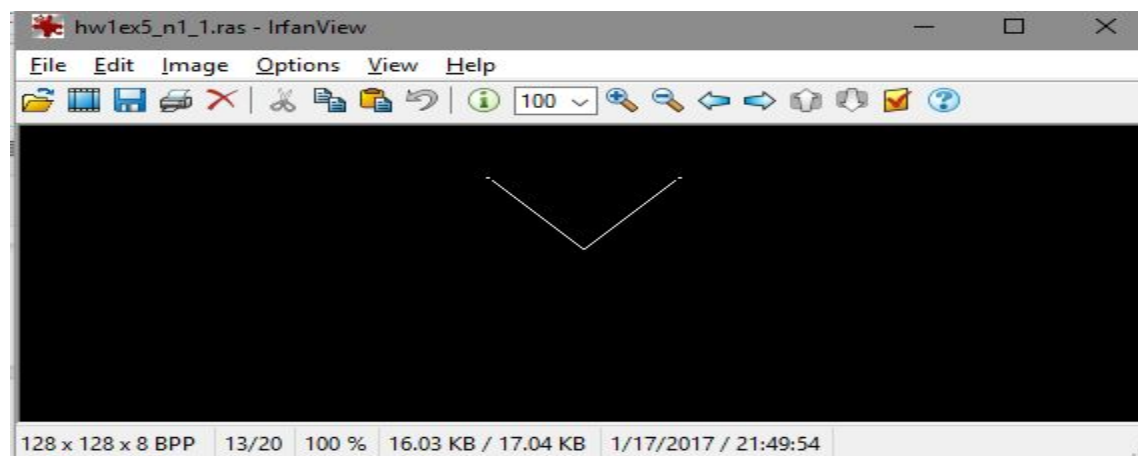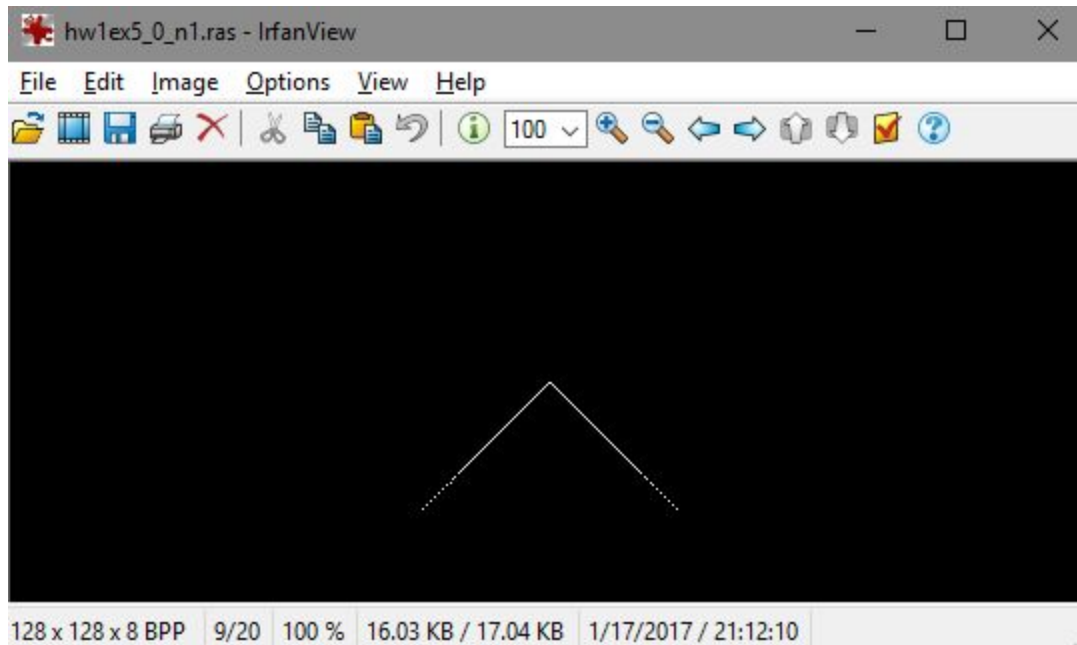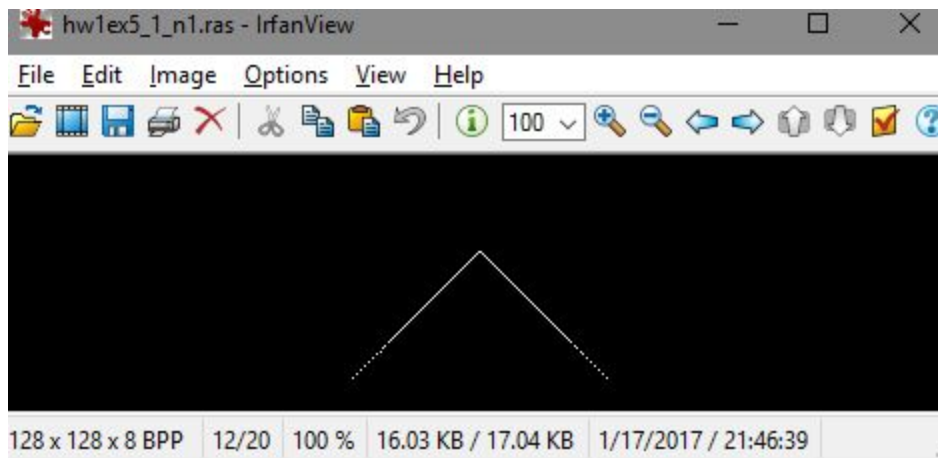**Orthographic:**
Xprime = x
X1prime = x1
Yprime = y

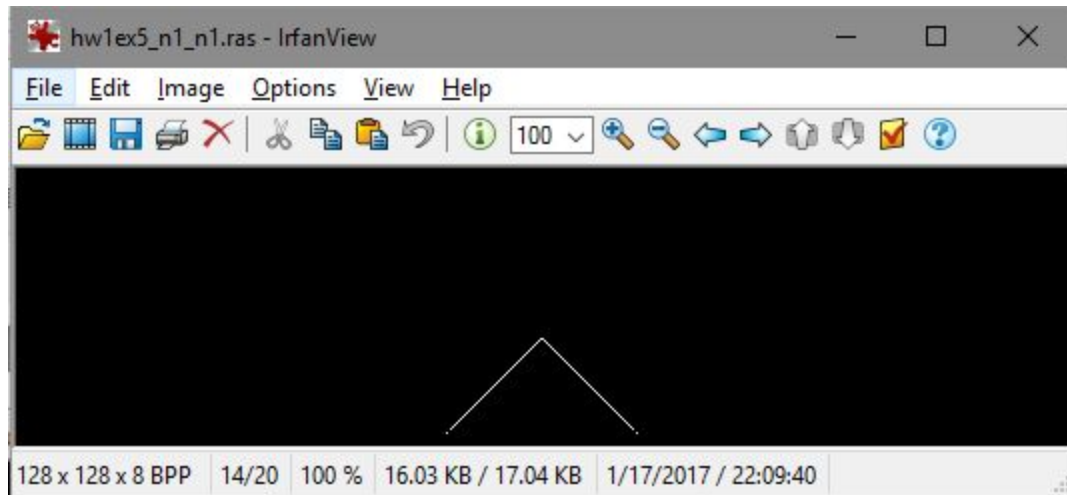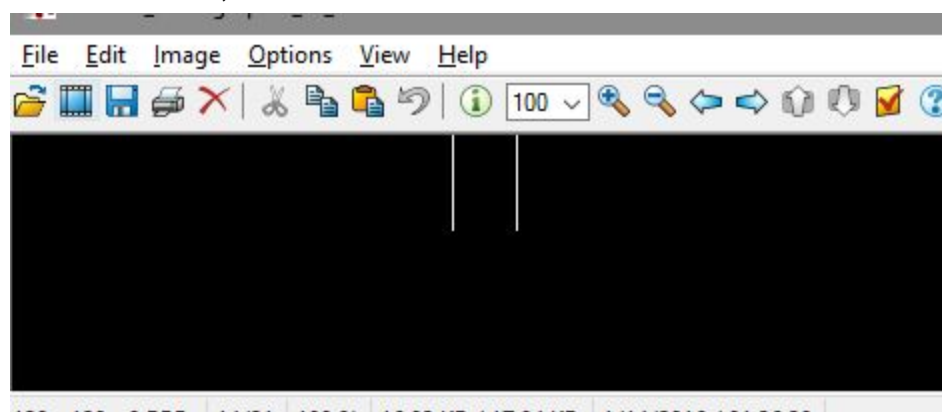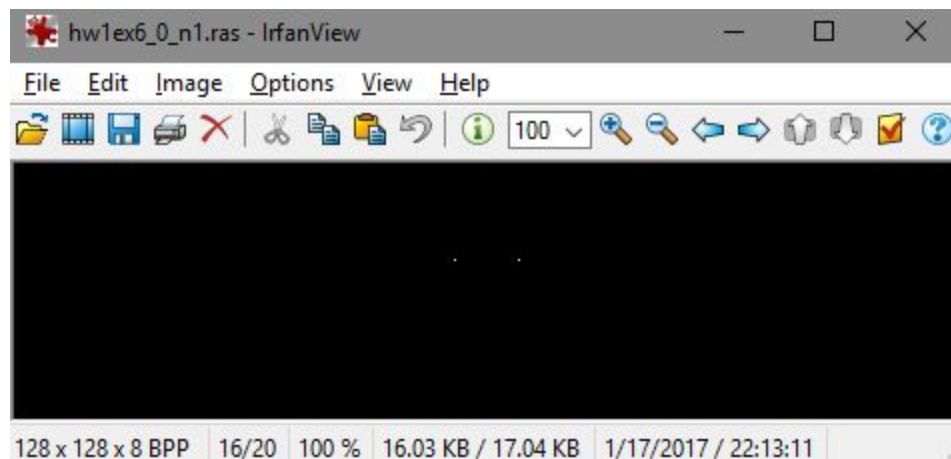**Case 1:** b =0, c =1

Case 2: b =1, c =1

Case 3: b = -1, c =1

Case 4: b =0, c =-1

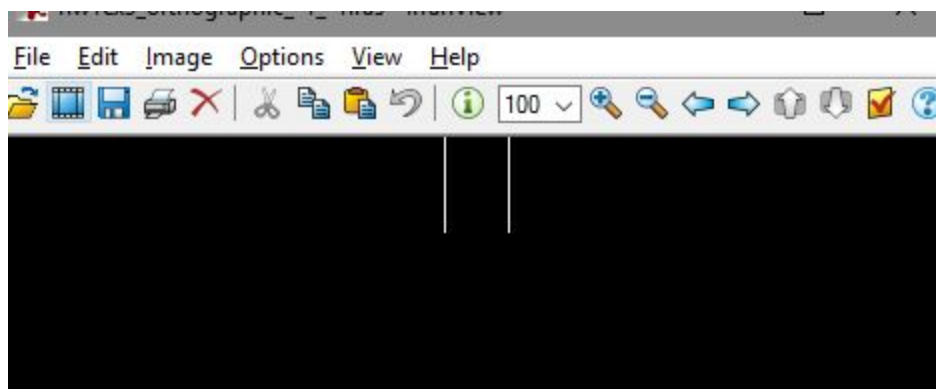128 x 128 x 8 BPP | 16/20 | 100 % | 16.03 KB / 17.04 KB | 1/17/2017 / 22:13:11

Case 5: b =1, c =-1
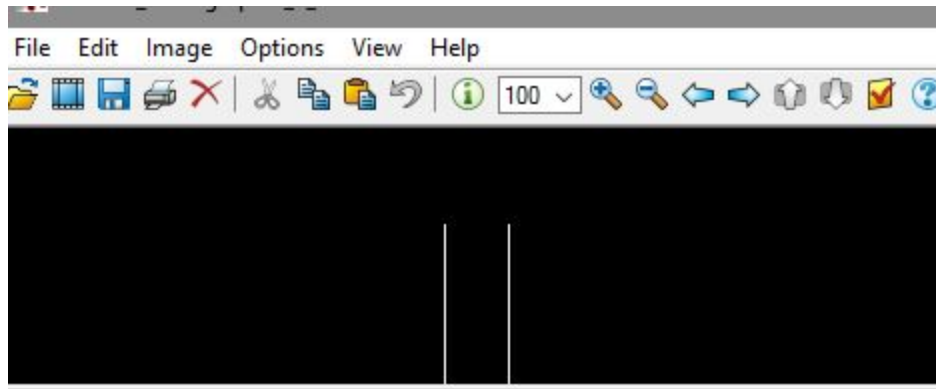
Case 6: b =-1, c =-1

Magnification = f/z
But z value varies with t value (ranges from 0.01 to 10000)
Perspective : It should intersect eventually
Orthographic: no Z involved so it would remain parallel.
The pictures match the description
And no Orthographic is not approximation of Perspective in this picture.

Bonus Question:
In this assignment we are trying to replicate a pinhole system. We are simply taking in a raw file and make it an Rar file.

Main function: Declare variables and run a for loop which does computations and fills a 2 day matrix with the values accordingly.
It also opens and writes into the new image files based on the above values and closes it.

Clear function: Resets the value of the image matrix to 0s

Header function: The header function literally sets the header. We need a header to know what kind of file it is.