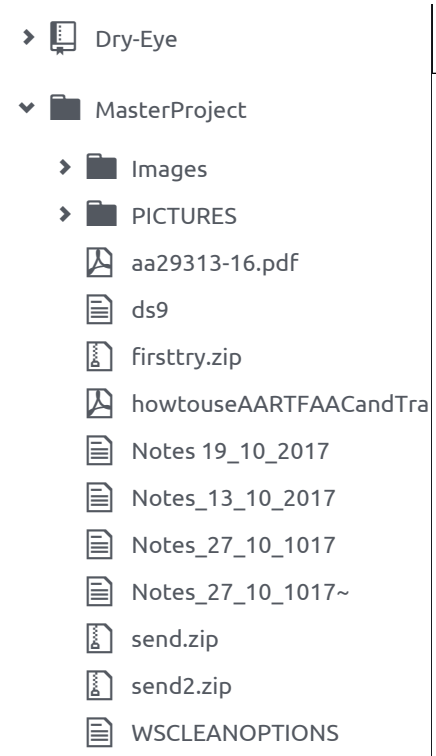

exc1.py | Settings | exc3.py | exc3turnin.py

```
12
13  # Function returning Centered solution
14  def cFD(x,h):
15      return (Fx(x+h) - 2 * Fx(x) + Fx(x-h))/(h**2)
16
17  # Function returning Forward solution
18  def fFD(x,h):
19      return (Fx(x+(2*h)) - 2 * Fx(x + h) + Fx(x))/(h
20
21  # Function calculating error Centered
22  def errorcFD(x,h):
23      return( abs(cFD(x,h) - exact(x)))
24
25  # Function calculating error Forward
26  def errorfFD(x,h):
27      return( abs(fFD(x,h) - exact(x)))
28
29  # Intializing values
30  x = 0.5
31  cf = []
32  ff = []
33  xlist=[]
34  exactz = []
35
36  # Looping over specified range (1 till 1*10^-16)
37  for h in range(0,17):
38      h = -1*h
39      i = 10**h
40      cf.append(errorcFD(x,i))
41      ff.append(errorfFD(x,i))
42      exactz.append(exactsolution(x))
43      xlist.append(i)
44
45  # Plot everything
46  plt.plot(xlist,cf, label = "Centered FD")
47  plt.plot(xlist,ff, label = "Forward FD")
48  cf = np.array(cf)
49  ff = np.array(ff)
50  plt.yscale('log')
51  plt.xscale('log')
52  plt.xlabel("h",fontsize=20)
53  plt.ylabel("Error",fontsize=20)
54  plt.tick_params(axis='both', labelsize=15)
```

Numerical_Algorithms/Homework1/exc2.py