Ass 1(i)

In [1]:
```
import numpy as np
```

In [2]:
```
x=np.arange(0,100)
y=2*x
z=x**2
```

In [3]:
```
x
```

Out[3]:
```
array([ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16,
       17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33,
       34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50,
       51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67,
       68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84,
       85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99])
```

In [4]:
```
y
```

Out[4]:
```
array([  0,   2,   4,   6,   8,  10,  12,  14,  16,  18,  20,  22,  24,
        26,  28,  30,  32,  34,  36,  38,  40,  42,  44,  46,  48,  50,
        52,  54,  56,  58,  60,  62,  64,  66,  68,  70,  72,  74,  76,
        78,  80,  82,  84,  86,  88,  90,  92,  94,  96,  98, 100, 102,
       104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128,
       130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154,
       156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180,
       182, 184, 186, 188, 190, 192, 194, 196, 198])
```

In [5]:
```
z
```

Out[5]:
```
array([   0,    1,    4,    9,   16,   25,   36,   49,   64,   81,  100,
        121,  144,  169,  196,  225,  256,  289,  324,  361,  400,  441,
        484,  529,  576,  625,  676,  729,  784,  841,  900,  961, 1024,
       1089, 1156, 1225, 1296, 1369, 1444, 1521, 1600, 1681, 1764, 1849,
       1936, 2025, 2116, 2209, 2304, 2401, 2500, 2601, 2704, 2809, 2916,
       3025, 3136, 3249, 3364, 3481, 3600, 3721, 3844, 3969, 4096, 4225,
       4356, 4489, 4624, 4761, 4900, 5041, 5184, 5329, 5476, 5625, 5776,
       5929, 6084, 6241, 6400, 6561, 6724, 6889, 7056, 7225, 7396, 7569,
       7744, 7921, 8100, 8281, 8464, 8649, 8836, 9025, 9216, 9409, 9604,
       9801])
```

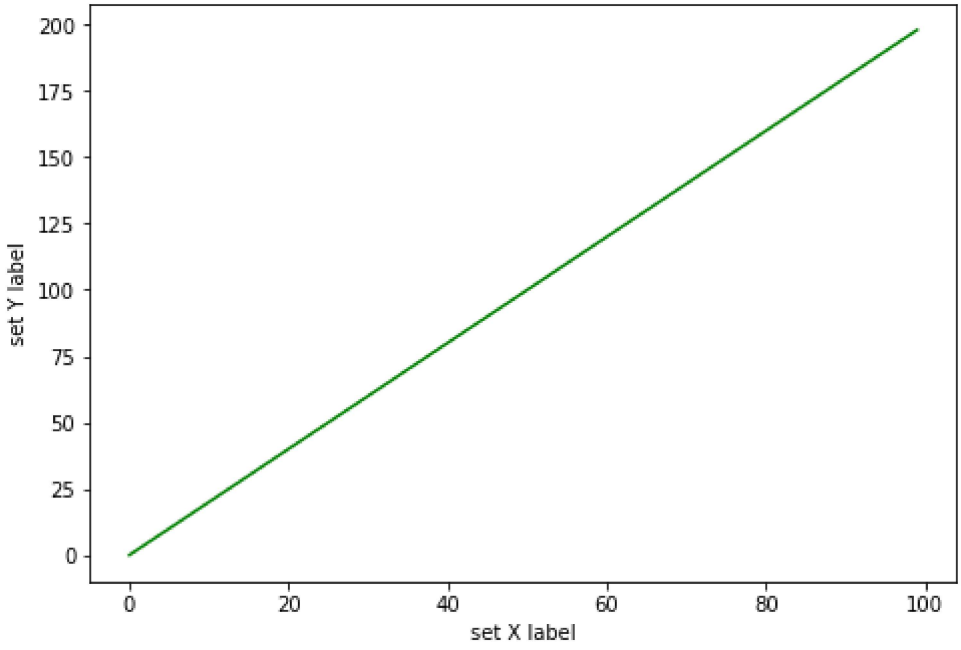
Ass 1(ii)

In [6]:
```
import matplotlib.pyplot as plt
%matplotlib inline
```

Ass 1(iii)

In [7]:
```
fig=plt.figure()
ax1=fig.add_axes([0,0,1,1])
ax1.plot(x,y,'g')
ax1.set_xlabel('set X label')
ax1.set_ylabel('set Y label')
```

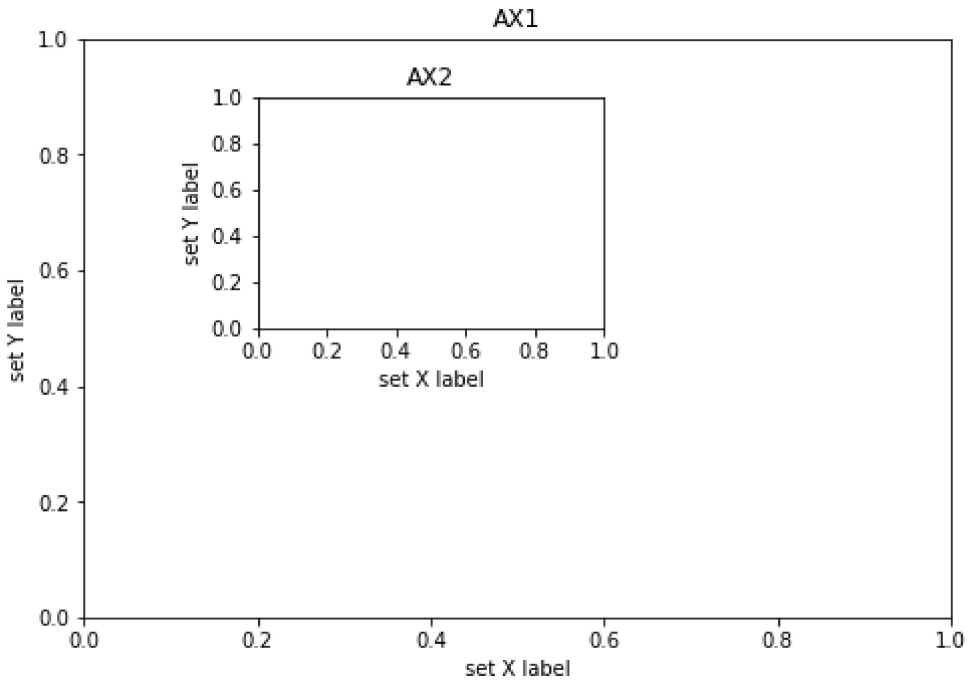
Out[7]:
```
Text(0, 0.5, 'set Y label')
```



ASS 1(iv)

In [8]:
```
fig=plt.figure()
ax1=fig.add_axes([0,0,1,1])
ax2=fig.add_axes([0.2,0.5,.4,.4])
ax1.set_title('AX1')
ax1.set_xlabel('set X label')
ax1.set_ylabel('set Y label')
ax2.set_title('AX2')
ax2.set_xlabel('set X label')
ax2.set_ylabel('set Y label')
```

Out[8]:
```
Text(0, 0.5, 'set Y label')
```

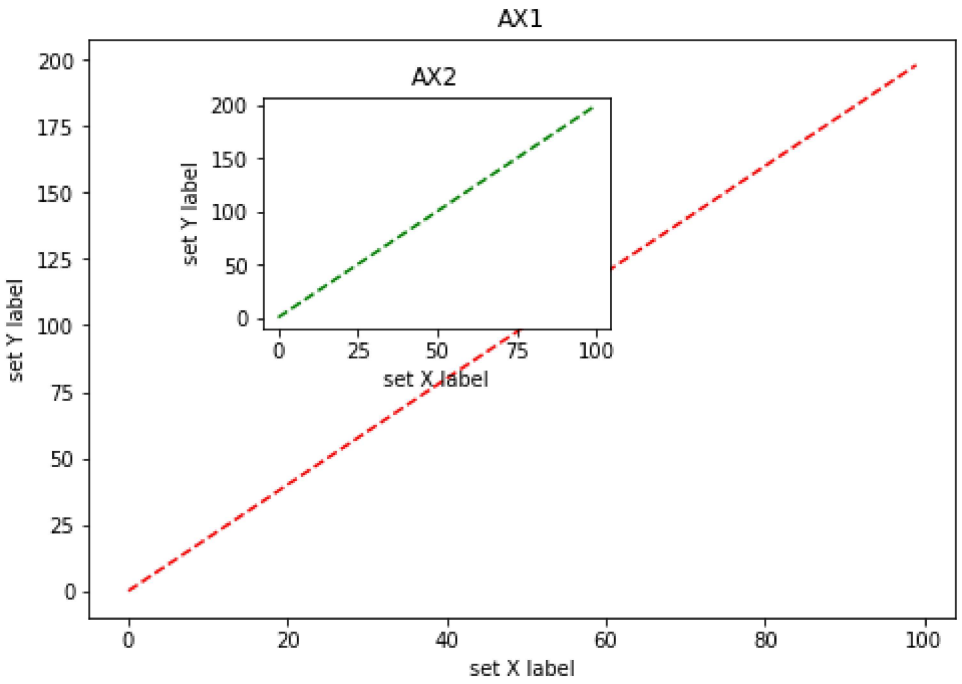


ASS 1(V)

In [9]:
```
fig=plt.figure()
```

```
ax1=fig.add_axes([0,0,1,1])
ax2=fig.add_axes([0.2,0.5,.4,.4])
ax1.plot(x,y,'r--')
ax1.set_xlabel('set X label')
ax1.set_ylabel('set Y label')
ax1.set_title('AX1')
ax2.plot(x,y,'g--')
ax2.set_xlabel('set X label')
ax2.set_ylabel('set Y label')
ax2.set_title('AX2')
```

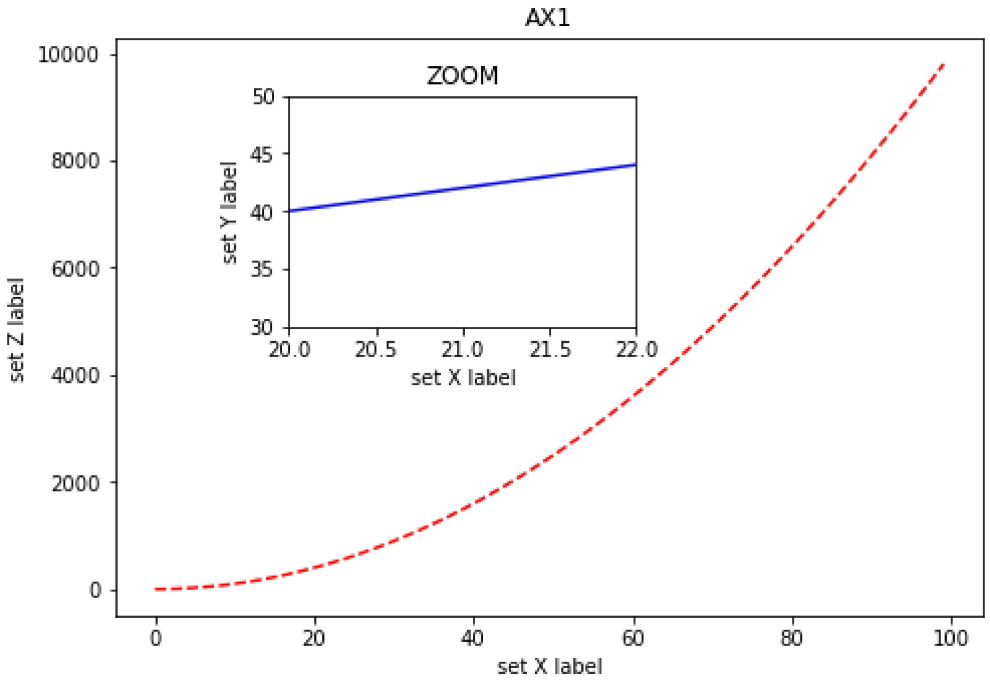
Out[9]: Text(0.5, 1.0, 'AX2')



ASS 1(vi)

In [10]:
```
fig=plt.figure()
ax1=fig.add_axes([0,0,1,1])
ax2=fig.add_axes([0.2,0.5,.4,.4])
ax1.plot(x,z,'r--')
ax1.set_title('AX1')
ax1.set_xlabel('set X label')
ax1.set_ylabel('set Z label')
ax2.plot(x,y,'b')
ax2.set_title('ZOOM')
ax2.set_xlabel('set X label')
ax2.set_ylabel('set Y label')
ax2.set_xlim(20,22)
ax2.set_ylim(30,50)
```

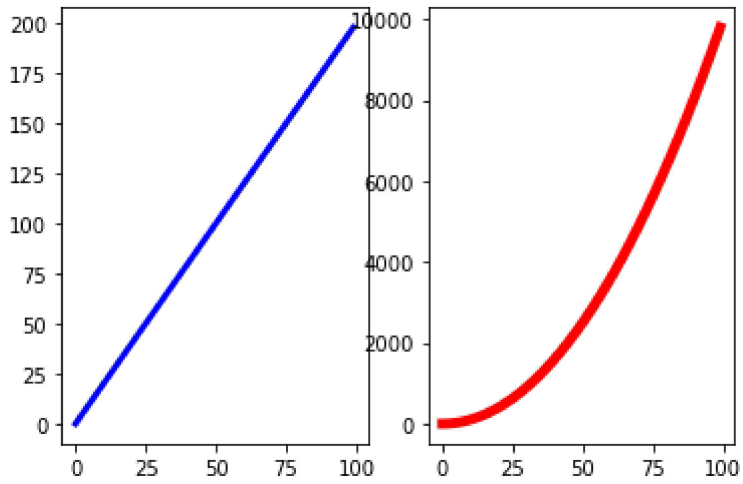
Out[10]: (30.0, 50.0)



ASS 1(vii)

In [11]:
```
plt.subplot(1,2,1)
plt.plot(x,y,'b',lw=3)
plt.subplot(1,2,2)
plt.plot(x,z,'r',lw=5)
```

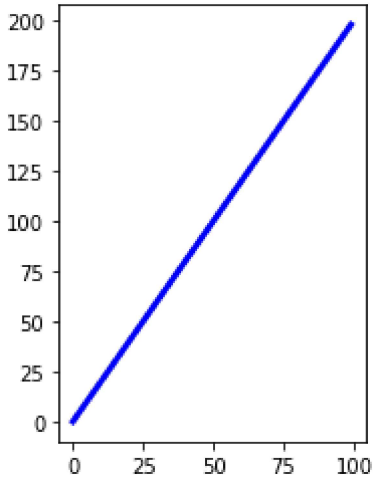
Out[11]: [<matplotlib.lines.Line2D at 0x1bc7f2ae4f0>]

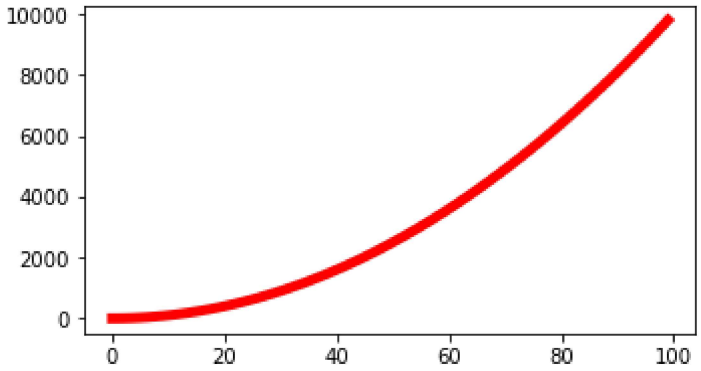


ASS 1(viii)

In [12]:
```
plt.subplot(1,2,1)
plt.plot(x,y,'b',lw=3)
plt.figure(figsize=(12,3))
plt.subplot(1,2,2)
plt.plot(x,z,'r',lw=5)
```

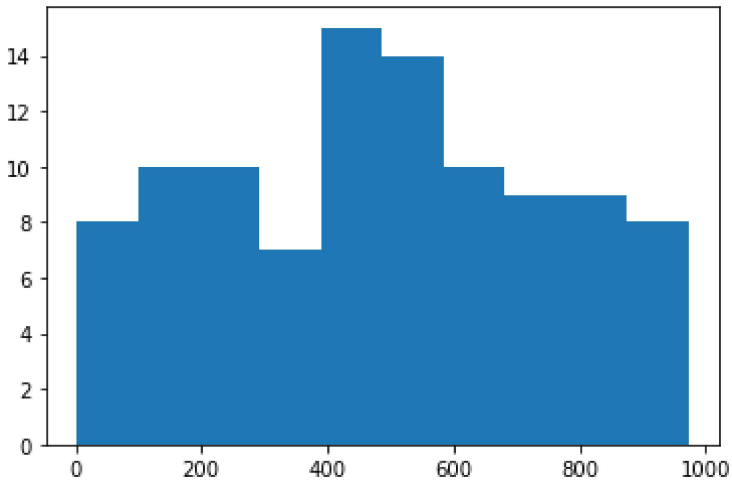
Out[12]: [<matplotlib.lines.Line2D at 0x1bc7f35c880>]





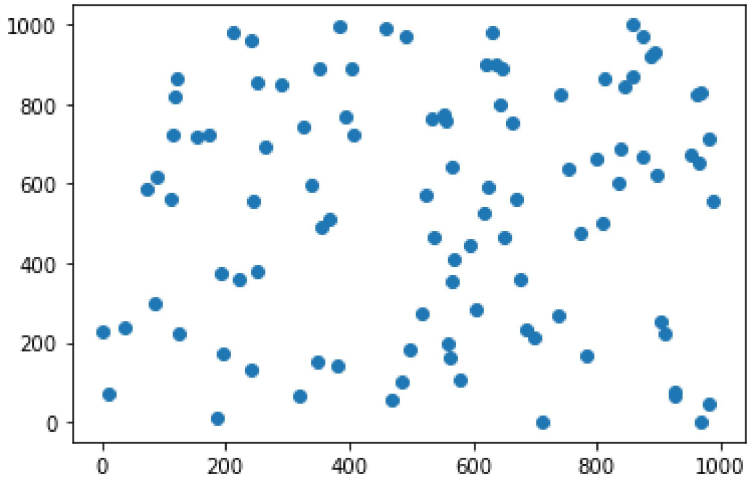
In [13]:
```
from random import sample
data=sample(range(1,1000),100)
plt.hist(data)
```

Out[13]:
```
(array([ 8., 10., 10.,  7., 15., 14., 10.,  9.,  9.,  8.]),
 array([  2.,  99., 196., 293., 390., 487., 584., 681., 778., 875., 972.]),
 <BarContainer object of 10 artists>)
```



In [14]:
```
from random import sample
x=sample(range(1,1000),100)
y=sample(range(1,1000),100)
plt.scatter(x,y)
```

Out[14]:
```
<matplotlib.collections.PathCollection at 0x1bc7f2e7d90>
```


1000
800
600
400
200
0
0
200
400
600
800
1000