In [1]:
```python
import numpy as np
from mnist import MNIST
import struct
import os
```

In [2]:
```python
# for training
path = "C:\Users\sai"
data_train = os.path.join(path,'train-images-idx3-ubyte')
```

In [3]:
```python
mndata = MNIST('C:\Users\sai')
images , labels = mndata.load_training()
```

In [4]:
```python
data_train = np.array(images)
data_labels = np.array(labels)
```

In [5]:
```python
a = np.array([3,2])
b = np.array([1,1])
print(np.linalg.norm(a-b))
```

2.2360679775

In [6]:
```python
data_train.shape
```

Out[6]: (60000L, 784L)

In [7]:
```python
n = input("Enter the row to check which digit is stored in it?")
small = 1000000.4654
for i in range(0,60000):
    dist = np.linalg.norm(data_train[i]-data_train[n])
#     print(dist)
    if dist<small and i!=n:
        small = dist
        index = i
print("The minimum distance = "+str(dist))
print("The digit on the given row is = "+str(data_labels[index]))
```
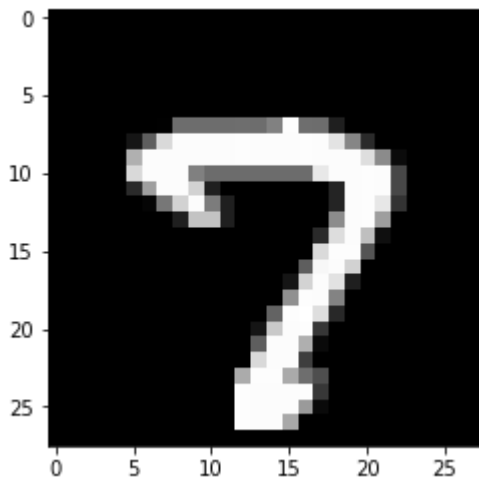
Enter the row to check which digit is stored in it?51
The minimum distance = 2932.5407073
The digit on the given row is = 0

In [8]:
```python
import matplotlib.pyplot as plt
n = input("Enter the row number")
img = data_train[n]
pixels = img.reshape((28,28))
plt.imshow(pixels,cmap='gray')
plt.show()
```

Enter the row number52

In [9]:
```python
mndata.display(data_train[34])
```

Out[9]: '\n...............................\n.................................\n.................@@@@.........\n.................@@@@.........\n.............@@@@@@
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In [10]:
```python
test_data , test_labels = mndata.load_testing()
```

In [11]:
```python
test_data = np.array(test_data)
test_labels = np.array(test_labels)
```

In [12]:
```python
correct = 0
for j in range(0,10000):
    small = 1000000.4654
    for i in range(0,60000):
        dist = np.linalg.norm(data_train[i]-test_data[j])
        if dist<small:
            index = i
            small = dist
    if data_labels[index]==test_labels[j]:
        correct = correct + 1
acc = correct * 100 / 60000.0
print("Accuracy = "+str(acc)+" %")
```

Accuracy = 96.23 %

In [ ]: