In [1]:
```
import pandas as pd
import networkx as nx
```

In [2]:
```
import random
def generatorPhones(amount):
    arr = []
    for y in range(1, amount+1):
        number = ""
        for y in range(10):
            number += str(random.randint(0,9))
        arr.append(number if int(number) != 0 else "1111111111")
    return arr
```

In [3]:
```
def generatePhoneCalls(phoneNumbers, callsPlaced):
    arr = []
    length = len(phoneNumbers)+1
    for x in range(callsPlaced):
        arr.append([random.randint(1, length), phoneNumbers[random.randint(0, length-2)
    return arr
```

In [4]:
```
phones = generatorPhones(100)
call_db = generatePhoneCalls(phones, 1000)
```

In [5]:
```
call_pd_db = pd.DataFrame(call_db)
```

In [6]:
```
print(call_pd_db)
```

```
      0           1   2
0    52  3427976695  99
1    83  2452572240   5
2    68  3680055819  35
3    60  3427976695  75
4    98  2981904437  18
..   ..         ...  ..
995  70  1290626340  74
996  33  2814980240  99
997   1  6144471304  59
998  24  2452572240  53
999  41  5288002605  46

[1000 rows x 3 columns]
```

In [7]:
```
G = nx.from_pandas_edgelist(df=call_pd_db, source=0, target=2)
```

In [8]:
```
G.add_nodes_from(nodes_for_adding=call_pd_db.iloc[:, 0].tolist())
```

In [9]:
```
print(G.nodes())
```

```
[52, 99, 83, 5, 68, 35, 60, 75, 98, 18, 29, 43, 27, 88, 92, 37, 17, 69, 66, 46, 89, 19,
62, 42, 55, 14, 4, 36, 64, 13, 94, 48, 79, 47, 16, 71, 8, 41, 86, 65, 56, 70, 10, 58, 3
4, 93, 15, 76, 9, 23, 90, 63, 20, 7, 81, 101, 59, 38, 44, 1, 32, 78, 54, 84, 21, 67, 45,
2, 3, 97, 33, 53, 51, 40, 91, 28, 74, 96, 87, 82, 39, 31, 77, 72, 95, 30, 73, 6, 80, 25,
50, 85, 100, 26, 61, 24, 49, 22, 11, 57, 12]
```

In [10]:
```
nx.draw(G)
```