

Test

July 1, 2022

```
[93]: from qiskit import *
      from qiskit.visualization import plot_bloch_multivector, plot_histogram
      from qiskit.aqua.algorithms import Shor
      from qiskit.aqua import QuantumInstance
      import numpy as np
      from qiskit import IBMQ
      from qiskit.tools.visualization import plot_histogram
      from qiskit.tools.monitor import job_monitor
      IBMQ.
      ↪save_account('35b928a34f3c82fef0cb27f5a76e0b2c660e7ff461551308a1f597918a22843fd99465440401c
      IBMQ.load_account()
      largelist = []
      shortlist = []
```

```
configrc.store_credentials:WARNING:2022-07-01 15:19:19,108: Credentials already
present. Set overwrite=True to overwrite.
ibmqfactory.load_account:WARNING:2022-07-01 15:19:20,347: Credentials are
already in use. The existing account in the session will be replaced.
```

```
[94]: qc = QuantumCircuit(1, 1) #1 quantum, 1 classical
      %matplotlib inline
      qc.draw(output='mpl')
```

[94]:

q —

c ¹ =

```
[95]: for i in range(30):
      qc.h(0)
      qc.z(0)
```

```
qc.h(0)
qc.draw(output='mpl')
```

[95]:



```
[96]: for i in range(50):
    qc.measure(0, 0)
    provider = IBMQ.get_provider('ibm-q')
    backend = provider.get_backend('ibmq_armonk')
    job = execute(qc, backend=backend)
    job_monitor(job)
    result = job.result()
    largelist.append(result.time_taken)
    print(result.time_taken)
    print(largelist)
```

```
Job Status: job has successfully run
21.449549436569214
[21.449549436569214]
Job Status: job has successfully run
21.377461910247803
[21.449549436569214, 21.377461910247803]
Job Status: job has successfully run
21.365190505981445
[21.449549436569214, 21.377461910247803, 21.365190505981445]
Job Status: job has successfully run
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 Job Status: job has successfully run
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Job Status: job has successfully run

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Job Status: job has successfully run

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Job Status: job has successfully run

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Job Status: job has successfully run

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Job Status: job has successfully run

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Job Status: job has successfully run

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Job Status: job has successfully run

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Job Status: job has successfully run

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Job Status: job has successfully run

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Job Status: job has successfully run

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Job Status: job has successfully run

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Job Status: job has successfully run

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21.405300855636597, 21.61631965637207, 21.402336359024048, 21.39625358581543,
23.43426489830017, 21.330816745758057, 21.310954332351685, 21.373296976089478,
21.347994565963745, 21.346103191375732, 21.318400859832764, 21.327528715133667,
21.377563953399658, 21.4002525806427, 21.42316198348999, 21.39112615585327,
21.342939615249634, 21.371262550354004, 21.401368379592896, 21.42343544960022,
21.463013172149658, 21.456416368484497]

Job Status: job has successfully run

21.334224700927734

[21.449549436569214, 21.377461910247803, 21.365190505981445, 21.56193995475769,
21.3350887298584, 21.37723398208618, 21.38307499885559, 21.418291091918945,
21.420321226119995, 21.362615823745728, 21.320735692977905, 21.361289501190186,
21.374776124954224, 21.3188738822937, 21.357759475708008, 21.359440803527832,
21.405300855636597, 21.61631965637207, 21.402336359024048, 21.39625358581543,
23.43426489830017, 21.330816745758057, 21.310954332351685, 21.373296976089478,
21.347994565963745, 21.346103191375732, 21.318400859832764, 21.327528715133667,
21.377563953399658, 21.4002525806427, 21.42316198348999, 21.39112615585327,
21.342939615249634, 21.371262550354004, 21.401368379592896, 21.42343544960022,
21.463013172149658, 21.456416368484497, 21.334224700927734]

Job Status: job has successfully run

21.355660676956177

[21.449549436569214, 21.377461910247803, 21.365190505981445, 21.56193995475769,
21.3350887298584, 21.37723398208618, 21.38307499885559, 21.418291091918945,
21.420321226119995, 21.362615823745728, 21.320735692977905, 21.361289501190186,
21.374776124954224, 21.3188738822937, 21.357759475708008, 21.359440803527832,
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23.43426489830017, 21.330816745758057, 21.310954332351685, 21.373296976089478,
21.347994565963745, 21.346103191375732, 21.318400859832764, 21.327528715133667,
21.377563953399658, 21.4002525806427, 21.42316198348999, 21.39112615585327,
21.342939615249634, 21.371262550354004, 21.401368379592896, 21.42343544960022,
21.463013172149658, 21.456416368484497, 21.334224700927734, 21.355660676956177]

Job Status: job has successfully run

21.40739345550537

[21.449549436569214, 21.377461910247803, 21.365190505981445, 21.56193995475769,
21.3350887298584, 21.37723398208618, 21.38307499885559, 21.418291091918945,
21.420321226119995, 21.362615823745728, 21.320735692977905, 21.361289501190186,

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21.405300855636597, 21.61631965637207, 21.402336359024048, 21.39625358581543,
23.43426489830017, 21.330816745758057, 21.310954332351685, 21.373296976089478,
21.347994565963745, 21.346103191375732, 21.318400859832764, 21.327528715133667,
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21.342939615249634, 21.371262550354004, 21.401368379592896, 21.42343544960022,
21.463013172149658, 21.456416368484497, 21.334224700927734, 21.355660676956177,
21.40739345550537]

Job Status: job has successfully run

21.701083660125732

[21.449549436569214, 21.377461910247803, 21.365190505981445, 21.56193995475769,
21.3350887298584, 21.37723398208618, 21.38307499885559, 21.418291091918945,
21.420321226119995, 21.362615823745728, 21.320735692977905, 21.361289501190186,
21.374776124954224, 21.3188738822937, 21.357759475708008, 21.359440803527832,
21.405300855636597, 21.61631965637207, 21.402336359024048, 21.39625358581543,
23.43426489830017, 21.330816745758057, 21.310954332351685, 21.373296976089478,
21.347994565963745, 21.346103191375732, 21.318400859832764, 21.327528715133667,
21.377563953399658, 21.4002525806427, 21.42316198348999, 21.39112615585327,
21.342939615249634, 21.371262550354004, 21.401368379592896, 21.42343544960022,
21.463013172149658, 21.456416368484497, 21.334224700927734, 21.355660676956177,
21.40739345550537, 21.701083660125732]

Job Status: job has successfully run

21.477155923843384

[21.449549436569214, 21.377461910247803, 21.365190505981445, 21.56193995475769,
21.3350887298584, 21.37723398208618, 21.38307499885559, 21.418291091918945,
21.420321226119995, 21.362615823745728, 21.320735692977905, 21.361289501190186,
21.374776124954224, 21.3188738822937, 21.357759475708008, 21.359440803527832,
21.405300855636597, 21.61631965637207, 21.402336359024048, 21.39625358581543,
23.43426489830017, 21.330816745758057, 21.310954332351685, 21.373296976089478,
21.347994565963745, 21.346103191375732, 21.318400859832764, 21.327528715133667,
21.377563953399658, 21.4002525806427, 21.42316198348999, 21.39112615585327,
21.342939615249634, 21.371262550354004, 21.401368379592896, 21.42343544960022,
21.463013172149658, 21.456416368484497, 21.334224700927734, 21.355660676956177,
21.40739345550537, 21.701083660125732, 21.477155923843384]

Job Status: job has successfully run

21.341886043548584

[21.449549436569214, 21.377461910247803, 21.365190505981445, 21.56193995475769,
21.3350887298584, 21.37723398208618, 21.38307499885559, 21.418291091918945,
21.420321226119995, 21.362615823745728, 21.320735692977905, 21.361289501190186,
21.374776124954224, 21.3188738822937, 21.357759475708008, 21.359440803527832,
21.405300855636597, 21.61631965637207, 21.402336359024048, 21.39625358581543,
23.43426489830017, 21.330816745758057, 21.310954332351685, 21.373296976089478,
21.347994565963745, 21.346103191375732, 21.318400859832764, 21.327528715133667,
21.377563953399658, 21.4002525806427, 21.42316198348999, 21.39112615585327,
21.342939615249634, 21.371262550354004, 21.401368379592896, 21.42343544960022,
21.463013172149658, 21.456416368484497, 21.334224700927734, 21.355660676956177,
21.40739345550537, 21.701083660125732, 21.477155923843384, 21.341886043548584]

Job Status: job has successfully run

21.407679796218872
[21.449549436569214, 21.377461910247803, 21.365190505981445, 21.56193995475769,
21.3350887298584, 21.37723398208618, 21.38307499885559, 21.418291091918945,
21.420321226119995, 21.362615823745728, 21.320735692977905, 21.361289501190186,
21.374776124954224, 21.3188738822937, 21.357759475708008, 21.359440803527832,
21.405300855636597, 21.61631965637207, 21.402336359024048, 21.39625358581543,
23.43426489830017, 21.330816745758057, 21.310954332351685, 21.373296976089478,
21.347994565963745, 21.346103191375732, 21.318400859832764, 21.327528715133667,
21.377563953399658, 21.4002525806427, 21.42316198348999, 21.39112615585327,
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21.463013172149658, 21.456416368484497, 21.334224700927734, 21.355660676956177,
21.40739345550537, 21.701083660125732, 21.477155923843384, 21.341886043548584,
21.407679796218872]

Job Status: job has successfully run

21.396946907043457
[21.449549436569214, 21.377461910247803, 21.365190505981445, 21.56193995475769,
21.3350887298584, 21.37723398208618, 21.38307499885559, 21.418291091918945,
21.420321226119995, 21.362615823745728, 21.320735692977905, 21.361289501190186,
21.374776124954224, 21.3188738822937, 21.357759475708008, 21.359440803527832,
21.405300855636597, 21.61631965637207, 21.402336359024048, 21.39625358581543,
23.43426489830017, 21.330816745758057, 21.310954332351685, 21.373296976089478,
21.347994565963745, 21.346103191375732, 21.318400859832764, 21.327528715133667,
21.377563953399658, 21.4002525806427, 21.42316198348999, 21.39112615585327,
21.342939615249634, 21.371262550354004, 21.401368379592896, 21.42343544960022,
21.463013172149658, 21.456416368484497, 21.334224700927734, 21.355660676956177,
21.40739345550537, 21.701083660125732, 21.477155923843384, 21.341886043548584,
21.407679796218872, 21.396946907043457]

Job Status: job has successfully run

21.396984815597534
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21.3350887298584, 21.37723398208618, 21.38307499885559, 21.418291091918945,
21.420321226119995, 21.362615823745728, 21.320735692977905, 21.361289501190186,
21.374776124954224, 21.3188738822937, 21.357759475708008, 21.359440803527832,
21.405300855636597, 21.61631965637207, 21.402336359024048, 21.39625358581543,
23.43426489830017, 21.330816745758057, 21.310954332351685, 21.373296976089478,
21.347994565963745, 21.346103191375732, 21.318400859832764, 21.327528715133667,
21.377563953399658, 21.4002525806427, 21.42316198348999, 21.39112615585327,
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21.40739345550537, 21.701083660125732, 21.477155923843384, 21.341886043548584,
21.407679796218872, 21.396946907043457, 21.396984815597534]

Job Status: job has successfully run

21.409025192260742
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21.420321226119995, 21.362615823745728, 21.320735692977905, 21.361289501190186,
21.374776124954224, 21.3188738822937, 21.357759475708008, 21.359440803527832,
21.405300855636597, 21.61631965637207, 21.402336359024048, 21.39625358581543,

23.43426489830017, 21.330816745758057, 21.310954332351685, 21.373296976089478,
21.347994565963745, 21.346103191375732, 21.318400859832764, 21.327528715133667,
21.377563953399658, 21.4002525806427, 21.42316198348999, 21.39112615585327,
21.342939615249634, 21.371262550354004, 21.401368379592896, 21.42343544960022,
21.463013172149658, 21.456416368484497, 21.334224700927734, 21.355660676956177,
21.40739345550537, 21.701083660125732, 21.477155923843384, 21.341886043548584,
21.407679796218872, 21.396946907043457, 21.396984815597534, 21.409025192260742]

Job Status: job has successfully run

21.45979595184326

[21.449549436569214, 21.377461910247803, 21.365190505981445, 21.56193995475769,
21.3350887298584, 21.37723398208618, 21.38307499885559, 21.418291091918945,
21.420321226119995, 21.362615823745728, 21.320735692977905, 21.361289501190186,
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21.405300855636597, 21.61631965637207, 21.402336359024048, 21.39625358581543,
23.43426489830017, 21.330816745758057, 21.310954332351685, 21.373296976089478,
21.347994565963745, 21.346103191375732, 21.318400859832764, 21.327528715133667,
21.377563953399658, 21.4002525806427, 21.42316198348999, 21.39112615585327,
21.342939615249634, 21.371262550354004, 21.401368379592896, 21.42343544960022,
21.463013172149658, 21.456416368484497, 21.334224700927734, 21.355660676956177,
21.40739345550537, 21.701083660125732, 21.477155923843384, 21.341886043548584,
21.407679796218872, 21.396946907043457, 21.396984815597534, 21.409025192260742,
21.45979595184326]

Job Status: job has successfully run

21.410318613052368

[21.449549436569214, 21.377461910247803, 21.365190505981445, 21.56193995475769,
21.3350887298584, 21.37723398208618, 21.38307499885559, 21.418291091918945,
21.420321226119995, 21.362615823745728, 21.320735692977905, 21.361289501190186,
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21.405300855636597, 21.61631965637207, 21.402336359024048, 21.39625358581543,
23.43426489830017, 21.330816745758057, 21.310954332351685, 21.373296976089478,
21.347994565963745, 21.346103191375732, 21.318400859832764, 21.327528715133667,
21.377563953399658, 21.4002525806427, 21.42316198348999, 21.39112615585327,
21.342939615249634, 21.371262550354004, 21.401368379592896, 21.42343544960022,
21.463013172149658, 21.456416368484497, 21.334224700927734, 21.355660676956177,
21.40739345550537, 21.701083660125732, 21.477155923843384, 21.341886043548584,
21.407679796218872, 21.396946907043457, 21.396984815597534, 21.409025192260742,
21.45979595184326, 21.410318613052368]

[]:

[]:

```
[97]: qc = QuantumCircuit(1, 1) #1 quantum, 1 classical
      %matplotlib inline
      qc.draw(output='mpl')
```

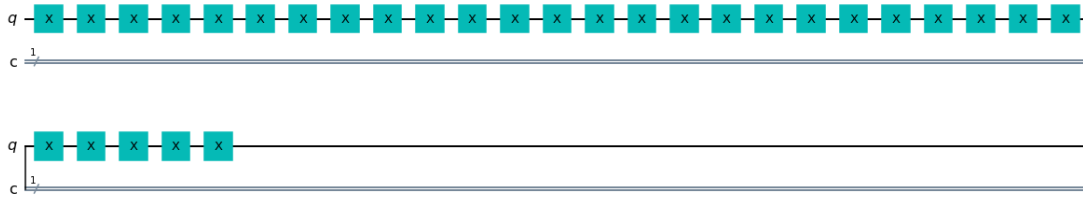
[97]:

q —

$c \neq 1$

```
[98]: for i in range(30):  
      qc.x(0)  
      qc.draw(output='mpl')
```

[98]:



```
[99]: for i in range(50):  
      qc.measure(0, 0)  
      provider = IBMQ.get_provider('ibm-q')  
      backend = provider.get_backend('ibmq_armonk')  
      job = execute(qc, backend=backend)  
      job_monitor(job)  
      result = job.result()  
      shortlist.append(result.time_taken)  
      print(result.time_taken)  
      print(shortlist)
```

Job Status: job has successfully run

21.407562255859375

[21.407562255859375]

Job Status: job has successfully run

21.408573627471924

[21.407562255859375, 21.408573627471924]

Job Status: job has successfully run

21.414096117019653

[21.407562255859375, 21.408573627471924, 21.414096117019653]

Job Status: job has successfully run

21.264878273010254

[21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254]
 Job Status: job has successfully run
 21.357922554016113

[21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254, 21.357922554016113]
 Job Status: job has successfully run
 21.35581088066101

[21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254, 21.357922554016113, 21.35581088066101]
 Job Status: job has successfully run
 21.447328090667725

[21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254, 21.357922554016113, 21.35581088066101, 21.447328090667725]
 Job Status: job has successfully run
 21.4387629032135

[21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254, 21.357922554016113, 21.35581088066101, 21.447328090667725, 21.4387629032135]
 Job Status: job has successfully run
 21.32330894470215

[21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254, 21.357922554016113, 21.35581088066101, 21.447328090667725, 21.4387629032135, 21.32330894470215]
 Job Status: job has successfully run
 21.439496994018555

[21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254, 21.357922554016113, 21.35581088066101, 21.447328090667725, 21.4387629032135, 21.32330894470215, 21.439496994018555]
 Job Status: job has successfully run
 21.361856937408447

[21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254, 21.357922554016113, 21.35581088066101, 21.447328090667725, 21.4387629032135, 21.32330894470215, 21.439496994018555, 21.361856937408447]
 Job Status: job has successfully run
 21.350731372833252

[21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254, 21.357922554016113, 21.35581088066101, 21.447328090667725, 21.4387629032135, 21.32330894470215, 21.439496994018555, 21.361856937408447, 21.350731372833252]
 Job Status: job has successfully run
 21.422061920166016

[21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254, 21.357922554016113, 21.35581088066101, 21.447328090667725, 21.4387629032135, 21.32330894470215, 21.439496994018555, 21.361856937408447, 21.350731372833252, 21.422061920166016]
 Job Status: job has successfully run
 21.417022466659546

[21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254, 21.357922554016113, 21.35581088066101, 21.447328090667725, 21.4387629032135, 21.32330894470215, 21.439496994018555, 21.361856937408447, 21.350731372833252,

21.422061920166016, 21.417022466659546]
 Job Status: job has successfully run
 21.362573385238647
 [21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254,
 21.357922554016113, 21.35581088066101, 21.447328090667725, 21.4387629032135,
 21.32330894470215, 21.439496994018555, 21.361856937408447, 21.350731372833252,
 21.422061920166016, 21.417022466659546, 21.362573385238647]
 Job Status: job has successfully run
 21.393275260925293
 [21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254,
 21.357922554016113, 21.35581088066101, 21.447328090667725, 21.4387629032135,
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 21.422061920166016, 21.417022466659546, 21.362573385238647, 21.393275260925293]
 Job Status: job has successfully run
 21.40533947944641
 [21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254,
 21.357922554016113, 21.35581088066101, 21.447328090667725, 21.4387629032135,
 21.32330894470215, 21.439496994018555, 21.361856937408447, 21.350731372833252,
 21.422061920166016, 21.417022466659546, 21.362573385238647, 21.393275260925293,
 21.40533947944641]
 Job Status: job has successfully run
 21.296337366104126
 [21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254,
 21.357922554016113, 21.35581088066101, 21.447328090667725, 21.4387629032135,
 21.32330894470215, 21.439496994018555, 21.361856937408447, 21.350731372833252,
 21.422061920166016, 21.417022466659546, 21.362573385238647, 21.393275260925293,
 21.40533947944641, 21.296337366104126]
 Job Status: job has successfully run
 21.380724668502808
 [21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254,
 21.357922554016113, 21.35581088066101, 21.447328090667725, 21.4387629032135,
 21.32330894470215, 21.439496994018555, 21.361856937408447, 21.350731372833252,
 21.422061920166016, 21.417022466659546, 21.362573385238647, 21.393275260925293,
 21.40533947944641, 21.296337366104126, 21.380724668502808]
 Job Status: job has successfully run
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 [21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254,
 21.357922554016113, 21.35581088066101, 21.447328090667725, 21.4387629032135,
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 21.422061920166016, 21.417022466659546, 21.362573385238647, 21.393275260925293,
 21.40533947944641, 21.296337366104126, 21.380724668502808, 21.355082273483276]
 Job Status: job has successfully run
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 [21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254,
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 21.40533947944641, 21.296337366104126, 21.380724668502808, 21.355082273483276,

21.50102686882019]
 Job Status: job has successfully run
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 Job Status: job has successfully run
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 Job Status: job has successfully run
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 Job Status: job has successfully run
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 [21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254, 21.357922554016113, 21.35581088066101, 21.447328090667725, 21.4387629032135, 21.32330894470215, 21.439496994018555, 21.361856937408447, 21.350731372833252, 21.422061920166016, 21.417022466659546, 21.362573385238647, 21.393275260925293, 21.40533947944641, 21.296337366104126, 21.380724668502808, 21.355082273483276, 21.50102686882019, 21.419570446014404, 21.30513572692871, 21.36033868789673, 21.355355978012085]
 Job Status: job has successfully run
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 Job Status: job has successfully run
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21.422061920166016, 21.417022466659546, 21.362573385238647, 21.393275260925293,
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21.50102686882019, 21.419570446014404, 21.30513572692871, 21.36033868789673,
21.355355978012085, 21.365572214126587, 21.314064502716064]

Job Status: job has successfully run

21.384041786193848

[21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254,
21.357922554016113, 21.35581088066101, 21.447328090667725, 21.4387629032135,
21.32330894470215, 21.439496994018555, 21.361856937408447, 21.350731372833252,
21.422061920166016, 21.417022466659546, 21.362573385238647, 21.393275260925293,
21.40533947944641, 21.296337366104126, 21.380724668502808, 21.355082273483276,
21.50102686882019, 21.419570446014404, 21.30513572692871, 21.36033868789673,
21.355355978012085, 21.365572214126587, 21.314064502716064, 21.384041786193848]

Job Status: job has successfully run

21.38921880722046

[21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254,
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21.32330894470215, 21.439496994018555, 21.361856937408447, 21.350731372833252,
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21.40533947944641, 21.296337366104126, 21.380724668502808, 21.355082273483276,
21.50102686882019, 21.419570446014404, 21.30513572692871, 21.36033868789673,
21.355355978012085, 21.365572214126587, 21.314064502716064, 21.384041786193848,
21.38921880722046]

Job Status: job has successfully run

21.43513798713684

[21.407562255859375, 21.408573627471924, 21.414096117019653, 21.264878273010254,
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21.32330894470215, 21.439496994018555, 21.361856937408447, 21.350731372833252,
21.422061920166016, 21.417022466659546, 21.362573385238647, 21.393275260925293,
21.40533947944641, 21.296337366104126, 21.380724668502808, 21.355082273483276,
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21.38921880722046, 21.43513798713684]

Job Status: job has successfully run

21.4158878326416

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21.32330894470215, 21.439496994018555, 21.361856937408447, 21.350731372833252,
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21.40533947944641, 21.296337366104126, 21.380724668502808, 21.355082273483276,
21.50102686882019, 21.419570446014404, 21.30513572692871, 21.36033868789673,
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21.38921880722046, 21.43513798713684, 21.4158878326416]

Job Status: job has successfully run

21.42410373687744

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Job Status: job has successfully run

21.362725496292114

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Job Status: job has successfully run

21.350627422332764

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Job Status: job has successfully run

21.348615884780884

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Job Status: job has successfully run

21.31438112258911

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21.362725496292114, 21.350627422332764, 21.348615884780884, 21.31438112258911]
 Job Status: job has successfully run
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 21.362725496292114, 21.350627422332764, 21.348615884780884, 21.31438112258911,
 21.388452529907227]
 Job Status: job has successfully run
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 21.362725496292114, 21.350627422332764, 21.348615884780884, 21.31438112258911,
 21.388452529907227, 21.409446001052856]
 Job Status: job has successfully run
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 21.362725496292114, 21.350627422332764, 21.348615884780884, 21.31438112258911,
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 Job Status: job has successfully run
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21.388452529907227, 21.409446001052856, 21.35711646080017, 21.43991446495056]
 Job Status: job has successfully run
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 21.388452529907227, 21.409446001052856, 21.35711646080017, 21.43991446495056,
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 Job Status: job has successfully run
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 21.422061920166016, 21.417022466659546, 21.362573385238647, 21.393275260925293,
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 Job Status: job has successfully run
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 Job Status: job has successfully run
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Job Status: job has successfully run

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Job Status: job has successfully run

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Job Status: job has successfully run

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Job Status: job has successfully run

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Job Status: job has successfully run

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Job Status: job has successfully run

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```

```
[100]: #big = [map(int, x) for x in largelist]
        ylargelist= []
        yshortlist= []
```

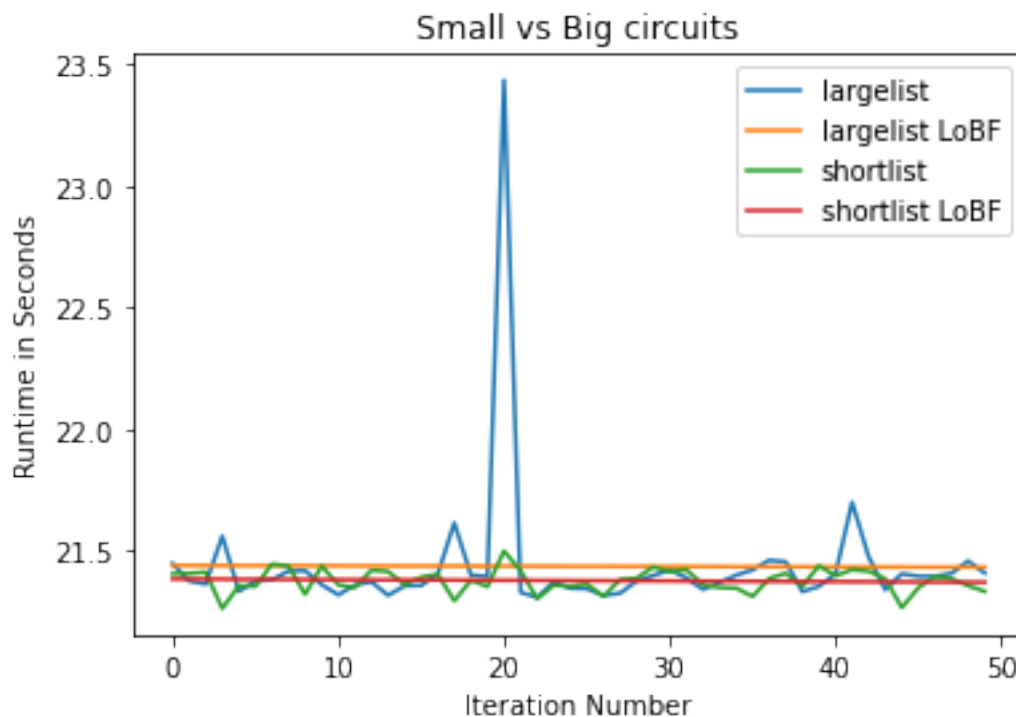
```

for i in range(len(largelist)):
    ylargelist.append(i)

for i in range(len(shortlist)):
    yshortlist.append(i)

import matplotlib.pyplot as plt
plt.xlabel("Iteration Number")
plt.ylabel("Runtime in Seconds")
plt.title("Small vs Big circuits")
plt.plot(ylargelist, largelist, label = 'largelist')
#line of best fit
plt.plot(ylargelist, np.poly1d(np.polyfit(ylargelist, largelist, 1))(ylargelist), label = 'largelist LoBF')
plt.plot(yshortlist, shortlist, label = 'shortlist')
#line of best fit
plt.plot(yshortlist, np.poly1d(np.polyfit(yshortlist, shortlist, 1))(yshortlist), label = 'shortlist LoBF')
plt.legend()
plt.show()

```



```

[101]: # Python program to get average of a list
def Average(lst):

```

```
    return sum(lst) / len(lst)

average1 = Average(largelist)
average2 = Average(shortlist)

# Printing average of the list
print("Average of the largelist =", round(average1, 2))
# Printing average of the list
print("Average of the shortlist =", round(average2, 2))
```

```
Average of the largelist = 21.44
Average of the shortlist = 21.38
```

[]: