

# Graph Distance Report

## Parameters:

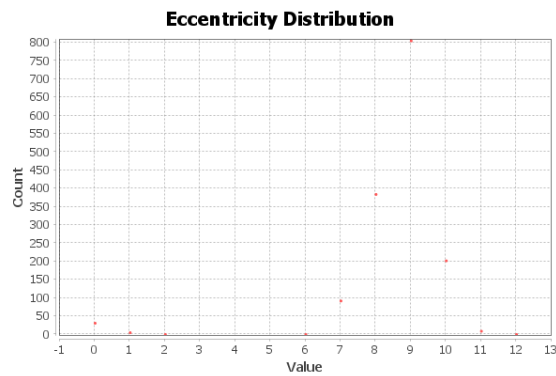
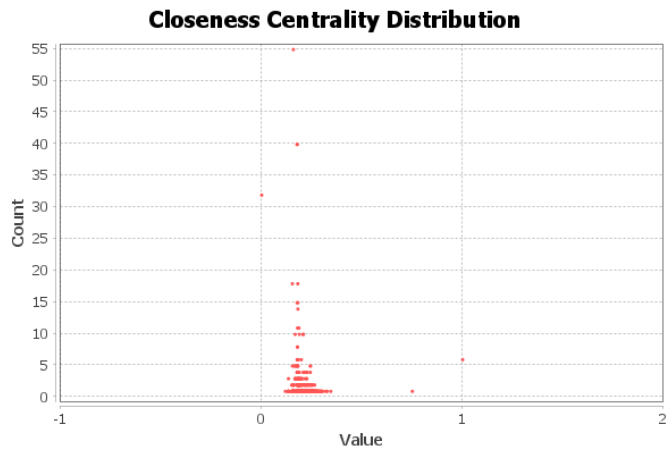
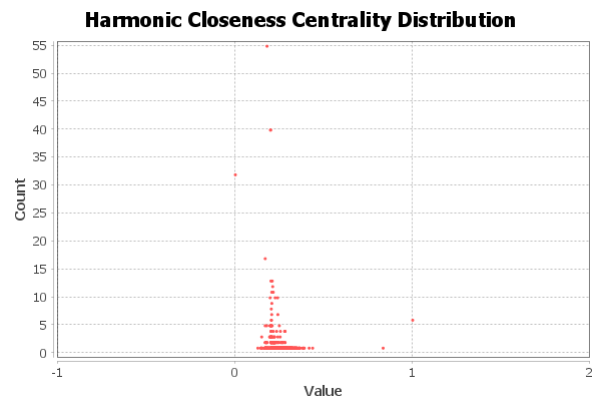
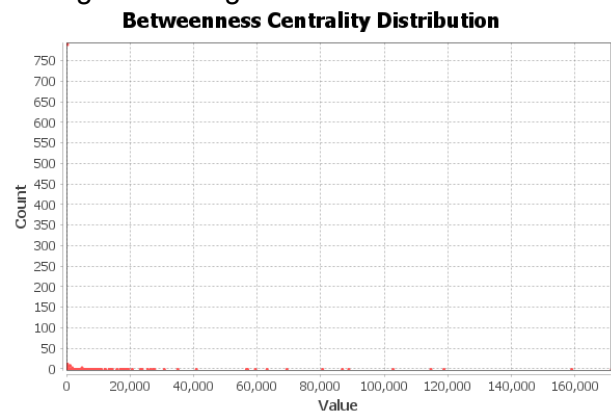
Network Interpretation: directed

## Results:

Diameter: 12

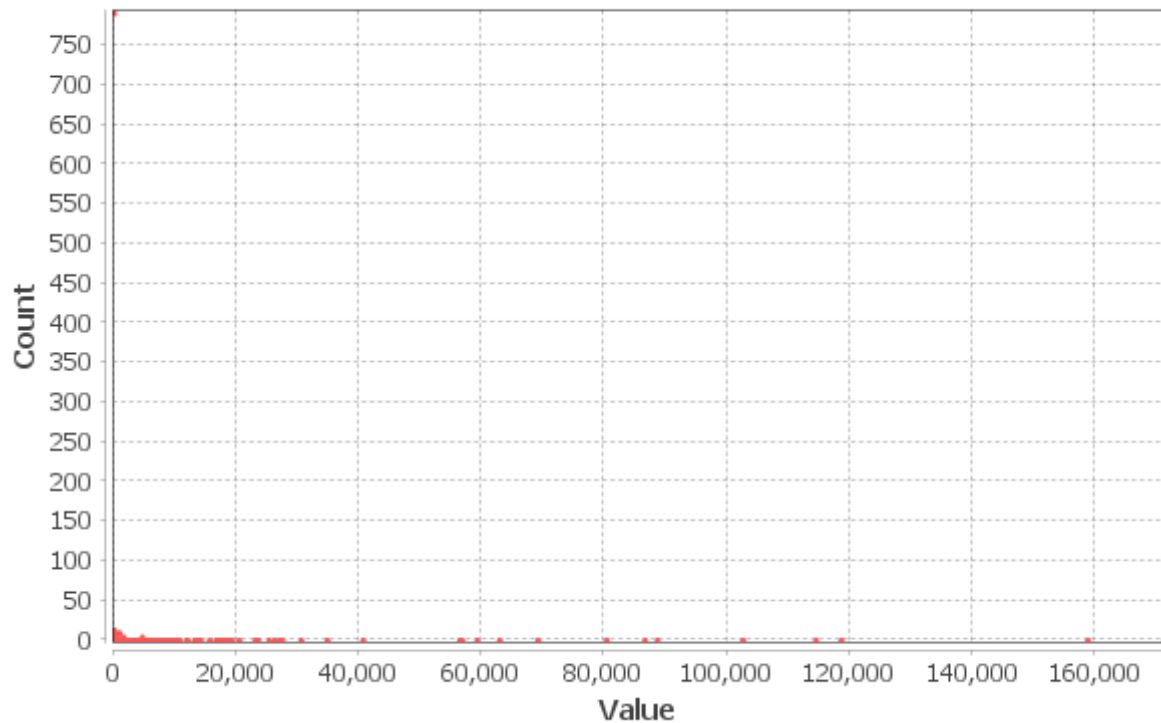
Radius: 0

Average Path length: 5.108295807538753



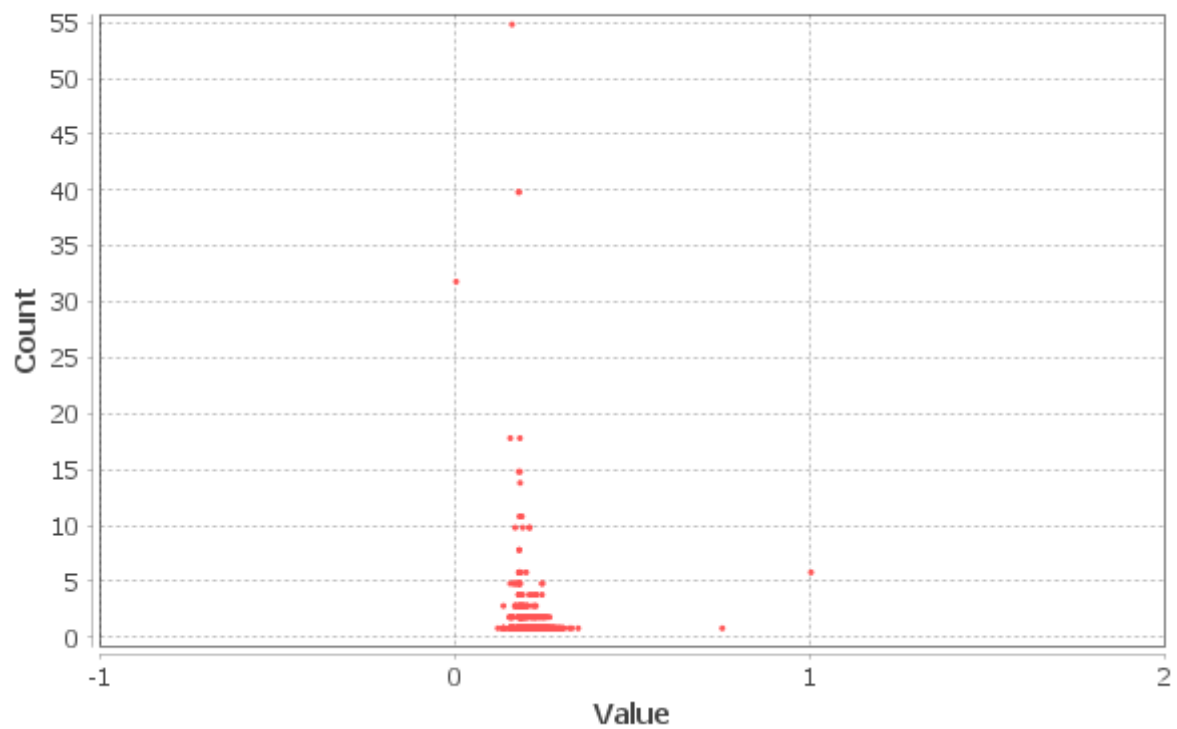
Id	Label	Interval	Betweenness Centrality ▾
56	java.lang.Class		171145.138326
5	java.lang.String		158635.536323
14	java.util.Locale		118452.409256
20	java.lang.Object		114316.478581
190	java.nio.ByteBuffer		102440.248656
204	java.io.File		88495.366523
473	java.lang.SecurityManager		86473.419075
680	java.net.URI		80244.489444
12	java.io.ObjectInputStream		69022.097145
27	java.awt.Component		62783.525699
188	java.lang.ClassLoader		59129.977718
937	java.nio.DirectByteBuffer		56667.254936
755	java.lang.Package		56317.934089
1309	java.text.MessageFormat		40546.452657
266	java.lang.Throwable		34707.485626
692	java.io.OutputStreamWriter		30468.418062
152	java.awt.Toolkit		27393.144233
678	java.nio.channels.FileChannel		26880.972598
199	java.lang.StringBuffer		26082.114047
54	java.io.ObjectOutputStream		25240.455621
115	java.io.FileInputStream		23495.166263
131	java.awt.Font		22948.185795
756	java.security.Permissions		20375.455809
1449	java.util.regex.Matcher		19195.310831
155	java.io.PrintStream		18788.617662
784	java.util.jar.JarInputStream		18711.610167
160	java.util.ResourceBundle		18422.294767
938	java.nio.HeapByteBuffer		18388.740554
696	java.nio.charset.Charset		17747.521215
642	java.io.ObjectStreamClass		17622.611898

## Betweenness Centrality Distribution



Between Centrality

## Closeness Centrality Distribution



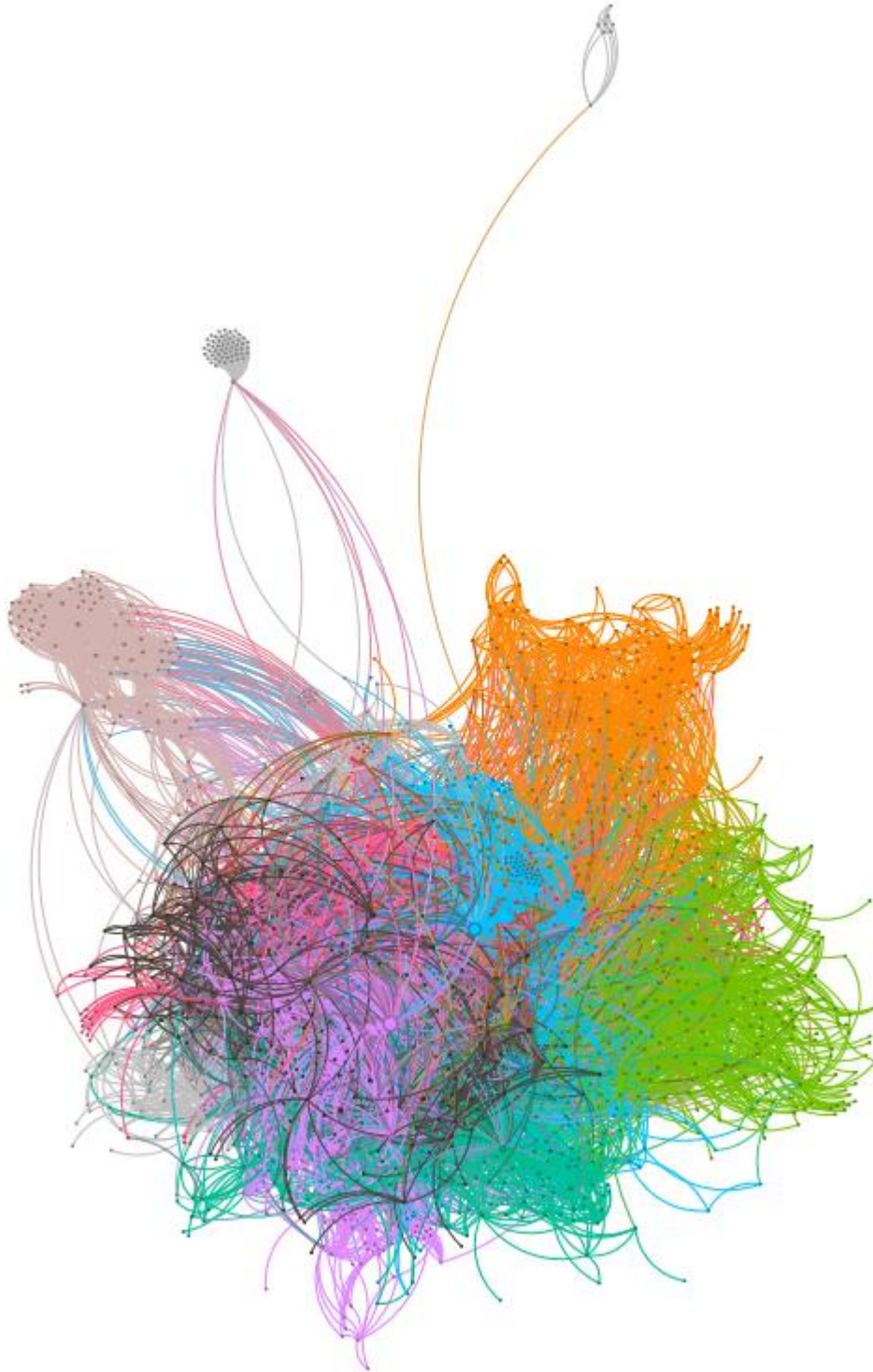
Id	Label	Interval	Closeness Centrality
56	java.lang.Class		0.263359
5	java.lang.String		0.212569
14	java.util.Locale		0.2533039647577093
20	java.lang.Object		0.214286
190	java.nio.ByteBuffer		0.258815
204	java.io.File		0.276664
473	java.lang.SecurityManager		0.271868
680	java.net.URI		0.28798
12	java.io.ObjectInputStream		0.259009
27	java.awt.Component		0.318795
188	java.lang.ClassLoader		0.291385
937	java.nio.DirectByteBuffer		0.248918
755	java.lang.Package		0.278675
1309	java.text.MessageFormat		0.236463
266	java.lang.Throwable		0.224756
692	java.io.OutputStreamWriter		0.254613
152	java.awt.Toolkit		0.343785
678	java.nio.channels.FileChannel		0.234534
199	java.lang.StringBuffer		0.212832
54	java.io.ObjectOutputStream		0.249458
115	java.io.FileInputStream		0.264368
131	java.awt.Font		0.300391
756	java.security.Permissions		0.234534
1449	java.util.regex.Matcher		0.186595
155	java.io.PrintStream		0.228932
784	java.util.jar.JarInputStream		0.195357
160	java.util.ResourceBundle		0.263359
938	java.nio.HeapByteBuffer		0.218078
696	java.nio.charset.Charset		0.326087
642	java.io.ObjectStreamClass		0.241766

Closeness Centrality

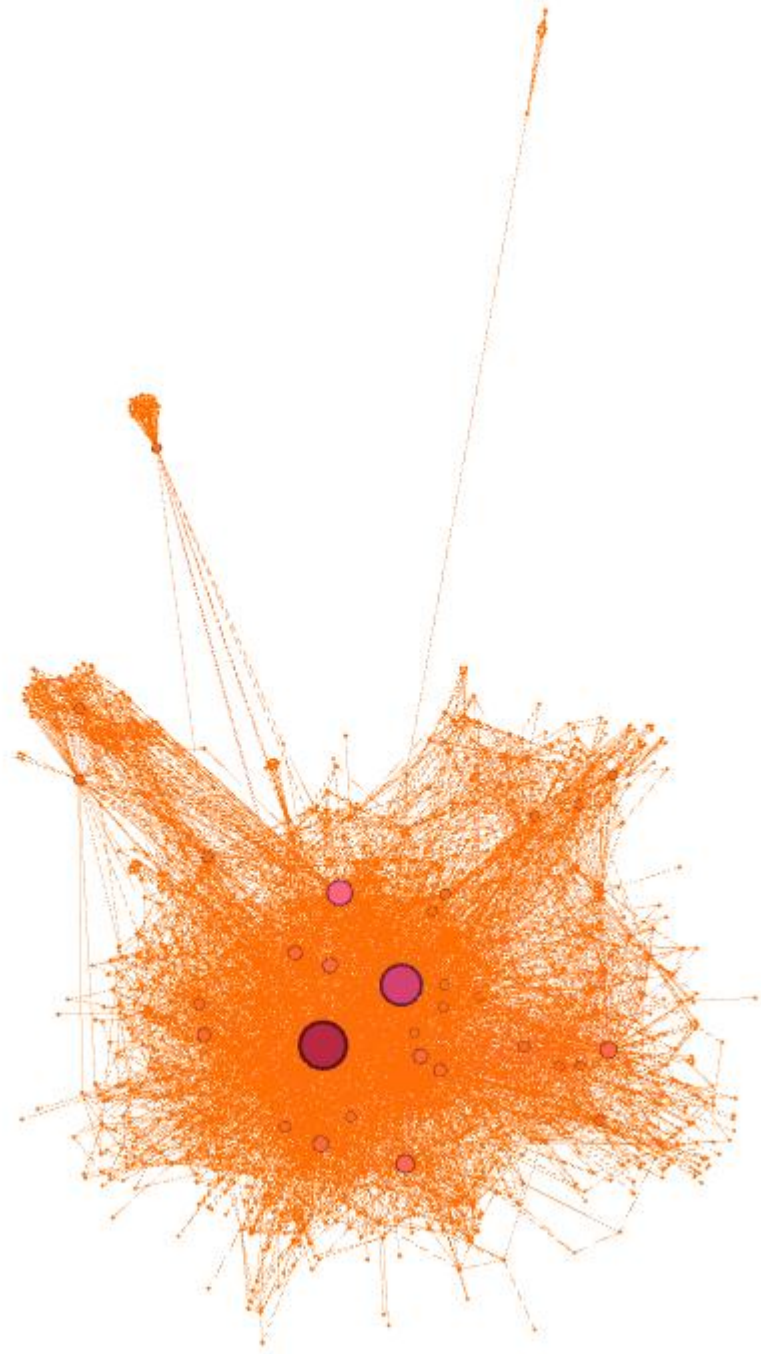
**Kết luận:**

- **56 và 5** là các nút quan trọng nhất trong mạng này vì chúng có cả Betweenness và Degree cao, và Closeness cao
- **14** là nút quan trọng thứ 2, có degree cao và gần với các nút còn lại

Thuật toán	Số lượng cộng đồng	Modularity
Louvain	11	0.469
Girvan-Newman	159	0.3614188
LPA	2	0.375



louvain



ForceAtlas 2

