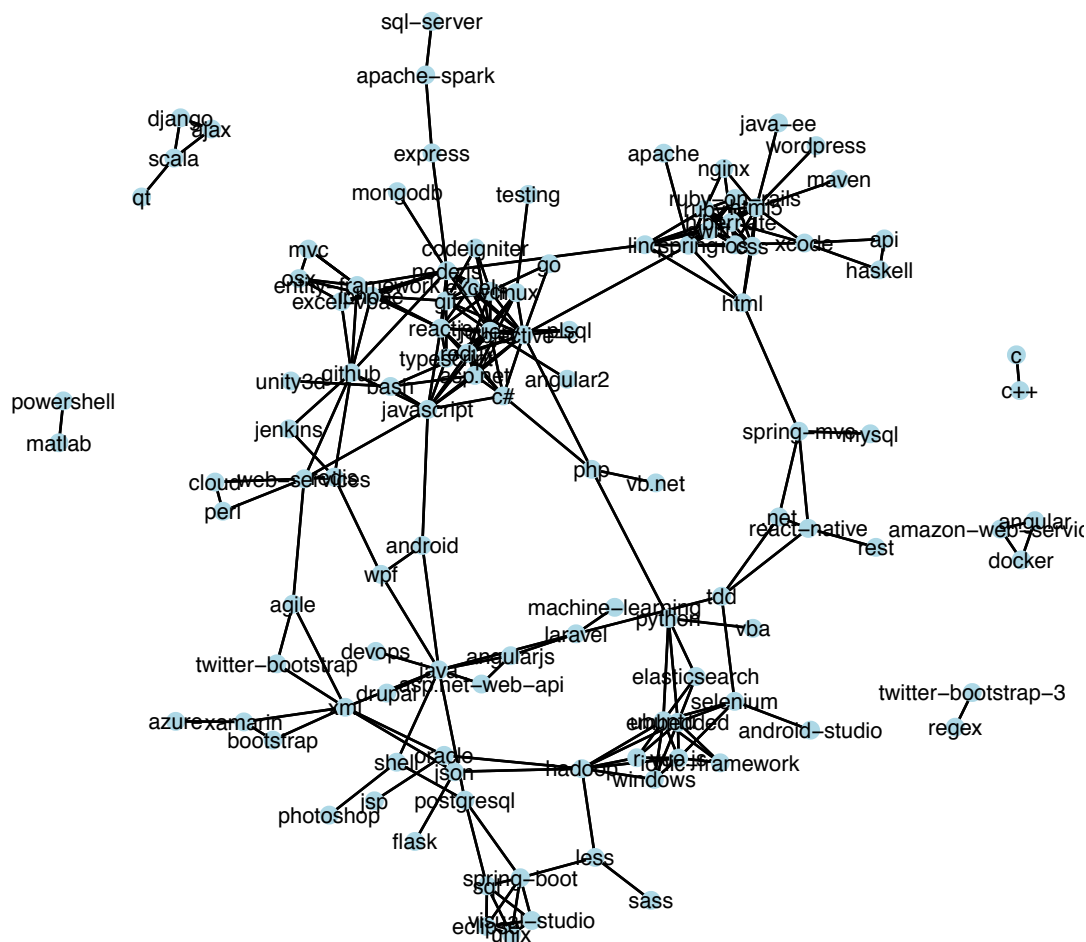


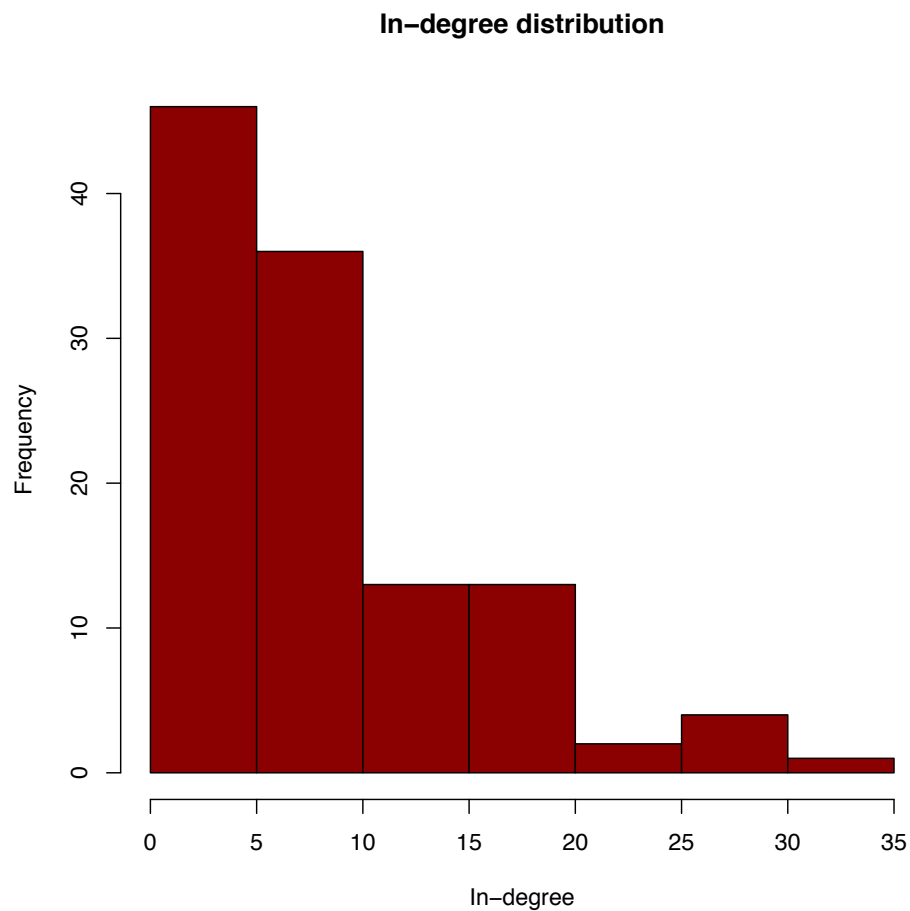
Network data corresponding to technology tags listed in developer stories on stack overflow were downloaded from Kaggle (<https://www.kaggle.com/stackoverflow/stackoverflow-tag-network>).

The network was created by stack overflow for the purpose of understanding the ecosystem of how different technologies are related to each other.

The nodes in the network correspond to technology tags and edges connect technology tags that appear together. The network has 115 nodes and 490 edges, is undirected and has 6 components. These components including 1 large network, 3 dyads, 1 triad and 1 component containing 4 nodes, a visualization of the network is shown below. The fact that the network contains multiple components suggests certain technologies are used independently of others.



In-degree was calculated for each of the node in the network; the corresponding distribution is plotted below. This distribution demonstrates that most nodes have 0-5 incoming connections and a small number of nodes have many (≥ 20) incoming connections.



There were 9 nodes with 20 or more incoming connections. These technologies include:

- Node.js
- Redux
- Jquery
- Wcf
- Objective-c
- Javascript
- Reactjs
- Html5
- Spring

The visualization below has highlighted nodes with in-degree of 20 or greater in blue. It demonstrates that the majority of these high in-degree nodes are located in 1 cluster.

13 clusters were identified in total. The technology tags belonging to each of these clusters is listed below.

Cluster 1	azure, sql-server, asp.net, entity-framework, wpf, linq, wcf, c# asp.net-web-api, .net, sql, mvc, vb.net, xamarin, unity3d, visual-studio, plsql, oracle
Cluster 2	tdd, agile
Cluster 3	codeigniter, jquery, mysql css , php, javascript json, angularjs, ionic- framework, reactjs, mongodb, sass, twitter-bootstrap express node.js, html5, laravel ,ajax,wordpress , photoshop, html, bootstrap less , redux, twitter-bootstrap-3 xml, vue.js , react-native, drupal
Cluster 4	cloud, devops, docker, amazon-web-services, git, jenkins, go github
Cluster 5	Ios, android-studio, android, nginx, linux, shell, bash, swift, osx objective-c, iphone, xcode, unix, Ubuntu, windows, apache, powershell
Cluster 6	Java, rest, maven, jsp, spring-boot, web-services spring-mvc, java-ee spring, hibernate, eclipse, api
Cluster 7	typescript angular2, angular
Cluster 8	Scala, hadoop, apache-spark, haskell
Cluster 9	c++ , python, embedded, qt , c, flask, django, r, machine-learning, matlab
Cluster 10	Postgresq, redis, elasticsearch, ruby-on-rails, ruby
Cluster 11	Vba, excel-vba, excel
Cluster 12	Regex, perl
Cluster 13	testing, selenium

Inspection of the clusters reveals related technologies within the same cluster, for instance cluster 5 contains various operating systems, cluster 12 contains regex with perl, and cluster 13 contains selenium with testing, while scala and hadoop are in the same cluster and cloud and aws are in the same cluster.

In conclusion, this network analysis was able to give insight on how the technology ecosystem is structured; it was able to reveal that related technologies are likely to be tagged together in the stack overflow developer stories.