

What's the most common programming language used by everyone?

```
In [1]: from tools import data_loader
import pandas as pd
```

Here we import the data_loader module to help us pre_load the data into dataframe and do some cleaning beforehand.

```
In [2]: df = data_loader.load_data("Developer Kaki _ Developer Salary Survey 2022 Result")
```

```
In [3]: df.tech_used #The column we are interested to investigate
```

```
Out[3]: 0                                The Internet
1      Angular, NestJS, Laravel, WordPress, NextJS
2                                Configura Magic
3      Terminal, Zendesk, slack
4                                .NET
...
821                                Coldfusion
822      PHP, Python, React, React Native
823      C#,Java,powershell,azure,AWS,SQL,mongoDB,NOSQL
824                                Java
825      react, javascript, kotlin, html, css, nodejs
Name: tech_used, Length: 802, dtype: object
```

Get the frequency of each tech and sort them from most common to least common

```
In [4]: from tools import frequency_counter
```

```
In [5]: counter_info, wordcloud = frequency_counter.freq_counter(df)
# frequency counter will automatically use df.tech_used as reference
```

```
In [6]: counter_info.most_common()
```

```
Out[6]: [('python', 104),
         ('java', 102),
         ('javascript', 86),
         ('aws', 73),
         ('react', 68),
         ('php', 63),
         ('c#', 59),
         ('nodejs', 56),
         ('.net', 52),
         ('angular', 50),
         ('mysql', 43),
         ('docker', 39),
         ('laravel', 36),
         ('sql', 32),
         ('flutter', 30),
         ('vuejs', 29),
         ('typescript', 27),
         ('html', 26),
         ('css', 24),
         ('react native', 23),
         ('kubernetes', 23),
         ('js', 22),
         ('laptop', 22),
         ('kotlin', 20),
         ('gcp', 20),
         ('golang', 20),
         ('mongodb', 18),
         ('azure', 18),
         ('vue', 17),
         ('git', 16),
         ('reactjs', 16),
         ('android', 16),
         ('postgresql', 15),
         ('jquery', 14),
         ('swift', 14),
         ('spring boot', 14),
         ('mssql', 13),
         ('django', 13),
         ('jira', 13),
         ('ruby on rails', 13),
         ('asp.net', 12),
         ('.net core', 12),
         ('linux', 11),
         ('sql server', 10),
         ('c++', 10),
         ('spring', 10),
         ('jenkins', 10),
         ('android studio', 9),
         ('postgres', 9),
         ('node.js', 9),
         ('', 9),
         ('vue.js', 8),
         ('redis', 8),
         ('ruby', 8),
         ('go', 8),
         ('slack', 7),
         ('azure devops', 7),
         ('bitbucket', 7),
         ('github', 7),
         ('xcode', 7),
         ('graphql', 7),
         ('node js', 7),
         ('bash', 7),
```

```
('nestjs', 6),
('wordpress', 6),
('nextjs', 6),
('firebase', 6),
('cloud', 6),
('react js', 6),
('node', 6),
('angularjs', 6),
('hibernate', 5),
('spark', 5),
('coldfusion', 5),
('web', 5),
('-', 5),
('power bi', 5),
('php laravel', 5),
('postman', 4),
('airflow', 4),
('gitlab', 4),
('flask', 4),
('react.js', 4),
('excel', 4),
('express', 4),
('bootstrap', 4),
('google cloud', 4),
('ionic', 4),
('etc', 4),
('html5', 4),
('vscode', 4),
('tensorflow', 4),
('kafka', 4),
('oracle', 4),
('maven', 4),
('machine learning', 3),
('nosql', 3),
('microsoft azure', 3),
('putty', 3),
('jsp', 3),
('shell', 3),
('tableau', 3),
('scss', 3),
('sap', 3),
('terraform', 3),
('rabbitmq', 3),
('vue js', 3),
('springboot', 3),
('asp.net core', 3),
('objective c', 3),
('nginx', 3),
('r', 3),
('c', 3),
('redux', 2),
('deep learning', 2),
('google cloud platform', 2),
('powershell', 2),
('visual studio', 2),
('elasticsearch', 2),
('windows server', 2),
('ml', 2),
('quasar', 2),
('computer', 2),
('confluence', 2),
('talend', 2),
('alicloud', 2),
```

```
('rails', 2),
('j2ee', 2),
('mern stack', 2),
('asp .net', 2),
('expressjs', 2),
('windows', 2),
('salesforce', 2),
('nifi', 2),
('serverless', 2),
('lambda', 2),
('sqs', 2),
('webflow', 2),
('ansible', 2),
('groovy', 2),
('bitrise', 2),
('ts', 2),
('k8s', 2),
('blockchain', 2),
('alibaba cloud', 2),
('ai/ml', 2),
('sas', 2),
('java spring', 2),
('cordova', 2),
('dart', 2),
('ios', 2),
('vb.net', 2),
('codefresh', 2),
('next', 2),
('aws stack', 2),
('pyspark', 2),
('nuxt', 2),
('qlikview', 2),
('web development', 2),
('mobile development', 2),
('rust', 2),
('rest api', 2),
('sass', 2),
('objc', 2),
('gradle', 2),
('elixir', 2),
('ids', 2),
('unity3d', 2),
('figma', 2),
('css3', 2),
('microservices', 2),
('servicenow', 2),
('the internet', 1),
('configura magic', 1),
('terminal', 1),
('zendesk', 1),
('computer vision', 1),
('clickup', 1),
('asp.net 4.5', 1),
('vs code', 1),
('microsoft dynamics erp', 1),
('xampp', 1),
('phpstorm', 1),
('android java/kotlin', 1),
('swift (ios)', 1),
('aws serverless stack', 1),
('metatrader', 1),
('json', 1),
('elastic search', 1),
```

```
('delphi', 1),
('.', 1),
('message queue', 1),
('aliyun', 1),
('superset', 1),
('api- muelsoft', 1),
('apigee and sap api manager', 1),
('trello', 1),
('java mysql', 1),
('c#.net', 1),
('angular js', 1),
('buildkite', 1),
('retool', 1),
('react native and nodejs', 1),
('obj-c', 1),
('swift.', 1),
('angular spring boot docker kubernetes', 1),
('electron', 1),
('feathers.js', 1),
('mongo db', 1),
('office 365', 1),
('vm', 1),
('hci', 1),
('routing & switching', 1),
('wifi 5', 1),
('wifi 6', 1),
('jetbrains', 1),
('svelte', 1),
('team foundation server', 1),
('dl', 1),
('hp prodesk', 1),
('jupyter', 1),
('ms sql', 1),
('svn', 1),
('tailwindcss', 1),
('aangular', 1),
('selenium', 1),
('gis', 1),
('backbone', 1),
('mariadb', 1),
('rpa', 1),
('cloud erp', 1),
('elastic', 1),
('python.', 1),
('documentation and website development', 1),
('spring-boot', 1),
('powerbi', 1),
('sql & python', 1),
('ms team', 1),
('any', 1),
('gcloud (gke mainly)', 1),
('holistics', 1),
('hex', 1),
('quill (quintiq logic language)', 1),
('frontend', 1),
('pytorch.', 1),
("don't understand", 1),
('raspberry pi', 1),
('microsoft stack', 1),
('workday', 1),
('microservice', 1),
('net core', 1),
('multiple gcp services', 1),
```

```
('pks', 1),
('ssis', 1),
('apache airflow', 1),
('mlflow', 1),
('dvc', 1),
('arize.ai', 1),
('react.js + typescript', 1),
('dynamodb', 1),
('sns', 1),
('api gateway', 1),
('hexagonal architecture(more like how we build those)', 1),
('ci/cd', 1),
('kubernetes', 1),
('ec2', 1),
('rxjs', 1),
('redux/ngrx', 1),
('electronjs', 1),
('golang and some in house framework', 1),
('perl', 1),
('ci/cd pipelines', 1),
('lamp stack', 1),
('mevn', 1),
('bi tool', 1),
('react framework', 1),
('oracle sql', 1),
('asp.net (c# and vb.net)', 1),
('ros', 1),
('three.js', 1),
('github.', 1),
('javascript react', 1),
('.net web development', 1),
('spotfire', 1),
('workbench', 1),
('deploybot', 1),
('a lot', 1),
('react-native', 1),
('web application', 1),
('server setup', 1),
('hardware', 1),
('was', 1),
('dotnet', 1),
('zeplin', 1),
('angular java', 1),
('mobile phone', 1),
('plc', 1),
('python and flutter', 1),
('nuxtjs', 1),
('aliyun analytic db', 1),
('polardb', 1),
('hbase', 1),
('apache big data stack', 1),
('sitecore', 1),
('mongo atlas', 1),
('macbook', 1),
('haskell', 1),
('rescript', 1),
('java ee', 1),
('sql and jsp', 1),
('dataiku', 1),
('hadoop', 1),
('mongo', 1),
('kubenetes', 1),
('spark ar', 1),
```

```
('not sure of question.', 1),
('macos', 1),
('hack (php)', 1),
('javascript(react)', 1),
('reactnative', 1),
('vmware', 1),
('macbook pro 16"', 1),
('iphone 11', 1),
('gcp fast api vuejs (nuxt) express', 1),
('lamp', 1),
('ar stuff', 1),
('hyper-v', 1),
('nodejs /express', 1),
('segmentio', 1),
('pusher', 1),
('embrace', 1),
('aws secrets', 1),
('gatsby', 1),
('mssql', 1),
('azure services', 1),
('ms excel', 1),
('jmp', 1),
('linux hosting', 1),
('web dev', 1),
('backend', 1),
('data distributed system', 1),
('ai infusion', 1),
('desktop app dev', 1),
('confluence', 1),
('microsoft office', 1),
('desktop', 1),
('company laptop', 1),
('company monitor', 1),
('keyboard', 1),
('mouse', 1),
('headphone', 1),
('aws cloud', 1),
('bamboo', 1),
('none', 1),
('laptops', 1),
('weblogic', 1),
('microsoft platform', 1),
('slate', 1),
('unix', 1),
('game development', 1),
('cg', 1),
('cv', 1),
('ai', 1),
('newrelic', 1),
('mac', 1),
('grpc', 1),
('python', 1),
('internal', 1),
('cloud run', 1),
('psql', 1),
('futter', 1),
('js/typescript', 1),
('css-in-js', 1),
('websocket', 1),
('web technologies (laravel', 1),
('node.js', 1),
('mvvm', 1),
('.net sqlserver', 1),
```

```
('raspberrypi', 1),
('opencv', 1),
('mysql and more', 1),
('java struts', 1),
('sybase', 1),
('java javascript react', 1),
('telco infra', 1),
('networking infra', 1),
('cms architecture', 1),
('iiot solution', 1),
('robotic process automation', 1),
('bit', 1),
('apps', 1),
('azure web services', 1),
('javascript framework', 1),
('loopback4', 1),
('api', 1),
('bash script', 1),
('angular 8', 1),
('akamai', 1),
('tibco', 1),
('cypress', 1),
('graph ql', 1),
('jmeter', 1),
('taurus', 1),
('google suite', 1),
('rust/c++', 1),
('machine vision', 1),
('machine components & controllers', 1),
('.net framework and .net core', 1),
('angular and react', 1),
('pytorch', 1),
('tech support', 1),
('technical task (eg: hardware installation', 1),
('configuration)', 1),
('kendo', 1),
('angular 2', 1),
('qt qml', 1),
('phoenix', 1),
('what is this?', 1),
('azure cloud', 1),
('php zend framework 1', 1),
('miro', 1),
('teams', 1),
('ide', 1),
('mainframe', 1),
('objective-c', 1),
('intellij', 1),
('hardhat', 1),
('subgraph', 1),
('solidity', 1),
('mean', 1),
('visual studio code', 1),
('restful api', 1),
('javascripts', 1),
('inertia', 1),
('yii', 1),
('pardot', 1),
('hubspot', 1),
('google analytic', 1),
('google tag manager', 1),
('xamarin', 1),
('web frameworks', 1),
```



```
('streaming', 1),
('distributed platform', 1),
('search database', 1),
('scripting languages', 1),
('open source automation package', 1),
('spring framework', 1),
('. net mvc', 1),
('hyper v', 1),
('spring(kotlin/java)', 1),
('elixir phoenix', 1),
('sonarqube', 1),
('aws ecs', 1),
('microsoft o365', 1),
('ubuntu', 1),
('siem', 1),
('fw', 1),
('ips', 1),
('mobile', 1),
('html3', 1),
('css5', 1),
('asp.net mvc', 1),
('uiopath (rpa tech)', 1),
('apollo graphql', 1),
('fe (mobile) : java', 1),
('swift be : ruby', 1),
('fe(web): react', 1),
('elixir. devops: aws', 1),
('kubernetes. ds: python. automation test : groovy (katalon)', 1),
('asp based system', 1),
('cloudflare', 1),
('wifi', 1),
('stripes', 1),
('db2', 1),
('google', 1),
('microsoft power bi', 1),
('laptp', 1),
('phone', 1),
('mean stack', 1),
('dotnet core', 1),
('adobe illustrator', 1),
('elementor', 1),
('codepen', 1),
('git bash', 1),
('postgress', 1),
('networking', 1),
('lynx', 1),
('elm', 1),
("don't get it what topic of the question", 1),
('jasperreport', 1),
('phyton', 1),
('eye-tracking', 1),
('centos', 1),
('xwiki', 1),
('asp classic', 1),
('android kotlin', 1),
('wordpress & etc', 1),
('hh', 1),
('alot. mean or mern', 1),
('play framework', 1),
('flink', 1),
('big data', 1),
('uiopath', 1),
('microsoft 365', 1),
```

```
('company internal software', 1),
('mvc', 1),
('python web-framework plc uiux', 1),
('java spring boot', 1),
('.net core(xamarin)', 1),
('objective - c', 1),
('php yii', 1),
('zephyr', 1),
('charles proxy', 1),
('c# c++', 1),
('java web', 1),
('atlassian suites', 1),
('tsql', 1),
('ibm as400', 1),
('jsx', 1),
('many', 1),
('cubejs', 1),
('kubernetete', 1),
('mulesoft', 1),
('business intelligence', 1),
('heidisql', 1),
('big query', 1),
('java spingboot', 1),
('oracle weblogic', 1),
('pl/sql', 1),
('codeignitor', 1),
('webix ui', 1),
('oracle db', 1),
('openshift', 1),
('micro service', 1),
('. net core', 1),
('intelli j', 1),
('alibaba', 1),
('blockchain api', 1),
('discord api', 1),
('unity', 1),
('smartphone', 1),
('sofa', 1),
('ant financial cloud', 1),
('jfrog artifactory', 1),
('aws eks', 1),
('struts framework', 1),
('application & cloud', 1),
('app', 1),
('laptop?', 1),
('1. gitlab 2. visual studio 2022 3. asp.net core 4. blazor', 1),
('debugging', 1),
('angular framework', 1),
('elixir/phoenix', 1),
('asp', 1),
('jpa', 1),
('java 8', 1),
('google drive', 1),
('facebook ads', 1),
('typescript (nodejs', 1),
('react)', 1),
('qt', 1),
('match client workflows and tech', 1),
('huge assortment', 1),
('asp.net/devexpress', 1),
('hdfs', 1),
('.net framework', 1),
('etl/elt tools', 1),
```

```
('aws redshift', 1),  
( 'cloud computing (huawei', 1),  
( 'aws etc)', 1)]
```

From above, we can see that "python" has the highest frequency count.
Now, have a quick look at all rows containing the word "python"

```
In [7]: with pd.option_context('display.max_rows', None, 'display.max_columns', None):  
        display(df[df.tech_used.str.lower().str.strip().str.contains("python")][["te
```

	tech_used	salary
8	python	4000.0
9	Python, Google Cloud platform	5100.0
13	Python, flutter, c#, java, NoSql	8000.0
32	Python, Aliyun, Airflow, Superset, Postgres	3600.0
39	Java, Vuejs, python	5700.0
56	Typescript, Python, React	5200.0
64	Python, AWS, ML, DL	3640.0
65	Python, Django, Flask, Vue, Quasar, AWS	4000.0
66	node.js, react.js, typescript, postgresql, python	6046.0
69	Python, Docker, Spark, Jupyter, Excel, Jira, C...	7750.0
70	React, Nodejs, Java, Python	7200.0
73	Nodejs, aws, python	12300.0
74	Python	4000.0
83	Python, JavaScript, JQuery, Bootstrap, HTML, C...	4800.0
85	Linux, Shell, Python, SQL	5150.0
92	AWS, Azure, Elastic, Python.	3800.0
102	SQL & Python	5100.0
104	python, mysql, mssql, shell	5016.0
113	Java, python	4750.0
131	Python, Pytorch.	5200.0
135	JavaScript, Python	5000.0
136	Python, Deep Learning	12500.0
147	Node js, Django, React, Python	3500.0
149	Python	8300.0
155	Vue.js, Python, multiple GCP services	3480.0
157	Python, PKS, Kubernetes, JS	5367.0
159	Python, AWS, Docker, Apache Airflow, MLflow, D...	5500.0
168	Golang, Reactjs, Python, CI/CD, Kubernetes, Re...	18000.0
170	Js, python	6700.0
177	Python, Perl, Java, C++	3600.0
199	.NET, Python, Power BI	5000.0
219	python	10000.0
231	Javascript, Python, SQL, Machine Learning	3640.0
242	Python, AWS	3600.0
249	Python and flutter	3500.0

	tech_used	salary
250	Python,React,.Net	1400.0
251	Java, Python, nodejs, angular	6700.0
252	Java, python	7200.0
268	vue,angular,python,c#,js	5500.0
270	Python, JavaScript, GCP, Kubernetes	3800.0
272	Python , Javascript , MYSQL , PHP	4000.0
281	Reactjs, nextjs, python, docker, react native,...	6500.0
297	AI/ML, Python, Dataiku, Hadoop, Oracle	26500.0
300	VUEJS, DOCKER, EXPRESSJS, MONGO, MYSQL, PYTHON...	4200.0
309	Python, Nodejs	6800.0
313	GCP, python, sql,gitlab,kubernetes	5980.0
322	Python, SQL	6594.0
323	Hack (PHP), Python, JavaScript(React), GraphQL	10000.0
334	Python, SQL	3300.0
341	Kubernetes, Docker, Linux, Spark, Python, Git	4200.0
344	AWS, Python, JavaScript, NodeJS, VueJS	16000.0
349	Angular, C#, Python, Azure services	10000.0
357	Python, AWS	4200.0
359	Python, spark,	10000.0
360	Python	3800.0
361	python, tensorflow, django, postgresql, vuejs	9500.0
365	Python, AWS Stack, Pyspark, SQL, Tableau, MS E...	5280.0
366	SQL, python, power bi	5000.0
368	JMP, Python	3500.0
371	C#, C++, Python, Web Dev, Backend, Data Distri...	6500.0
390	Python, AWS	3700.0
395	Python, unix	10000.0
407	Python, R, SAS, SQL	14000.0
417	Python, JS, Cloud Run, PSQL, HTML, CSS, Futter...	8000.0
420	Python, airflow	7500.0
426	php, python, js, django, laravel, raspberrypi,...	2200.0
439	PHP, Python	5100.0
440	python,C#,java,mssql	5500.0
445	AWS, NextJS, typescript, javascript, python	3500.0
446	C++,Java,Angular,Python	7500.0

	tech_used	salary
448	Python	3300.0
455	Azure, Python	3000.0
461	Python, Bash	2600.0
463	Python, SQL, google cloud, git, docker	4000.0
466	C#, Python, AWS	5000.0
467	Go,rabbitmq,nodejs,kafka,docker,python,typescript	16000.0
469	SQL, Python	5000.0
488	Python, bash	8000.0
491	C#, qt qml, php, python, django, .net	8150.0
518	Python, Google Cloud, Airflow, Postgres	5150.0
528	Python, R, Javascript, SQL, Elasticsearch, Pos...	6600.0
533	python, node.js, javascripts, mysql, etc	3600.0
558	Java, Python, Angular, Spring Boot, Flask, C#	6120.0
570	Python, Typescript, AWS	5000.0
572	GoLang, Python, Javascript	6900.0
595	Python, typescript	11000.0
597	FE (Mobile) : java, swift BE : ruby, postgresq...	3200.0
611	Nodejs, PHP, Python	4000.0
613	MEAN stack, Python, Golang, SQL, tensorflow, K...	8800.0
614	Python, React, JavaScript, HTML, CSS, Bash, Gi...	3000.0
619	Python, Kubernetes, Azure, Docker	10300.0
620	Java, Bash, Python	3400.0
636	C, Linux, Python, Networking	28400.0
638	Typescript, JavaScript, Python, React, NestJS,...	6000.0
640	AWS, Python, PHP	15000.0
644	Python	5319.0
647	Python, Java	13000.0
668	Python, Go	10000.0
682	Python	13000.0
688	python web-framework plc uiux	6800.0
703	Kubernetes, Python, Docker, Nifi, Kafka, Azure	10300.0
705	go, python	9700.0
710	angular,.net,html,css,js,ts,tsql,python,react	7200.0
723	Python, Javascript	9500.0
731	Python, Flask, Nodejs	5000.0

	tech_used	salary
775	GCP, Azure, Python, Vue, JavaScript, ML, SQL	5000.0
801	C#,C++,Qt,Python	4400.0
811	Airflow, Python, HDFS, Pyspark	4550.0
822	PHP, Python, React, React Native	7000.0