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Statistics and data from all](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=38.470230769230774) [of these will come together and be stored](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=40.40869230769233) [in a data warehouse, and this is where](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=43.10526666666667)[BigQuery comes in. BigQuery is GCP's data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=45.913800000000016) [warehouse on the cloud. This supports both](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=48.650999999999996) [standard SQL and other SQL drivers such as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=51.720571428571425) [ODBC and JDBC. There are a variety of ways](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=55.415428571428556) [to work with BigQuery. It offers an](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=58.5938) [intuitive and easy-to-use web UI. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=61.066624999999995) [use the command line, or you can access it](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=63.91116666666666) [programmatically. Client libraries are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=67.1294166666667) [available in Python and most of the other](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=68.35425000000001) [common programming languages. The best](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=70.66691666666671) [part about BigQuery and its most powerful](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=72.6152) [feature by far is the fact that it's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=75.4451) [serverless. There are no clusters that you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=78.17389999999997) [need to set up, no nodes that you need to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=79.7658) [instantiate, no servers that you need to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=82.06181818181818) [manage at all. BigQuery can be considered](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=85.00054545454549) [to be completely no-ops. BigQuery works in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=87.87450000000003) [such a way that there is absolutely no](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=90.37935714285716) [need for you to set up indices on any of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=92.7536428571429) [the data that you feed in here. The fact](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=95.71250000000003) [that BigQuery is serverless, and the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=98.37)[machines on which data is stored and where](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=100.137) [you run your queries is completely](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=102.73936363636363) [abstracted away from you, means that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=104.87590909090909) [BigQuery can offer autoscaling right to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=107.34654545454543) [petabytes just out-of-the-box. In](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=109.884) [addition, BigQuery supports a number of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=111.968) [advanced features. You can work with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=114.69927272727274) [streaming data that is fed into BigQuery,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=116.64109090909095) [and BigQuery gives you real-time analytics.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=0&mode=live&start=121.612)

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However, if you're](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=14.31761538461538) [looking for other technologies on the GCP](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=16.47472727272727) [that might be considered prereqs to this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=18.756090909090897) [course, here are some courses on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=20.882999999999996) [Pluralsight that you can watch. Creating](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=22.684)[and Administering Google Cloud SQL](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=25.009333333333327) [Instances shows you how the relational](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=26.977) [database service works on the GCP.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=29.392) [Architecting Google Cloud Storage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=32.159666666666666) [Configurations will show you how the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=34.122333333333344) [elastic storage service on the GCP works.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=36.57091666666665) [Here are some skills that might be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=39.312) [considered prereqs for this course. 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We'll start this course off with a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=64.1314) [basic introduction to BigQuery. We'll talk](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=66.73109090909087) [about where exactly BigQuery fits in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=68.6876923076923) [range of GCP services, we'll talk about](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=71.21361538461538) [how BigQuery is priced, and we'll compare](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=73.50623076923075) [it to other GCP technologies. We'll then](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=75.48776923076919) [move on to understanding the basic model](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=78.10645454545455) [of data storage within BigQuery. We'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=81.203) [talk about datasets, tables, and views,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=83.46860000000001) [and we'll talk about partitioned tables.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=85.98450000000001) [The module after that will focus on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=89.001) [advanced analytical queries that you can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=91.50718181818186) [perform on BigQuery, we'll talk about how](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=93.29046153846153) [you can store data in nested and repeated](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=95.25853846153842) [fields, we'll see a range of aggregate](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=97.79575000000003) [operations in BigQuery, and also work with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=100.167) [windowing functions. And finally, we'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=104.33900000000003) [see how we can access data stored in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=106.62161538461541) [BigQuery programmatically. We'll work with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=109.52992307692315) [Datalab notebooks, which is basically](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=111.18099999999998) [Jupiter Notebooks hosted on a VM in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=112.72099999999995) [cloud. This is the only part of the course](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=114.97313333333331) [where we'll do a little bit of Python](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=117.54666666666667) [programming, very little. All of the demos](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=120.36000000000006) [will assume that engineers in this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=122.90045454545456) [organization, SpikySales. com, are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=125.1286363636364) [evaluating BigQuery on the GCP. They're](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=127.08699999999999) [contemplating a move to the cloud.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=130.03885714285715) [SpikySales is a hypothetical online](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=131.88) [retailer which specializes in flash sales](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=134.61833333333328) [of trending products. Traffic to their](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=137.90162499999997) [website and mobile app tend to be very](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=140.45550000000003) [spiky. At sale time, they have huge](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=142.88883333333342) [traffic with lots of visits, at other](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=145.11190909090917) [times it's relatively quiet, which is why](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=147.4777272727273) [cloud computing fits perfectly. They're](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=150.16127272727277) [interested in the pay-as-you-go model.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=152.312125) [They do not want idle capacity during](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=154.619) [off-sale periods. Data analysts and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=157.87633333333324) [engineers working in SpikySales are very](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=159.85459999999998) [interested in BigQuery as an analytical](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=161.94979999999995) [data warehouse. They're especially drawn](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=164.7418571428571) [to the serverless operations that it](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=167.01980000000003)[offers. They know that they only need to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=169.6214000000001) [pay for storage and queries, and not for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=171.96774999999994) [servers that they may not always utilize.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=174.4254) [And they have built-in visualization using Google's Data Studio.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=1&mode=live&start=176.972)

[Transactional and Analytical Processing](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live)

[When you're working with data, the kind of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=0.273) [processing that you perform on this data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=3.753) [can be divided into two categories, broad](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=6.6068) [categories, transactional processing and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=9.542857142857143) [analytical processing. For example, John](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=11.994285714285715) [is responsible for order management](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=14.612666666666668) [support. At SpikySales, he's responsible](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=16.933777777777777) [for tracking and delivering orders on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=19.236909090909084) [time. Anna works for SpikySales as well.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=21.99527272727271) [She is a revenue analyst. She is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=24.272454545454536) [responsible for tracking and monitoring](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=26.698818181818183) [revenues for the company. This is what a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=28.978363636363643) [typical workday looks like for John. He](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=31.755599999999994) [finds out that 20 deliveries to Kent,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=33.602) [Washington have been delayed. The courier](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=36.513999999999974) [company there has had a computer outage,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=38.697) [and they aren't able to make their](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=40.51350000000002) [deliveries on time. John then goes into](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=42.56666666666666) [the order management system and assigns](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=44.79733333333332) [these orders to another courier company in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=47.073999999999984) [the same region. Here is what a typical](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=49.64399999999999) [day for Anna looks like. Anna's manager](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=52.22599999999999) [wants an update on last month's revenues](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=54.70345454545455) [for SpikySales, Last month was an](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=57.550545454545464) [unusually slow one, despite the fact that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=59.47569230769229)[there were as many sales as in previous](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=61.42115384615381) [months. Anna pulls up data for the last](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=63.62657142857144) [five years to check for seasonal effects.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=65.826) [John and Anna both work with data and both](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=69.123) [use data processing systems, but the kind](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=72.06392307692307) [of processing that they do is very](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=74.40190909090909) [different. John primarily performs](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=76.80736363636363) [transactional processing; Anna performs](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=78.74939999999998) [analytical processing on data. Let's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=80.87033333333332) [quickly take a look at some of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=83.23218181818181) [differences between transactional and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=85.24163636363637) [analytical processing. Transactional](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=87.1095) [processing typically involves analyzing](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=89.00416666666666) [individual entries in any dataset.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=91.12083333333334) [Analytical processing involves analyzing](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=93.7345) [large batches of data. When you're working](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=95.819) [with transactional processing, you're](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=98.4258) [typically working with recent data. Access](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=99.93533333333335) [to recent data from the last minute, the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=102.19407142857143) [last hour, or the last few days is more](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=104.57064285714286) [important. Analytical processing involves](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=107.26720000000002) [accessing older data going back months or](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=108.84466666666665) [even years. Analytical processing is all](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=111.8425) [about seeing patterns and extracting](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=114.53349999999998) [insights, which means we need data going](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=116.56946153846154) [back a long way. Transactional operations](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=118.98607692307691) [are mostly about updating the data, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=121.26925000000001) [it's important that updates follow asset](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=124.4445) [properties. Analytical processing mostly](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=127.25550000000004) [involves reading data or querying data.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=129.44899999999998) [Transactional processing typically](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=132.899) [requires fast, real-time access to data.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=134.43) [Analytical processing is typically made up](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=137.492)[of long-running processing jobs.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=140.44879999999992) [Transaction processing involves using](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=142.42) [data, usually from a single source,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=143.95960000000002) [whereas with analytical processing, you'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=146.269)[access data that might be from multiple](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=148.19677777777778) [sources. As you can see here, the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=151.24425000000002) [objectives for transactional and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=153.63218181818175) [analytical processing are completely](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=154.88963636363624)[different, but back in the old days, when](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=156.25760000000002) [the data involved was small, both of these](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=159.06216666666668) [objectives could be achieved using the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=161.8315000000001) [same database system. You could use a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=164.04700000000003) [single machine or a single RDBMS server,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=166.58472727272732) [and basically work with that machine to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=168.966) [perform all of your transactional and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=171.42554545454541) [analytical processing. You would have a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=173.993) [single machine maybe with some backup. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=176.49180000000004) [data would be structured, well-defined,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=178.90088888888891) [you'll access individual records or the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=180.92033333333342) [entire dataset. This is small data after](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=183.3306363636364) [all. As the size of data collected and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=186.1274545454546) [stored by organizations kept growing, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=189.39525) [we ended up with big data processing, it](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=191.7227142857143) [was very hard to meet all of these](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=193.95242857142847) [requirements of transactional, as well as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=196.3165) [analytical processing, using the same](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=198.25749999999996)[system setup. As data sizes grew,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=200.63033333333337) [processing needed to move to a distributed](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=203.08066666666664) [cluster which had multiple machines. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=205.57558333333327) [kind of data that we were working with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=207.62949999999995) [also changed. Data could be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=210.4498181818182) [semi-structured or even unstructured data.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=212.66890909090912) [These big data solutions worked well for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=214.888) [analytical processing because they do not](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=218.03644444444438) [offer random access to data, which is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=219.99233333333333) [typically not needed when you're running](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=221.84091666666666) [long-running queries or jobs. Data would](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=224.32000000000005) [be replicated, and the propagation of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=226.72690909090912) [updates would take time that was fine as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=228.63163636363643) [well. Analytical processing places more](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=231.28100000000006) [importance to older data or trends.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=232.978) [Extracting insights with analytical](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=235.95066666666668) [processing also involves access to data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=237.93460000000002) [from multiple sources. These different](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=240.92020000000005) [sources might have unknown or different](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=243.27277777777778) [formats. When we talk about a huge amount](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=245.85211111111107) [of data, or big data, we typically speak](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=248.30383333333342) [of three Vs. The first V refers to volume,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=250.75475000000003) [that is the shared amount of data. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=253.775) [second V refers to variety, the number and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=256.5313076923077) [different types of data sources that we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=259.0392) [might need to work with. And we have the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=260.87133333333327) [third V that stands for velocity. Data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=263.4672) [might come in a streaming format, it might](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=265.6505384615385) [come in very fast, or you might have batch](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=267.67084615384607) [operations that need to run quickly. At](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=270.51554545454536) [this point in time, we have different](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=272.9893333333333) [systems which work with transactional](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=274.89566666666667) [processing and analytical processing.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=276.587) [Transactional processing is typically done](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=278.995) [on a traditional relational database](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=280.79277777777787) [management system. Analytical processing](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=282.746) [is performed using a data warehouse, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=284.8059999999999) [this is where BigQuery fits in. BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=288.33260000000007) [is a data warehouse that is hard to tell](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=291.6027142857143) [apart from an RDBMS, which means analysts](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=294.2821428571428) [that have been working with traditional](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=296.4213333333334) [relational databases can move to BigQuery seamlessly.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=2&mode=live&start=298.318)

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[At the end of the last clip, we described](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=0.208) [BigQuery as Google's data warehouse that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=4.119538461538461) [is hard to tell apart from an RDBMS. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=6.5566) [best way to really understand what](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=9.624416666666667) [BigQuery has to offer is to compare and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=11.264916666666663) [contrast it to a traditional data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=13.8686) [warehouse. All data warehouses have been](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=16.341800000000003) [explicitly built to support complex](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=18.643000000000004) [analytical queries, and the same is true](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=20.532) [for BigQuery as well. Data that you store](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=22.886545454545452) [in BigQuery can scale to petabytes. Once](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=25.478399999999993) [again, this is not so very different from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=27.618272727272725) [other traditional data warehouses.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=29.780454545454532) [BigQuery, though, supports both reads, as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=31.209600000000002) [well as updates to your data. Traditional](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=33.87539999999999) [data warehouses typically do not allow row](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=36.931) [level update, you can only read data from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=39.793499999999995) [within it. One of the most important](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=42.57549999999998)[features of BigQuery is the fact that it's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=44.93946153846155) [very, very fast. It allows fast, real-time](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=47.609) [access to your data, allows batch](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=50.432545454545455) [processing operations to run as well.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=52.73475) [Traditional data warehouses typically only](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=54.801) [support long-running jobs. You can have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=57.46412499999998) [data from multiple sources stored in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=60.315999999999995) [BigQuery, once again, not so very](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=62.82399999999999) [different from a traditional data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=64.672) [warehouse. BigQuery allows you to work](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=66.102) [with streaming data as well. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=68.38950000000001) [stream in data into BigQuery buffers and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=71.27483333333335) [query it real-time. Traditional data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=74.36825000000005) [warehouses tend to be more focused on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=76.2968) [batch processing operations. Another](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=78.40660000000001) [useful way to understand BigQuery is to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=80.96263636363636) [compare and contrast it with a traditional](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=83.01809090909093) [RDBMS. BigQuery uses standard SQL, which](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=85.96522222222222) [means it's no different from working with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=88.95363636363636) [a traditional RDBMS. BigQuery data scales](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=91.79309090909089) [to petabytes, traditional RDBMSs can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=94.43999999999998) [typically store just terabytes of data.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=96.82333333333328) [Unlike traditional relational database](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=99.74833333333332) [management systems, BigQuery does not](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=101.707) [offer transaction support or support for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=104.20311111111114) [ACID properties. Another significant](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=107.25742857142858) [difference, which in fact is a huge](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=109.37228571428572) [advantage when you use BigQuery, is the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=111.67372727272728) [fact that it's serverless. You don't have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=113.83336363636364) [to instantiate compute nodes where you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=116.2216363636364) [store your data. All of this is taken care](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=118.29657142857144) [of behind the scenes and abstracted away](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=121.14174999999996) [from the user. Relational databases are a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=123.24262499999992) [classic example of using a server. You](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=125.76059999999998) [have to instantiate nodes, install the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=128.633) [database, administer the database, and so](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=131.309) [on. When you're using BigQuery, you don't](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=133.61450000000005) [need to provision nodes to store your data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=136.03276923076925) [off a compute, you don't need to set up](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=138.26784615384628) [indices on your data as well. RDBMSs on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=140.878)[the other hand, have a heavy](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=143.4748) [administrative overhead. Now that we've](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=145.94919999999993) [understood how BigQuery is different from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=147.6726363636364) [a traditional data warehouse and a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=149.4699090909092) [traditional RDBMS, let's talk about what](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=151.50572727272723) [features it has to offer us. The very](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=153.6608181818181) [first thing about BigQuery is the fact](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=156.08449999999993) [that it's serverless. You don't have to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=158.149) [set up a cluster. There is no provisioning](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=159.83981818181812) [of compute nodes or storage nodes. This is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=162.20040000000003) [a significant factor in BigQuery pricing.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=165.1695) [You don't have to pay for instances to be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=167.802) [up if you're not using them. The fact that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=170.08979999999997) [BigQuery is serverless means that there](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=172.56218181818178) [are some specific implications. The first](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=174.45654545454533) [is, BigQuery can support autoscaling](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=177.18622222222226) [out-of-the-box. It can expand to meet your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=179.809) [processing, as well as storage needs](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=182.54981818181815)[without you having to explicitly configure](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=185.19022222222222) [anything. Serverless also implies that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=188.41288888888883) [BigQuery is automatically configured for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=190.82049999999998) [high availability. Data is replicated, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=193.1481) [should always be available to you. It has](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=195.89069999999998) [a very high uptime. BigQuery has full](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=198.97200000000007) [support for the three Vs of big data. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=201.16472727272728) [first is volume, and BigQuery storage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=203.786) [scales to petabytes of data. BigQuery is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=206.31799999999998) [actually very powerful in terms of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=208.96966666666668) [variety of data sources it supports. It's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=210.86550000000008) [fully integrated to all other technologies](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=213.43369230769235) [on the GCP. You can store data within](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=216.0672307692309) [BigQuery itself. You can also use BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=219.43185714285718) [to query data that is stored on cloud](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=221.93023076923075) [storage buckets, BigTable, or even on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=224.617) [Google Drive spreadsheets. Data can live](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=228.00433333333334) [elsewhere but can be queried from within](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=230.79599999999996)[BigQuery. This is huge. And finally, we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=233.35799999999986) [have Velocity. BigQuery can support](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=236.14049999999997) [streaming data, and supports real-time](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=238.31899999999996) [queries on this data as well. You don't](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=240.60733333333323) [have to learn a new programming language](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=243.05484615384617) [or tool to work with BigQuery. BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=245.28730769230776) [supports standard SQL, which is ANSI:2011](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=248.23489999999998) [compliant. There are extensions built in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=251.57869999999997) [to work with nested and repeated fields.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=253.88641666666672) [In addition to standard SQL, which is what](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=256.337) [you typically use with BigQuery, there is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=258.6588461538463) [an additional SQL dialect that BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=260.8793333333333) [recognizes. This is referred to as legacy](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=263.1873333333332) [SQL. The original version of BigQuery only](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=265.6265000000001) [understood legacy SQL. The latest](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=268.151125) [versions, though, have full support for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=270.50174999999996) [standard SQL, and that's what is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=272.7887692307693) [recommended for use. Even though BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=274.8089230769232) [is serverless, it gives you some control](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=276.5747272727272) [over where exactly your data is stored. It](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=278.3380909090907) [has specific support for some locations.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=281.06100000000004) [You can specify that you want your data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=283.179) [within the US, or within the European](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=285.1584285714288) [Union. You can also store data in Japan,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=287.13475) [specifically in Tokyo. BigQuery is being](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=291.0687500000002) [actively developed, and it has many cool](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=293.47890909090904) [new features such as BigQuery ML, which is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=295.6603636363635) [currently in beta. The objective of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=298.64459999999997) [BigQuery ML is to bring machine-learning](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=300.93120000000005) [algorithms to where data is stored. It](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=303.2136000000001) [democratizes machine learning, making it](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=306.0546666666667) [easy for data analysts who know only SQL](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=307.9245) [to build machine-learning models. We won't](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=310.4825) [be covering BigQuery ML in this introductory course, though.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=3&mode=live&start=312.91720000000004)

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Now the data that you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=10.617714285714285) [want to store would be unstructured data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=12.585142857142856) [or structured data. With unstructured](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=15.550749999999999) [data, you typically want cloud storage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=17.77011111111111) [buckets, that's the object store, or you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=19.975444444444438) [might store them on persistent disks that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=22.009000000000007) [are attached to your VM. With structured](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=23.959933333333336) [data, you have a choice as well. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=25.95446666666668) [choose to store it in SQL storage or noSQL](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=28.64016666666667) [form. In the case of SQL storage, it could](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=31.750416666666673) [be for transactional processing or](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=34.89266666666668) [analytical processing. SQL storage is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=36.8082) [typically used for OLDB, online](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=39.39420000000001) [transactional processing, or OLAP, online](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=42.013625000000005)[analytical processing. A NoSQL store could](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=44.76674999999999) [be BigTable or Cloud Datastore. There is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=47.947555555555546) [an asterisk here next to Cloud Datastore,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=51.17216666666667) [because it's a document-based storage.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=53.36025000000002) [Your data should be in the form of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=54.994363636363644) [entities to store it in cloud Datastore.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=57.779818181818214) [For transactional processing on the GCP,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=60.49849999999999) [you have two choices. You can go with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=62.869) [Cloud SQL, which is its relational](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=65.03823076923078) [database management service, or Cloud](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=66.89685714285714) [Spanner, which offers you ACID++](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=69.41114285714283)[properties at scale, distributed across](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=72.34100000000002) [your graphical locations. If you want to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=75.37475000000005) [perform analytical processing on the GCP,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=78.5378) [you'll use BigQuery. Now let's see the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=80.552) [differences between Cloud SQL and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=83.19887499999999) [BigQuery, and when you would choose to use](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=84.88869230769228) [one over the other. The first factor in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=87.51207692307685) [your decision making is how much data you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=90.0065) [want to store. If your data is in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=92.46475000000001) [petabytes, you'll choose BigQuery. Cloud](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=94.8934166666667) [SQL tops out at 20 terabytes of data.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=97.13033333333334)[BigQuery, as we've discussed before, is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=100.997) [serverless, you don't have to provision](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=102.32736363636367) [nodes or clusters. Cloud SQL requires node](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=103.9243) [provisioning or cluster provisioning. Just](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=107.34239999999997) [like any other traditional relational](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=109.69899999999998) [database, Cloud SQL requires that you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=111.99899999999995) [manually design schemas and build indices](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=114.38036363636365) [for your data. All that is not needed for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=116.686) [BigQuery. BigQuery is highly available](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=120.13210000000007) [out-of-the-box. There is no explicit](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=122.647) [configuration setting. Cloud SQL has to be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=124.69799999999998) [explicitly configured for high](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=127.651) [availability. BigQuery does not support](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=129.4062) [transactional features or ACID properties.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=131.60144444444447) [Cloud SQL does. Both BigQuery and Cloud](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=133.797) [SQL is used with a structured query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=136.08308333333332) [language. Big Query follows weak schema](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=138.88288888888889) [enforcement. You specify the schema, but](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=142.38355555555552) [your data doesn't have to strongly adhere](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=144.40307142857148) [to this. In the case of Cloud SQL, though,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=146.41357142857157) [there is strong schema enforcement as in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=149.0716666666666) [the case of all RDBMSs. Let's now](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=151.30983333333336) [understand the differences and the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=153.9342500000001) [similarities between BigQuery for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=155.93249999999998) [analytical processing and BigTable. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=157.67949999999993) [is the columnal store on the GCP. BigTable](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=159.90779999999995) [is very similar to HBase, but far more](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=163.4612) [powerful. Both BigQuery and BigTable can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=166.5988) [scale to petabytes of data. BigQuery is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=168.9595) [serverless, but BigTable requires you to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=171.89416666666665) [provision nodes or clusters. BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=174.7926666666666) [supports autoscaling, whereas with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=177.14) [BigTable you have to explicitly design](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=178.79999999999995) [your cluster, disk type, and other](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=181.5082222222222) [features. BigQuery is typically used for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=184.65288888888878) [data in a columnar format, which supports](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=187.02300000000002) [nested and repeated fields. BigTable](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=189.77533333333335)[supports data in a columnar format,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=192.10963636363635) [four-dimensional columnar data model.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=195.23945454545452) [BigQuery offers SQL storage, BigTable](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=197.326) [follows NoSQL technology. Accessing data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=200.93224999999998) [in BigQuery is very, very fast. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=203.84075) [latency is in the order of seconds.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=206.39933333333332) [BigTable is faster though. The latency](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=208.66966666666661) [order is of milliseconds. You can update](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=210.67033333333333) [data stored in BigQuery, but writes are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=213.13199999999995) [relatively slower as compared with reads.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=215.91219999999998) [With BigTable, though, you have extremely](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=218.5) [fast reads, as well as writes. The cost](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=220.70699999999994) [associated with BigQuery are for storage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=223.65709090909093) [and query processing, and you'll find that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=225.88636363636374) [BigQuery is relatively inexpensive.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=228.694) [BigTable, on the other hand, is quite](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=230.387) [expensive to use. We'll now compare](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=232.8832000000001) [BigQuery with the other NoSQL offering](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=235.13407692307692) [from the GCP, Datastore. BigQuery scales](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=237.49623076923075) [to petabytes of data. Datastore is more](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=239.9319090909091) [effective at terabyte scale. Both BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=242.94509090909096) [and Datastore are similar, in that they](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=245.54490909090904) [are first serverless technology. There is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=248.588) [no provisioning of nodes or clusters.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=250.7266666666666) [BigQuery stores relational data. Datastore](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=253.63928571428568) [stores information in the form of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=256.46637499999997) [documents, or entities which have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=258.6826249999999) [attributes. BigQuery gives you SQL access,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=260.7700000000001) [Datastore is a NoSQL technology. BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=263.347) [supports analytical queries, Datastore](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=266.8983333333333) [supports hierarchal queries. That's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=269.088375) [because the entities themselves are stored](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=270.745875) [in a hierarchal format. BigQuery is used](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=273.4054285714285)[for OLAP, that is online analytical](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=276.58279999999996) [processing. Datastore can also be used for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=279.1603999999999) [OLAP, but in addition it also has](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=281.71169230769243) [transactional support. Transactional](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=284.187)[support is lacking in BigQuery, as you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=285.8430000000001) [already know. It's often useful to compare](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=289.386) [BigQuery with offerings from other cloud](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=292.29400000000004) [computing platforms. Let's quickly take a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=294.7049) [look at the differences and the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=296.42030000000017) [similarities between BigQuery and Amazon's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=298.6996250000001) [Redshift data warehouse. The most](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=301.069) [significant differences between these two](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=303.48087499999997) [is the fact that BigQuery is serverless.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=305.5395555555556) [There is no provisioning needed before you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=307.68) [get up and running with BigQuery. With AWS](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=310.1585384615386) [Redshift, though, you have to set up nodes](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=312.8811666666667) [and clusters. AWS Redshift kind of works](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=315.2738333333333) [like BigTable in this case. Both BigQuery,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=317.9515000000001)[as well as Redshift, work at very high](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=320.7793636363636) [scale. BigQuery offers autoscaling,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=323.77281818181797) [though. You have no control over the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=325.07099999999997) [number of nodes used to store and process](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=327.227) [your data. BigQuery automatically takes](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=329.89819999999975) [care of scaling for you. With AWS](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=331.733) [Redshift, you can scale, but you have to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=334.29650000000004) [explicitly add nodes to your cluster. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=336.7705000000002) [operational overhead when you work with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=339.1803636363636) [BigQuery is minimal to nothing. With AWS](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=341.33) [Redshift, because you're provisioning](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=344.78099999999995)[nodes, there is some ops involved, and cluster maintenance might be needed.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=4&mode=live&start=346.3613333333334)

[BigQuery Pricing](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live)

[Before we use BigQuery on the GCP, it's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=0.393) [important we understand how exactly](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=4.438818181818183) [BigQuery is priced. There are three](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=6.629600000000001) [components to BigQuery pricing. The first](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=8.650400000000001) [is the storage cost for your petabytes of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=10.762153846153845) [data. The second is the cost of querying](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=13.638461538461536) [and processing your data. And lastly, we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=16.34745454545455) [have certain operations that are always](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=18.875750000000004) [free in BigQuery. Let's first talk about](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=21.247250000000008) [what we have to actually pay for, storage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=23.46754545454545) [and query costs in BigQuery. BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=25.633181818181818) [costs can be divided into two components,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=27.764272727272733) [storage and query costs. Storage costs](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=30.46985714285714) [differ based on whether your data is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=32.92033333333334) [active data or long-term data. Data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=35.501000000000026) [modified within the last 90 days is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=38.00200000000001) [considered active data, and it costs more](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=41.25700000000003) [to store. Long-term data has lower storage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=44.14499999999999)[costs. Query costs vary based on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=46.91283333333333) [amount of data you process with each](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=49.32666666666667) [query. These can be divided into on-demand](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=52.123636363636365) [queries, as well as flat-rate queries. For](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=55.43145454545454) [on-demand queries, you pay based on usage.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=58.07092307692309) [For flat-rate, you have predictable costs](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=60.599) [from one month to another. Let's talk](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=62.89863636363635)[about active and long-term data in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=65.56515384615383) [BigQuery, and how costs differ. Data which](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=67.81561538461534) [are stored in tables that have been](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=70.17007692307692) [modified in the last 90 days are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=71.84684615384613)[considered active data. Data in tables](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=73.9735) [that haven't been modified within the last](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=76.31049999999999) [3 months is considered long-term data.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=79.205) [Active data, as you might imagine, is more](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=81.794) [expensive to store, approximately 2 cents](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=84.3692727272727) [per GB per month. For long-term data it's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=86.40400000000001) [about 1 cent per GB per month. Costs are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=89.25466666666672)[50% lower with long-term data. For both](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=92.95623076923074) [kinds of data, the first 10 GB that you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=95.638) [store in BigQuery is absolutely free.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=98.29750000000004) [Managing data as active and long-term is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=100.4671) [automatically done by BigQuery. When a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=103.461) [table is edited, the pricing structure](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=106.009) [reverts to that of active data. When a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=108.18633333333334) [table is not edited for about 90 days, the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=110.5224) [pricing automatically drops to that of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=113.0988888888889) [long-term data. Query costs for BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=115.85222222222225) [also differ based on whether your usage is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=118.145)[on-demand or you're on a flat rate. Now if](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=120.895) [you and your team use BigQuery only](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=124.8026) [sporadically, you might want to go with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=127.3947) [on-demand pricing, because it's based](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=129.81918181818185) [solely on how much you use and process](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=131.531) [data. Flat-rate pricing, though, is better](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=134.37455555555545) [for larger teams and for more predictable](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=136.25727272727275)[monthly costs. In on-demand pricing, the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=138.62255555555555) [first terabyte of data that you process](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=141.81788888888883) [within a month is absolutely free. Over](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=144.60118181818183) [and above that, the cost is $5 per](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=147.01175) [terabyte per month. For flat-rate pricing,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=149.80174999999997) [the pricing is in terms of BigQuery slots.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=152.00981818181816) [It's $40, 000 per month for 2000 slots;](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=155.108) [$10, 000 for 500 additional slots for that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=158.45876923076918) [month. A slot in BigQuery is a measure of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=161.83550000000002) [computational capacity and one slot is one](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=165.46669230769234) [unit of computational capacity. Now](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=168.4174444444444)[BigQuery automatically calculates how many](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=170.78855555555546) [slots it needs to execute a particular](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=172.85490909090908) [query. The more complex your query, the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=175.4633636363636) [more slots it will occupy. Now that we've](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=177.96763636363642) [understood storage and query costs in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=180.7481) [BigQuery, let's talk about those](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=182.75629999999998) [operations which are always free. BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=184.94477777777774)[doesn't charge anything if you want to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=187.62816666666666) [load data into BigQuery, however, there is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=190.19133333333326) [a slight wrinkle here; streaming inserts](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=192.80375000000004) [are not free. If you're loading streaming](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=195.0992500000001) [data into BigQuery, you'll have to pay](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=197.4557272727273) [additional charges. Other operations that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=199.571) [are free are copying and exporting data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=201.65099999999998) [from your BigQuery tables. If you want to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=204.558) [delete datasets, or delete tables, views,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=207.57039999999995) [and partitions in your data, these](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=209.608) [operations are free as well, as are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=211.73909090909092)[metadata operations. Notice that all of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=214.18172727272724) [the operations that are not actually](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=216.18190909090902) [processing your huge dataset are free](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=218.5569) [operations. Streaming inserts are 1 cent](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=221.30670000000006) [for every 200 MB, however, only](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=224.15150000000006) [successfully inserted rows are charged.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=227.19633333333334) [When you're working with BigQuery, there](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=230.488) [are several techniques that you can use to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=232.16000000000008) [minimize the cost that you incur. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=234.3896363636364) [first thing is that BigQuery is a columnar](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=236.39600000000002) [store under the hood. We don't know how](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=239.06800000000004)[exactly the data is laid out, because that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=241.1566153846154) [is Google's proprietary information,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=242.66184615384623) [however, you can minimize the cost of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=244.1835) [processing by querying only that data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=247.295) [which you require within a certain query.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=249.59669230769228) [There are additional columns in there,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=252.282) [leave those out. Every column of data is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=254.19066666666666) [stored separately in BigQuery in a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=257.11375000000004) [separate encrypted and replicated file.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=259.4762500000001) [Each column that you add to your query,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=261.1333333333333) [adds to your cost. If you want to just](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=263.66) [explore what the data looks like in a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=266.899357142857) [particular BigQuery table, use the table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=269.65600000000006) [preview option that's available on the web](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=271.57000000000016) [console. Don't run queries just to explore](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=273.8261818181818) [your data. That will incur processing](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=276.22249999999997) [costs. Make sure you're always aware of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=278.94949999999994) [costs when you're working on a cloud](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=280.9330769230768) [platform, because these costs can add up.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=282.717) [You can also calculate the query price](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=286.065) [before you execute your queries. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=288.43625000000003) [use the dry\_run flag in the command line](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=290.7029090909091)[interface. You can use the query validator](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=292.99454545454546) [in the UI. You can always take a look at](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=294.97633333333346) [the GCP pricing calculator before you perform heavy-duty operations.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=5&mode=live&start=297.6777272727271)

[Logging into the GCP and Enabling APIs](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live)

[Enough with the talk, let's get hands-on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=0.139) [in this demo. We'll see how we can log](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=3.8441000000000005) [into the GCP and access BigQuery from the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=7.1222857142857166) [GCP web console. Now the Google cloud](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=9.376) [platform is available at console. cloud.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=12.368333333333336) [google. com, and you can log in with any](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=15.11383333333334) [Gmail account, or a G Suite account. So](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=18.445499999999992) [I'm logging in as spikeysales@loonycorn.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=21.2933) [com, specify your password, and you'll be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=23.4498) [logged in. This is the main GCP dashboard](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=26.051923076923075) [from where you can access all of your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=28.390384615384605) [resources. Notice that we have a little](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=30.702538461538474) [card here for billing. 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You](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=38.763999999999996) [might incur some charges, though, when](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=40.9305) [you're using a Datalab VM instance, for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=42.73388888888889)[example. Any time you're working within](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=45.27411111111112) [the GCP, you'll be within a project. A](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=47.42866666666667) [project on the GCP is a logical grouping](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=50.30378571428571) [of GCP resources and services. A project](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=53.2380714285714) [is also a billing unit. Typically, a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=55.69733333333333) [project is associated with a particular](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=57.88599999999999) [feature within your org, or maybe a team.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=59.80936363636364) [You can change the current project that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=62.437) [you're working on by clicking on this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=64.35990000000001) [drop-down at the very top and choosing a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=66.244) [project from the projects that have been](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=68.57480000000001)[enabled. On the top left here, you have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=71.16760000000004) [the hamburger icon that gives you access](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=73.21638461538458) [to all of the services and products that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=74.95884615384615) [GCP has to offer. This will bring up a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=77.38961538461537) [navigation menu, and you can scroll down](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=79.67576923076925) [this menu and get access to any product or](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=81.17484615384619) [service. We'll start off with APIs and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=84.60233333333336) [services, and enable those APIs that we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=87.31727272727271) [need in order to perform the demos in this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=89.82300000000001) [course. Click on ENABLE APIS AND SERVICES](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=92.42400000000002) [up on top, and this will bring up a search](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=94.45257142857145) [page where you can search for a particular](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=97.36415384615385) [API to enable. You can also scroll down](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=99.73276923076925) [this list until you find the API that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=101.86599999999997) [you're looking for. For our current](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=103.85799999999993) [project, you want to enable the Google](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=105.38175) [Compute Engine API, which will allow us to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=107.19416666666665) [instantiate VM instances. Go to the APIs](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=109.9293333333333) [page and click on the Enable button. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=112.30090909090909) [API will be enabled for you. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=114.82869230769231) [search for other APIs that you want to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=117.3702307692308) [enable using the search box at the top. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=119.48099999999998) [also want to enable the Cloud Source](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=121.47653846153847) [Repositories API so that we could use](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=123.68530769230773) [Datalab Notebooks. Once this API has been](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=126.06966666666668)[enabled as well, we are now ready to use BigQuery.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=6&mode=live&start=128.89300000000003)

[Beta UI and Classic UI](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live)

[Let's get to see the BigQuery web console.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=0.245) [Using the hamburger icon, open up the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=5.122) [Navigation menu. That will give you access](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=7.246888888888889) [to all of GCP's services. If you scroll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=9.225000000000001) [down to BIG DATA, you'll find BigQuery.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=11.538599999999999) [That is the first option on this list. If](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=13.738) [you're planning on using BigQuery often,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=16.465000000000007) [you might want this to be more easily](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=18.254636363636365) [available, you can click on the pin icon](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=20.565181818181827) [there to pin the BigQuery menu item to the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=23.08900000000001) [very top just under Home. Click on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=25.974) [BigQuery link, and this will take you to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=28.573999999999995) [the BigQuery web console. This is what the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=31.004200000000008) [UI looks like at the time of this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=33.24269230769232) [recording. The beta version of the UI is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=35.346076923076964) [currently available along with the classic](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=37.688583333333334) [version, and you can choose to use either](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=39.44045454545454) [of these. All of the functionality is not](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=41.57209090909089)[available in the beta version. For some](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=44.096454545454556) [things, you may have to switch back to the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=46.26015384615384) [classic version. On the left navigation](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=48.528846153846125) [pane, here are some quick links that are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=50.26814285714285) [very useful. You can see a history of all](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=52.73842857142854) [the queries that you've done in Query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=55.22500000000002) [history. You can save certain queries and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=57.094000000000044) [access them quickly in Saved queries. You](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=59.36399999999998) [can take a look at all of the jobs that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=61.583866666666665) [you've run on BigQuery, such as importing](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=63.752533333333346) [and exporting data. The Transfer service](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=65.60345454545457) [is what you'll use for large data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=67.5703636363637) [migrations into BigQuery. These are the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=70.176) [quick links on the left nav pane. When we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=72.29069999999999) [work with BigQuery on the command line,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=75.00761538461538) [we'll use the Cloud Shell terminal window.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=76.80176923076918) [Cloud Shell is an ephemeral VM that you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=78.94354545454544) [can access using a terminal window on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=81.921)[browser itself. Cloud Shell comes with all](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=84.74819999999995) [of GCP's command line utilities](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=87.36749999999998) [preinstalled on that VM. Since all](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=89.28) [operations are not yet available on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=91.49836363636365)[beta version of the UI, here is a link](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=93.82000000000001) [that will take you to the classic BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=95.94850000000007) [UI. Click on Go to Classic UI. This is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=98.33639999999998) [what the UI used to look like previously.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=101.78399999999999) [You can start writing queries by clicking](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=104.324) [on this big, red, COMPOSE QUERY button](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=106.38963636363631) [here. There are quick links here on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=108.50925000000001) [left navigation pane exactly like in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=111.01391666666672) [beta UI. The one differences here is the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=113.57325) [public Datasets. Public datasets on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=116.52025000000003) [BigQuery are datasets that you can use for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=118.1300909090909) [prototyping your models and your queries.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=120.469) [The storage costs are absolutely free.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=123.456) [They're stored on a public project, which](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=125.51450000000003) [can be accessed by anyone using BigQuery. You only pay to process this data.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=7&mode=live&start=127.917625)

[Public Datasets](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live)

[We start off here in the beta UI for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=0.049) [BigQuery. Notice here that we do not have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=4.311399999999999) [access by default to public datasets. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=7.165538461538462) [can get access by clicking on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=9.559999999999999) [navigation menu and going to Marketplace.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=12.037999999999993) [GCP's marketplace here gives you access to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=14.162) [a whole variety of products and services](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=16.20016666666667) [that can be used along with the Google](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=18.346333333333334) [Cloud Platform. But what we are looking](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=21.107666666666674) [for, though, is BigQuery public data. My](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=23.549363636363637) [search term is BigQuery dataset, and it](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=25.963) [brings up a number of public datasets that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=28.14700000000001) [I can use here. I'm going to click on one](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=30.43184615384616) [specific dataset, Political Advertising on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=32.848) [Google, and when I'm taken to the page for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=34.8965) [this dataset, I'm going to click on VIEW](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=37.95792307692307) [DATASET. You can see additional](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=39.98376923076922) [information on this data set right here in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=41.293307692307685)[this overview page. VIEW DATASET will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=43.40592307692305) [automatically allow you to view this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=45.651) [dataset from within BigQuery's classic UI](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=48.07425) [at this point in time. I'm going to go](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=50.72775000000001) [ahead and close the other tabs here and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=53.73271428571429) [just keep this one classic UI open for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=55.32014285714286) [BigQuery. And notice that I'm currently on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=58.06049999999999) [the dataset page for political ads. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=60.76292307692308) [is the dataset that I had clicked on from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=63.27538461538462) [the marketplace. If you switch back to the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=66.3207692307692) [beta UI by clicking on the Try the new UI](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=68.82230769230762) [button on the top right, you'll find that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=71.18699999999995) [the public datasets are not still](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=73.6465714285714) [accessible on the beta UI. Now in order to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=76.28571428571422) [enable public datasets, you need to go to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=79.46757142857142) [the BigQuery documentation and explicitly](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=81.43271428571425) [visit a link. On the main BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=83.7245) [documentation page, click on the link on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=86.95115384615386) [the left navigation pane which says Using](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=89.4469230769231) [the Web UI, scroll down a little bit until](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=92.03730769230768) [you find a link here that will allow the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=95.353) [public datasets to be displayed by default](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=98.16099999999997) [on your new beta UI. Copy over this link](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=100.85574999999999) [by clicking on the button on the top right](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=104.35871428571426) [here, and then paste this link into your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=106.81507142857134) [browser window. This link will take you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=109.67566666666671) [back to your beta UI, but this time you'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=112.01857142857145) [have public datasets enabled, and you can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=114.905) [see the link for public data off to the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=117.14876923076923) [left of your page in the navigation pane.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=119.9439090909091) [BigQuery public data is the public GCP](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=122.269) [project that holds all of the public](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=124.56930769230773) [datasets. I'm going to click on the PIN](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=126.8725) [PROJECT button here to the right of my](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=129.52450000000005) [screen so that this public data is always](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=131.75462500000006) [available to me. We can pin project, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=133.73162500000015) [BigQuery public data is now pinned to my](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=136.4126666666667) [BigQuery UI. If you expand this project,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=139.51613333333339) [you'll see all of the datasets that are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=141.67378571428569) [available. They have pretty descriptive](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=143.88464285714278)[names. Here is a good source for machine](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=145.50284615384618) [learning, or anything else that you want](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=148.18653846153853) [to perform. Within here, go to the samples](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=150.11950000000007) [dataset, a project on the GCP contains](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=153.1072857142857) [datasets. Datasets contain tables within](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=155.9717857142857) [them. We are going to query one specific](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=157.74572727272724) [table in the samples dataset, that is the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=160.51899999999998)[shakespeare table. When you click on a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=163.5989999999999) [table within BigQuery, the UI will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=165.87337499999995) [automatically show you useful information](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=167.71963636363637) [about that table. Here you can see on this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=169.29236363636363) [tab the schema for the shakespeare table.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=171.97507692307693) [Every word from Shakespeare's works is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=174.004) [present in this table, along with the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=176.25759999999994) [word\_count, the corpus where that word can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=178.549) [be found, and a corpus\_date field which](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=180.39000000000004) [gives us the year in which this particular](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=182.3471111111111) [work was published. If you click on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=184.92742857142858) [Details tab, you'll get information as to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=187.27246153846158) [when this table was created, how many rows](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=189.04830769230782) [that table has, how much data does it](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=191.88446153846147) [store, and so on. Instead of running](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=194.82333333333332) [queries that are expensive, the Preview](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=197.30409090909095) [tab will allow you to explore data without](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=199.36427272727283) [pay8ing any additional charges. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=202.25359999999995) [view almost all of the data in a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=204.27183333333332) [particular table by clicking through the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=206.47116666666656) [page links that is available at the bottom here.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=8&mode=live&start=211.021)

[Executing Queries](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live)

[We are now ready to run our first query on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=1.714) [BigQuery. We are going to query the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=4.839454545454546) [shakespeare table within the samples](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=7.062) [dataset in the public data project. When](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=8.653666666666666) [you reference a particular table in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=11.215076923076923) [BigQuery, it has to have this specific](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=13.458153846153847) [format, the project\_name, then a dot, then](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=16.009999999999998) [the name of the dataset, then a dot, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=18.458875) [then the name of the table, and this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=20.89675) [should be enclosed within backticks. For](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=23.384857142857143) [every query that you write using the web](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=25.828100000000003)[console, BigQuery has this nifty query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=28.11690000000001) [validator that will tell you whether the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=29.86883333333334) [the syntax of the query is correct. It'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=31.921) [give you tips on how to correct it if it's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=33.935857142857124) [wrong. It'll also tell you how much data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=36.47300000000001) [will be processed because of this query.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=38.525000000000034) [That will allow you to estimate your query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=40.49890909090908) [processing costs. Because we do a select](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=43.07866666666667) [star and don't specify individual columns](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=45.97200000000001) [within this query, the entire data in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=48.356090909090916) [table is queried. Click on the Run query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=51.407)[blue button here at the bottom of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=53.7946923076923) [query editor, and that will execute your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=56.21469230769232) [query and show you the results at the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=58.37930769230773) [bottom of the screen here. By default,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=61.07349999999999) [results are in a tabular format. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=63.40475000000001) [get the JSON format as well by clicking on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=65.75099999999999) [the JSON tab. And here is one entry in our](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=68.68499999999993) [table present in the JSON format. BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=71.8873846153846) [performs a bunch of optimizations in order](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=74.16) [to most efficiently execute your query. If](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=76.722) [you take a look at the execution details,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=78.73858333333334) [you'll see the various stages of operation](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=81.00463636363637) [of our query. This query was a fairly](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=84.27809090909088) [simple one with just two stages, the input](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=87.0837272727273) [stage and the output stage, and each stage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=89.27757142857143) [is made up of individual tasks, Wait,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=91.31985714285719) [Read, Compute, and Write. You can also see](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=94.19414285714285) [off to the very right the number of rows](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=97.54979999999999) [that were processed at each of these](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=99.54059999999996) [stages, the number of rows at the input of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=101.37146153846153) [the stage and the output of the stage. All](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=103.81744444444445) [of this information you can use in order](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=105.97646153846154) [to optimize your queries. I'm going to go](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=108.88415384615382) [back to the other tab I have open here](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=111.12724999999998) [where I have the queries classic UI open.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=112.90306249999993)[Let's compose a query in the classic UI.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=115.33653846153848) [Click on the Compose query button, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=118.283) [let's put in another query on the query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=119.94038461538459) [editor. This queries the same table that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=122.02416666666666) [we saw earlier, the shakespeare table. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=124.34524999999995) [use the LIMIT 10 clause to display just 10](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=126.69433333333333) [results from this table. Immediately](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=129.8287) [notice the query validator down to your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=131.95720000000003) [bottom right. You can see that there is a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=134.4116153846154) [red exclamation mark here indicating that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=136.66646153846162) [there's something wrong with that query.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=138.7674545454546) [Now back in the old days, when the first](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=140.988) [version of BigQuery came out, it ran a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=143.7709285714286) [particular dialect of SQL called legacy](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=146.38380000000004) [SQL. So in the classic UI, by default, we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=148.5174000000001) [use legacy SQL. This is a non-standard SQL](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=151.8919090909091) [dialect. The recommended dialect that you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=154.59399999999997) [should use now is standard SQL. Standard](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=156.478) [SQL is now the default in the new beta UI.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=159.31569230769225) [Now because we use standard SQL in our](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=163.26428571428568) [classic UI, that's why you see this error](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=166.29685714285705) [over here. The default dialect in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=169.31850000000003) [classic UI is legacy SQL, and that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=171.84953846153846) [requires that your table names be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=174.3366923076923) [specified in a slightly different format.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=176.4324545454545) [You can't use backticks, you can't use](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=178.521) [dots. Let's switch the execution in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=181.995625) [classic UI to the recommended standard SQL](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=184.496) [format. Click on the Show options button](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=186.8096) [here. This will bring up a form that has a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=189.06219999999996) [number of configuration options for your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=191.667923076923) [query. There's this checkbox right here in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=193.24766666666665) [the middle that says Use Legacy SQL, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=195.22399999999993) [it's checked by default. Uncheck this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=198.05655555555558) [checkbox, and the query editor will use](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=200.50209090909092) [standard SQL. Click on the Hide Options](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=203.50190909090912)[button, and you'll now see that this query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=205.92700000000005) [is valid. Executing this valid query is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=208.4358000000001) [straightforward. Just click on the RUN](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=210.59800000000007) [QUERY button, and you'll see the results](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=212.15769230769234) [of running this query here at the bottom](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=213.91146153846162) [of the screen. If you're interested in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=216.3432) [this dataset, you can run a bunch of other](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=218.39657142857138) [queries. Select \* EXCEPT word\_count,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=220.913357142857) [select all columns except the word\_count](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=222.9199090909091) [column. Run this query, and you'll see in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=225.51027272727273) [the result that the word\_count column is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=227.65174999999996)[missing. If you want to know how many of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=229.4103333333333) [Shakespeare's works are represented in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=231.82833333333326) [this dataset, you can say SELECT COUNT](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=233.3420909090909) [DISTINCT corpus, and you can see there are 42 works of Shakespeare here.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=9&mode=live&start=235.521)

[Working with the bq Command on the Terminal](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live)

[You can access BigQuery datasets and query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=0.201) [data using the command line as well, using](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=3.796666666666667) [the bq tool that comes preinstalled on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=7.405357142857144) [your Cloud Shell VM. Let's see how. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=9.832857142857142) [start off in the BigQuery beta UI page.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=12.858444444444444) [This is what we'll use in this course from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=15.254) [here on in. You won't see the classic UI](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=17.285750000000007)[again. Click on the Activate Cloud Shell](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=19.971153846153847) [button here on the top right, and this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=22.314) [will bring up a terminal window on your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=24.71628571428571) [GCP cloud. I'm going to click on this icon](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=27.068266666666666) [here to open up this terminal window on a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=29.54446666666666) [new browser tab. The Cloud Shell VM comes](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=33.260000000000005) [preinstalled with all of the command line](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=36.06816666666666) [tools that you need to work with the GCP,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=37.803) [including the bg tool, which you can use](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=40.82353846153848) [to work with BigQuery. If you run bq help,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=43.263000000000005) [that will show you all of the options that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=45.8344117647059) [you have available. Bq wait will allow you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=48.488352941176515) [to wait for the particular BigQuery job to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=50.66492307692307) [complete, bq version will show you the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=52.732) [current version of BigQuery. Bq update](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=55.745818181818166) [will allow you to update a dataset, a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=58.13671428571429) [table within the dataset, or a view within](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=60.81157142857144) [that dataset. Here are some other BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=63.56066666666666) [commands that you can explore as well.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=66.03108333333336) [Query is what you'll use to execute the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=68.05920000000002) [query, rm to remove a table or a dataset.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=70.29280000000004) [Let's first use the BigQuery ls command in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=73.34514285714283) [order to list all of the datasets that we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=75.89930769230769) [have available in this particular project,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=78.03369230769229) [and we can see that we have no datasets](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=79.71323076923075) [created in our spikey\_bq project. Let's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=82.425) [run an ls command to see the tables that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=84.97592307692308) [are available in the samples dataset in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=88.78676923076924) [the public data project. So](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=91.70846153846158) [publicdata:samples, and bq ls is a command](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=93.72907142857143) [that we run, and you can see that there](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=96.18657142857144) [are a number of tables available here.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=99.41200000000002) [We'll use the bq mk command on the command](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=102.023) [line in order to create a new dataset,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=104.4767857142857) [which we will name spikeysales\_dataset.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=107.83875000000002) [This will create a new dataset under our](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=111.17) [current spikey-bq project. You can switch](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=115.24272727272732) [back to the web console here, and you'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=117.40107142857144) [see under the spikey-bq project we now](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=119.08392857142863) [have a dataset, spikeysales\_dataset.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=122.54350000000002) [Datasets in BigQuery are kind of like](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=125.372) [databases in an RDBMS. We'll talk more of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=128.02627272727273) [what exactly datasets are in the next](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=130.942)[module. For now, they are just a container](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=133.39025) [for our tables. With this dataset created,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=135.93729999999994) [we can now switch back to the command line](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=137.9636153846154) [and run the bq ls command, and you'll see](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=140.404) [that this dataset is now listed. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=143.74300000000008) [delete datasets from the command line as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=146.40820000000002) [well. Run bq rm and specify the name of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=147.94540000000012) [the dataset. It will ask you for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=150.80659999999992) [confirmation. You can then say yes, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=152.74378571428576) [have the dataset deleted. If you want to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=154.53128571428581) [view information about a particular](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=157.43709090909098) [BigQuery object, whether it's a table or a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=159.433) [dataset, you can use the bq show command.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=161.78192307692302) [If you want to view information about a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=164.24575000000002) [table, make sure you specify the full path](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=166.9010833333334) [to that table, project, colon, dataset,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=170.0423333333333) [dot, table name. Here is the metadata](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=172.51063636363637) [information on this table, which we have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=175.74209090909088) [seen in the Details tab on the web](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=178.55284615384613) [console. We can also use the command line](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=181.40453846153838) [to run a simple query. Bq query is the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=183.73149999999995) [command that you use, and then you specify](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=186.3713076923077) [your SQL query within quotes. This is a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=188.8359230769231) [query to view ten rows from the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=191.64699999999993) [shakespeare table, and here are the ten](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=194.15) [rows printed out to your console. And on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=197.16269230769228) [this note, we come to the very end of this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=200.2772857142857) [introductory module on BigQuery, which is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=202.93871428571424) [the Google Cloud Platform's cloud data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=205.40081818181818) [warehouse. BigQuery supports standard SQL,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=208.29554545454545) [as well as ODBC and JDBC drivers. BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=210.61836363636368) [is completely serverless, which means you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=214.14249999999998)[don't need to instantiate clusters or](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=215.9634999999999) [servers in order to get up and running](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=217.9837692307692) [with BigQuery. BigQuery happens to be a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=220.9431538461538) [very popular choice for a data warehouse](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=223.0338333333334) [because of its low administrative](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=224.925) [overhead. It's completely no-ops. You](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=227.1975) [don't even have to set up indices for your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=229.2494285714286) [tables. The serverless nature of BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=232.843642857143) [implies that autoscaling is available](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=235.09800000000004) [right out-of-the-box, and BigQuery can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=237.04922222222223) [store petabytes of data that can be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=239.3853333333334)[queried efficiently and fast. BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=242.2685) [supports streaming data and real-time](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=244.22944444444445) [analytics on streams. Working with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=246.62666666666672) [BigQuery is also relatively inexpensive,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=248.86219999999997) [which means it is a great choice to store](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=250.8551999999999) [your data. In the next module, we'll get](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=253.56550000000004) [hands-on with BigQuery, and we'll see how we can use datasets, tables, and views.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=13efcc77-8203-4ef8-9b0c-5759656e6075&clip=10&mode=live&start=255.60150000000002)

[Using Datasets, Tables, and Views in BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live)

[Module Overview](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live)

[Hi, and welcome to this module where we'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=0) [get really hands-on with BigQuery. We'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=4.113846153846153) [see how we can use datasets, tables, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=7.0043999999999995) [views. We've already briefly described](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=9.5596) [datasets in BigQuery. In this module,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=11.648714285714286) [we'll get some more practice with them.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=13.775200000000002) [Datasets are containers, and as far as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=15.64)[containers go, they're very similar to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=18.111000000000008) [databases in a traditional RDBMS. With](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=20.626333333333328) [BigQuery, you can assign permissions and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=23.353444444444445) [ACLs information to datasets in order to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=26.146111111111107) [define who exactly can view the data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=28.881285714285713) [stored within. Datasets contain other](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=31.40728571428571) [objects, such as tables. Tables are what](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=33.49357142857143) [contain your actual data. Tables are made](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=36.335142857142856) [up of records. Tables in BigQuery are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=38.76075) [similar to tables in an RDBMS, except that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=41.240500000000004) [you don't have the overhead of setting up](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=43.75949999999999) [indices or primary keys, and in addition,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=46.169000000000004) [you can have tables which hold nested and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=48.26550000000002) [repeated fields. If you want to query just](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=51.421857142857135) [a subset of data in a table, you can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=54.282) [define a view. Views are a view of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=57.21749999999999) [data that is stored within a table. They](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=59.67846153846155) [are defined based on the query underlying](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=61.6967)[the view. Views in BigQuery are not](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=63.71759999999999) [materialized unless you explicitly query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=66.35149999999999) [for data from a view. The data associated](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=68.408) [with a view query does not take up](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=70.83333333333336) [additional space. It continues to remain](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=73.25366666666669) [in the underlying table which the view queries.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=0&mode=live&start=75.06516666666671)

[Datasets Tables and Views](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live)

[Here is a big-picture understanding of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=0.384) [data model that BigQuery uses, and how](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=3.959833333333333) [data is laid out in BigQuery. We have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=7.116181818181819) [datasets, which are containers, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=9.524909090909095) [datasets contain within them many tables](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=11.479199999999999) [which hold information. Tables are what](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=13.959) [hold our actual data. Tables are made up](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=16.1766) [of records. Tables in BigQuery can be very](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=19.173461538461538) [large. They can be terabytes or petabytes](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=22.210384615384612) [in size. Sometimes you only want to work](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=24.448500000000006) [with a subset of data that's available in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=26.45676923076923) [a table, which is where you'll create a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=28.390538461538462) [view, which is one representation of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=30.898846153846144) [data that's in a table. Here are some](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=33.370999999999995) [formal definitions for these terms. A](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=36.35125) [BigQuery dataset is a top-level container](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=38.31672727272728) [used to organize and control access to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=40.60709090909093) [tables and views. You apply ACLs and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=43.3553) [permissions at a dataset level in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=46.205) [BigQuery. Any table or view that you have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=48.842428571428556) [must belong to a dataset, and as you've](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=51.50508333333332) [already seen earlier, a dataset is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=54.3875) [associated with a GCP project. A table in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=56.9765) [BigQuery lives within a dataset. It](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=60.06099999999999) [contains individual records which are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=61.967727272727274) [organized in a tabular format in the form](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=63.776363636363634) [of rows. Each record is made up of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=66.41475) [columns. These columns in BigQuery are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=68.62741666666668) [referred to as fields, and these fields](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=70.46525000000003) [can be more complicated. They can hold](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=72.651) [structured data that is nested fields or](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=74.75418181818179) [lists as well. When you create a dataset](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=77.70550000000001) [in BigQuery, you can specify where exactly](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=80.76666666666665) [you want the data that lives within that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=82.603) [dataset to be located. This geographic](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=85.08300000000001) [location can be specified at create time,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=87.01277777777777) [and once the dataset has been created,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=89.427) [this location is immutable. You can't](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=92.29127272727276) [change the location of an already created](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=94.6454) [dataset. You can specify that your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=97.15629999999999)[datasets will live in a multi-regional](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=98.99136363636366) [location such as the United States or the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=100.763) [European Union. Multi-regional locations](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=103.58699999999996) [span a large geographical area that covers](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=105.17811111111112) [several regions, or you can have your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=108.276) [dataset located in a regional location.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=110.84123076923075) [That is Tokyo in Japan at this point in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=113.04) [time. The most important thing you need to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=115.62210000000003) [remember about a dataset is that this is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=117.94976923076926) [where you specify access control. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=120.5052857142857) [dataset level is where you assign](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=122.79958333333333)[permissions for who can view and query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=124.47108333333331) [your data. You can also assign labels to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=126.64583333333334) [logically group your datasets. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=129.7731666666667) [also specify an expiration time for new](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=131.92366666666663) [tables that live within a dataset. We've](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=134.31883333333323) [already worked with public datasets in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=136.54499999999996) [BigQuery. Let's define them here. Public](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=138.45136363636365) [datasets are stored in BigQuery where](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=140.4695454545455) [Google pays for the storage. These are in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=142.4532857142857) [a project somewhere that Google completely](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=145.25440000000003) [manages and pays all the bills for. They](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=147.66520000000008) [are available for general usage via this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=149.9925833333333) [shared project. What you as a user pay for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=152.0384285714286) [are only the queries that you run on this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=155.0553571428573) [public data. A view in BigQuery can be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=157.864) [thought of as a subset of data from a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=159.78419999999997) [particular table that is made available to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=161.763) [users. What data is made available is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=164.68025000000006)[defined by a SQL query that underlies the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=167.41699999999994) [view. Whenever a user queries the view,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=170.5103333333332) [the underlying query associated with the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=173.61390909090903) [view, called a view-query, is executed.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=176.29042857142855) [Views in BigQuery are non-materialized,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=178.765) [which means the data associated with the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=180.68777777777774) [view does not take up additional storage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=183.3160909090909)[space. It continues to live in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=185.8596363636363) [underlying table, and this data is only](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=188.0765384615384) [retrieved when you execute queries on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=190.239) [view. There are several advantages to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=192.64962500000007) [using views in BigQuery, and a huge one is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=194.45233333333329) [the fact that your query complexity can be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=197.05876923076923) [reduced if you use views instead of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=199.31784615384615) [sub-queries when you query your data, the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=201.809) [fact that your query complexity can be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=204.538) [reduced if you use views instead of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=206.37900000000005) [sub-queries when you query your data.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=208.80566666666667) [Tables in BigQuery tend to be very large](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=211.555) [and may contain huge amounts of data. You](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=213.67073333333332) [may want certain panes to view only](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=215.82141666666666) [portions of this data, and this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=217.91733333333337) [restriction can be applied using views.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=220.09225000000004) [You can also create views in a separate](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=223.024) [dataset, and give that dataset specific](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=225.31076923076932)[permissions. These permissions can allow](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=227.16322222222223) [you to restrict access to certain portions](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=229.27933333333334) [of data using a view. Views also allow you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=232.07077777777775) [to logically group your data. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=235.18766666666664) [construct different logical tables from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=237.4496) [the same underlying physical table when](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=239.30860000000004) [you use a view. This goes some way towards](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=241.32199999999997)[reducing the cognitive overload that might](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=244.016) [result when you're working with data on a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=245.88379999999992) [very huge table which has many fields and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=248.50776923076918) [potentially millions of records. For](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=251.26530769230757) [example, in the spikeysales organization,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=253.37577777777778) [different analysts are responsible for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=255.583) [data associated with different geographic](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=257.9863333333333)[regions, such as the US, European Union,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=260.32869999999997) [or Asia. Even if the sales data for the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=263.2665999999998) [entire organization across all regions is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=266.2969999999999) [stored in a single BigQuery table,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=268.21500000000003) [analysts can be restricted to view only](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=270.3330000000001) [that data that they are working on, data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=272.84976470588236) [from the US or data from Asia. This can be done using views.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=1&mode=live&start=275.85682352941177)

[Creating and Editing Access to a Dataset](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live)

[In this demo, let's create a new dataset](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=0.268) [using the BigQuery web console. We'll also](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=4.452615384615385) [specify access control information](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=8.063333333333333) [allowing specific users read and write](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=10.054000000000002) [access to the tables that live within this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=12.564500000000002) [dataset. Let's start off at the BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=15.27783333333334) [web console. We'll be using the beta UI.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=17.351749999999996) [We are within the spikey-bq project, as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=19.897999999999996) [you can see on the left side of your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=22.08118181818182) [screen. When you have your project](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=24.017818181818186) [selected on the left navigation pane,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=25.932090909090906) [you'll have the CREATE DATASET button](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=27.971) [enabled. Click on this CREATE DATASET, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=30.520142857142854) [this will bring up the UI allowing you to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=32.34199999999999) [create a new dataset. The ID of this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=34.62630769230769) [dataset is going to be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=36.99246153846154) [spikeysales\_dataset. This dataset ID is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=39.2535) [case sensitive, must contain letters or](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=42.036) [numbers, cannot contain special](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=45.13077777777778)[characters, and must be unique within this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=47.11255555555556) [project. If you have restrictions on where](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=49.25500000000002) [data can be stored, you can specify a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=51.28063636363636) [multi-regional location like the US or](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=54.309727272727244) [European Union, and your data will always](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=56.27930769230769) [live within that geographic region. Your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=58.400846153846146) [data will be spread across multiple](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=60.569399999999995) [regions in a large geographical area, or](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=62.913) [you can specify that your data lives in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=65.2055) [Asia. A regional location like Tokyo is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=67.90684615384616) [what is enabled at this point in time.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=70.38915384615386) [This might change in the future as a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=72.46838461538461) [additional locations are added. For every](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=74.093) [dataset you can specify default table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=76.21339999999996) [expiration times. You might want data in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=78.38883333333332) [your tables to be around forever, or you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=81.05524999999997) [might want to specify the number of days](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=83.4687692307692) [after which the data will be deleted. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=85.502) [will be the default value for all tables](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=88.02261538461543) [that you create within the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=91.01433333333331) [spikeysales\_dataset. Click on the Create](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=93.37488888888883) [dataset button here, and in a couple of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=94.80176923076921) [seconds you'll get the message at the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=96.71130769230764) [bottom left of the screen which says your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=98.32584615384611) [dataset has been created, and you'll find](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=100.33809090909091) [here under spikey-bq, that's our project](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=103.18772727272729)[name, we have the spikeysales\_dataset. If](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=105.70612499999999) [you click on the dataset name in the left](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=108.10283333333334) [nav pane, you'll find metadata information](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=110.21633333333341) [available on the web console. Here it](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=112.31755555555557) [tells you when the dataset was created,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=114.82957142857143) [where the data is located, when the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=116.48357142857142) [dataset was last modified, and so on. If](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=118.31233333333334) [you want to update the description, you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=120.82523529411765) [can do so using the web console as well.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=122.55588235294115) [Click on the description link, specify the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=124.781) [new description, and click on the Update](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=127.16799999999996) [button. We'll update the permissions](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=129.56599999999997) [associated with this dataset using the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=131.282) [command line. Activate Cloud Shell, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=133.40825000000004) [let's first view the metadata information](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=135.54260000000002) [for this dataset using the bq-show](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=137.681) [command. We want this metadata information](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=140.94071428571422) [to be displayed in JSON, which is why we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=142.99200000000005)[specified the format as prettyjson, and we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=145.74553846153844) [store this metadata information in a JSON](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=147.92523076923072) [file called dataset\_spikeysales. If you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=152.34362500000006) [click on this pencil button here to the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=155.019625) [top right of your Cloud Shell, that will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=156.61412499999992) [launch the code editor on the GCP. This is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=158.51755555555553) [a recently launched feature that allows](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=161.50290909090907) [you to edit configuration files and even](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=163.02963636363629) [code files from within your browser](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=165.1191818181818) [window. You don't have to switch back to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=167.1084545454545) [your local machine. When you click on code](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=169.40140000000005) [editor, it will give you a graphical view](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=171.46949999999995) [of the folders and files that live in your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=173.4334999999999) [Cloud Shell home directory. and you can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=176.47166666666672) [see that we have this here,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=179.08109090909088) [dataset\_spikeysales. json. 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This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=187.60500000000008) [also includes access permissions that are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=190.85245454545455) [associated with our dataset. We know which](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=192.9911818181818) [roles and users have permissions to read](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=195.66949999999997) [and write to tables in our datasets.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=198.5919999999999) [You're going to edit this here, you're](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=200.75336363636364) [going to add in a new user called cloud.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=202.72625) [user@loonycorn. com, which has the role](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=206.15749999999994) [writer. We can write to tables and read](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=207.99015384615385) [from tables in our dataset. Here we are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=210.13046153846156) [looking at a specific use case where we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=212.28746153846154) [assign writer permissions to an individual](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=214.73916666666668) [user in our organization. You can assign](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=217.23566666666676) [permissions to users, groups, or even to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=219.84959999999998) [the domain as a whole. This data file will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=222.06533333333326) [be automatically saved in your home](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=225.36945454545454) [directory, and with this update in your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=227.95163636363637) [JSON file, you can run a bq command in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=230.0332857142858) [order to update the permissions on your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=232.6408888888889) [dataset. Call the bq update command,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=235.48211111111107) [specify the source json file, which](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=237.82400000000004) [contains our updated permissions, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=240.082) [apply it to the spikeysales\_dataset. Once](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=241.692) [the permissions associated with that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=244.2845714285714) [dataset have been updated, we can call bq](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=247.546) [show and see the latest permissions. You](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=250.61457142857142) [can see that the cloud user has read and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=253.2342857142857) [write access to the tables within this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=256.09885714285707) [dataset. We now want to validate this.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=258.51875) [Permission-related information is not yet](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=261.26320000000015) [available in the beta UI for BigQuery at](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=263.12928571428574) [the time of this recording, so I'm going](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=265.4595714285715) [to switch over to the classic UI in order](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=267.63839999999993) [to ensure that the cloud user indeed has](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=269.80559999999974) [write access to this dataset. In the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=272.67800000000005) [classic UI, if you click on the little](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=275.22042857142856) [drop-down next to the name of the dataset,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=276.7901428571429) [you'll find an option which says shared](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=278.9403333333334) [dataset, and this is the option I'm going](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=281.32966666666687) [to select. This will pop up a UI, and you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=283.1161111111112) [can see here within this UI that cloud. user@loonycorn. com can edit this dataset.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=2&mode=live&start=285.1727333333333)

[Verifying Access to Datasets](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live)

[We are back in the beta UI for BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=0.102) [here. Let's verify that cloud.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=3.9792) [user@loonycorn. com indeed has access to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=5.998000000000001) [tables within the spikeysales\_dataset. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=8.380000000000003) [first need to create a table here. I'm](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=10.244636363636365) [going to create a very simple test table.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=13.092111111111112) [We'll talk more about table creation in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=15.325) [the clips that follow. Select the dataset](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=17.420545454545458) [on the left navigation pane. you'll have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=19.579499999999996) [the CREATE TABLE option. Click on it, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=21.67784615384615) [it will bring up the Create Table UI. I'm](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=23.66123076923076) [just going to call the Destination table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=25.83346153846155) [customer\_test\_table with two fields within](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=27.5) [this table, customer name and customer\_id.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=31.050714285714278) [If this is going a little fast for you, do](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=33.65746153846154) [not worry. In the clips that follow we'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=36.567) [talk about all of the these options that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=38.487000000000016) [are available during table creation. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=40.859625)[see that a customer\_test\_table has been](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=43.241) [created here. I'm going to open up a new](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=45.803) [browser window and go to the main](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=48.273066666666644) [dashboard for my GCP project, and from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=49.88913333333329) [within here I'm going to sign in with a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=51.69360000000001) [new account. Click on the Add account in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=54.054) [the menu that pops up when you click on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=56.605428571428575) [the user icon to the very top right of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=59.46914285714285) [your screen. I'm going to quickly sign in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=62.3195714285714) [as cloud. user@loonycorn. com. I'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=65.30799999999999) [specify the username and password to check](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=67.2341111111111) [whether cloud. user has access to the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=69.72688888888884) [BigQuery dataset that we just created.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=72.32749999999999) [Click on the BigQuery option from the left](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=74.572) [navigation menu. This will take you to the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=76.65679999999998) [web console. Within here, you won't get](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=78.81728571428573) [any notification indicating that you have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=80.72978571428575) [access to this dataset, but you can run](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=82.72522222222224)[queries on the customer\_test\_table, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=85.72518181818184) [these queries will be executed](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=87.75290909090914) [successfully. If you click on the Run](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=89.46600000000001) [query button, you'll find that the query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=91.57066666666671)[returned no results, but it executed](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=94.1999166666667) [successfully. Cloud user clearly has](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=96.63341666666673) [access to the customer\_test\_table within](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=98.5714) [our spikeysales\_dataset. I'm going to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=100.48689999999999) [close this browser window and switch back](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=102.76244444444444) [to my original account,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=106.21124999999999) [spikeysales@loonycorn. com, select the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=108.37774999999998) [customer\_test\_table and click on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=110.2748) [DELETE TABLE button. This is how you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=112.30930000000004) [delete tables from the UI. It'll ask you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=114.64155555555558) [for confirmation. Specify the name of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=117.00707142857144) [table and hit Delete. This table will now be deleted.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=3&mode=live&start=119.28457142857144)

[Creating and Querying Tables](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live)

[In this demo, we'll see how we can create](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=0.249) [and use tables in BigQuery. We'll see how](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=4.173) [we can create a table with source data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=7.161499999999999) [from another table. we'll also see how we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=9.317500000000003) [can copy tables. Click on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=12.105375) [spikeysales\_dataset on the left navigation](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=14.437000000000001) [pane. We're going to create a new table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=16.34366666666667) [within this dataset. Click on the CREATE](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=18.719300000000004) [TABLE link that's available here. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=20.920666666666666) [will bring up the UI that we've seen](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=22.8309) [before. We'll now study the various](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=24.646100000000004)[configuration options that are available](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=26.564153846153847) [in this UI. You have the option to specify](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=28.255307692307692) [whether the table that you want to create](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=30.819384615384624) [will be populated with source data. I'm](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=32.99257142857143) [going to create an empty table to start](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=35.408272727272724) [off with. We'll talk about populating data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=37.18645454545452) [within tables as you create them in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=39.50781818181819) [next module. The table that we are going](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=42.36228571428571) [to create here is the destination table,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=44.771428571428565) [and you can specify the project where you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=46.886750000000006) [want the table to be located, the dataset](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=49.31541666666669) [within which the table should be located,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=51.60750000000001) [and whether it's a native table or an](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=53.596) [external table. The native table option](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=56.28079999999999) [that we've chosen here is when the data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=57.923692307692306) [that you're going to store within this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=59.86707692307692) [table lives within BigQuery and not on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=61.82163636363636) [some external source. We'll look at](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=63.9630909090909)[configuring these in other demos in this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=66.10836363636365) [course. Let's specify a name for this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=68.33299999999998) [destination table. I'm going to call it](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=70.34899999999996) [the special\_customer\_table. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=72.97285714285712) [specify a schema for this table at the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=74.45514285714285) [time of table creation. You can choose to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=77.10771428571422) [specify the schema in a JSON format, in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=79.43857142857141) [which case you'll choose the Edit as text](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=81.44771428571423) [option, or you can simply click on the Add](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=83.82199999999999) [field button here, which allows you to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=86.74918181818181) [specify individual fields, the name and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=89.7674545454545) [the corresponding data type associated](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=92.03081818181818) [with that field. 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You then](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=102.38049999999998) [specify the kind of data that this field](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=104.81416666666665) [will store. 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And the third specification is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=115.18322222222226) [for the mode of the field, whether values](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=116.96890909090912) [in this field can be null or are they](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=119.3266153846154) [required values. There are three](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=122.64138461538465) [specifications for Mode. It can be a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=124.10849999999999) [nullable field, a required field or a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=126.2663846153846) [repeated field. A repeated field is a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=128.76430769230768) [field that is a list. We'll make](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=130.77550000000002) [customer\_name a required field, which](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=132.73827272727274) [means it can't have null values. Let's go](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=134.40145454545458) [ahead and add a new field here by clicking](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=136.9351428571429) [on the Add field button. 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The next is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=149.00425) [customer\_city, again, of type string and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=152.0579) [nullable. And the next is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=153.93769999999998) [customer\_contact, which is of type integer](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=156.15699999999995) [and nullable. You're now ready to click on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=159.01599999999988) [the Create Table button and wait for this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=161.24699999999996) [table to be created. This newly created](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=162.951) [table will now be available under the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=165.72999999999993) [spikeysales\_dataset. 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If you click on the Details](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=179.46239999999997) [tab, that will give you metadata](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=181.048) [information on the table that we just](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=182.322) [created, such as the size of the table,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=184.03323076923076) [it's 0 bytes, it holds no data at this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=186.06885714285715) [point in time, the number of records in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=188.62871428571435) [the table, when the table was created, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=190.8213333333333) [so on. 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Notice the query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=229.10933333333332) [validator off to the bottom right. Because](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=231.61833333333337) [we are inserting data into the table, this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=233.99641666666668) [query will process 0 bytes when run.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=236.21575000000013) [Remember, inserts into tables are free.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=238.92399999999998) [You only have to pay for storage. Click on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=241.738) [the Run query button, and execute this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=243.93538461538452) [insert query, and you'll soon see an](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=245.76515384615388) [update at the bottom of your screen. One](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=247.75584615384625) [row was added to our newly created table.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=249.97515384615383) [If you click on the table now and view the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=252.161) [Preview tab, you'll see that the table has](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=255.31850000000009) [one row. This is the record that we just](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=257.7744285714286) [inserted into this table. If you want to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=260.4442857142857) [view all of the tables that live within a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=262.3425714285712) [particular dataset, you can do so using a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=264.672) [SQL query as well, select star from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=266.9580000000001) [spikeysales\_dataset. \_\_TABLES\_SUMMARY\_\_.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=272.36580000000004) [This is a special table that is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=275.209) [automatically created within our dataset,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=276.8533636363635) [which holds a list of all the tables](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=278.1655) [available. Execute this query, and here](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=281.1455) [you can see we have exactly one table here, the special\_customer\_table.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=4&mode=live&start=283.02549999999985)

[Creating Tables from Other Source Tables](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live)

[We'll now create a table in BigQuery and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=0.423) [populate it with data from another table.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=3.854999999999999) [We start off in our public data project](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=6.821833333333334) [within samples. We are on the shakespeare](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=10.10916666666667) [table here. Here is the query that we want](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=12.896714285714285) [to execute on the shakespeare table. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=15.221923076923078) [want to select all records with a limit of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=16.86190909090909) [5. This will query the entire table, so](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=19.750090909090904) [you'll be charged for querying the entire](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=22.051416666666658) [table even though you want just five](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=24.022600000000004) [records. This is something to watch out](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=25.970700000000015) [for in BigQuery. Click on the More option](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=27.796333333333333) [here, and within that you'll find an](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=30.00346153846153) [option called Query settings. This is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=32.01030769230767) [where you can specify that you want this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=33.877416666666655) [data to be populated into a destination](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=36.43866666666667) [table. This opens up a configuration](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=38.879333333333335) [dialog for the query itself, which allows](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=41.00900000000001) [you to specify how you want this query to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=43.30707692307693) [be executed. We want the results of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=45.633923076923104) [query to be populated into a destination](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=47.812571428571424) [table. I click on the Set destination](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=49.751071428571414) [table checkbox and specify the name of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=51.865384615384635) [destination table within my project. I'm](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=54.3835) [going to call it the shakespeare\_table.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=56.566428571428574) [You can specify different options as you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=58.429) [write data into this table. You can say](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=60.60541666666665) [you only want to write data in if the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=62.818166666666656) [table is empty to begin with. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=64.79266666666663)[append this data to the table, or](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=66.76566666666666) [overwrite the existing contents of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=69.064) [table. We'll go over the Write if empty](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=70.88199999999999) [option. You may not realize it because the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=73.10333333333328) [query is so fast, but the size of the data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=75.14453333333329) [in your table can be huge, it can be in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=77.78646153846154) [petabytes. If you want your destination](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=80.91876923076924) [table to work with such large data sizes,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=83.05123076923077) [you can click on this checkbox which says](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=85.962) [Allow large results. There is no size](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=88.20854545454542) [limit. I'll leave it unchecked for now. My](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=90.13099999999999)[source table is pretty small anyway.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=92.31542857142857) [BigQuery jobs can run in interactive mode](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=94.082) [or batch processing mode. In interactive](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=97.19063636363632) [mode, your query will execute right away,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=99.51522222222222) [and that's what I'm going to choose here.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=101.434) [I don't want my job to run later on at](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=103.182) [some point in time. Cache preferences](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=105.36771428571423) [allow you to specify whether you want to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=106.87709090909091) [use cached results to populate your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=109.41745454545453) [destination table. Once you run a query,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=111.9064285714286) [BigQuery behind the scenes caches the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=114.47750000000003) [results of that query, and this option](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=116.52050000000007) [will allow you to specify whether you want](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=118.85853846153849) [to use cached results. This option is not](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=121.42691666666666) [enabled here when we're reading from a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=123.33024999999996) [public dataset, so I'm just going to leave](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=125.1942857142857) [that be. Let's move on and hit Save in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=127.4948571428571) [order to create and populate our new](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=130.22320000000005)[table. Our query settings are now](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=132.3764000000001) [configured. We can now execute this query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=134.24566666666664) [to create a new table and populate it with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=136.432) [data from the shakespeare table. There is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=139.09021428571427) [something interesting to observe here. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=141.09442857142858) [query all columns of the shakespeare](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=142.6896153846154) [table, which means all of the data within](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=144.3493076923077) [that table will be processed, even though](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=146.595) [we're interested in only five records.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=148.64600000000004) [Let's go ahead and execute this query. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=151.10191666666663) [query results will be displayed right here](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=154.39236363636363) [within your browser. Your new table has](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=156.22890909090904) [been created and has been populated with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=158.56492307692307) [these results. You can explore this newly](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=161.27553846153845) [created table under your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=164.37050000000002) [spikeysales\_dataset. What we're going to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=166.22690000000003) [do here, though, is run another query to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=167.9522307692308) [overwrite the data that is present in this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=170.47469230769238) [table. We'll query the shakespeare table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=172.3778333333333) [as before, but this time we're going to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=173.8235) [ask for a thousand records. Let's open up](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=176.31549999999996) [Query settings once again. The destination](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=179.106) [table is the same shakespeare table that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=181.35454545454547) [we created earlier, but this time we want](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=183.47045454545463) [to overwrite the table with these thousand](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=185.94600000000003) [records. This will completely delete the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=188.1878) [five records that existed in this table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=190.41260000000003) [earlier, and overwrite it with a thousand](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=192.67190909090905) [records that we've specified. Notice that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=194.679) [this query, once again, processes the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=196.94759999999994) [entire data within the shakespeare table.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=199.44899999999998) [The limit clause has no effect on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=202.416)[amount of data processed. That purely](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=205.43999999999988) [depends on the number of columns you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=207.47680000000003) [query. Here we are querying all columns.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=209.31360000000012) [Let's execute this query and populate the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=211.64360000000005) [shakespeare table; overwrite its existing](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=214.4153333333333) [contents. Overwriting an existing table's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=216.7375555555555) [contents is a pretty major task, which is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=218.57600000000002) [why BigQuery asks you for a confirmation.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=221.101) [I'm going to hit OK here, and this will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=222.725) [overwrite the original table that was](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=225.6756153846155) [created with five records. If you see the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=227.56623076923077) [results of this query, at the very bottom](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=229.88315384615387) [right you can see that there are a total](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=231.869) [of a thousand records because of our limit](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=233.87959999999998) [1000. You can explore the shakespeaere](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=236.7157499999999) [table within your spikesales\_dataset and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=238.97288888888895) [confirm that it indeed has 1000 records.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=240.91299999999998) [The entire table has been overwritten.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=243.944)[We'll do something else here, and continue](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=246.3107272727273) [on this screen. Let's just select word and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=248.94936363636364) [corpus from the shakespeare table. We're](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=251.61481818181826) [limiting the number of columns that we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=253.52209090909085) [want to query. And now you'll notice that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=255.734) [the amount of data processed by this query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=258.31799999999987) [is much smaller. It doesn't process the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=261.02127272727273)[entire table, it only processes 3. 62 MB](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=263.491) [of data. This is because we've limited the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=266.7629999999999) [number of columns that we are querying.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=269.70915384615375) [Limiting the columns or fields that we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=272.192) [query is a technique that you you can use](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=273.89892307692315) [to minimize your query processing costs.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=276.23566666666676) [Let's click on the Run query button here,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=277.983) [and you'll notice something. The query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=280.5496666666666) [settings that we had specified earlier](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=282.50354545454553) [applies to this query as well. We are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=284.51518181818204) [within the same session with the same](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=286.81176923076924) [editor. The query settings that we had](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=288.61884615384616) [configured applies to this query as well,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=290.74253846153846) [so make sure you're aware of this as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=292.919) [you're executing multiple queries in a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=295.05566666666675) [session. This query is now complete. Our](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=296.68475) [existing shakespeare table has been](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=298.6864) [overwritten with these new records with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=300.28339999999986) [just two fields, the word and corpus](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=302.50399999999996) [field. Let's go take a look at the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=305.8044999999999) [spikeysales dataset, which has the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=308.07733333333346) [shakespeare table which we've written to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=309.364) [and overwritten several times by now.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=311.58199999999994) [Notice the latest schema of this table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=313.8) [contains just the word and corpus fields.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=316.56450000000007) [This was the last query that we executed](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=319.329) [that overwrote the contents of this table.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=321.9170000000002) [You can create a new BigQuery table with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=324.2644615384616) [source data from an existing table using](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=327.0736923076925) [the COPY TABLE command. This will copy](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=329.4126666666667) [over the entire data that exists in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=331.60584615384613) [current table. This is the destination](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=333.9627692307692) [table, shakespeare\_table\_copy, and the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=336.3373333333333) [source table is the shakespeare\_table in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=338.12266666666653) [my current dataset. Click on Save here.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=340.9883750000001) [This will start the process of copying the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=343.56276923076933) [table. Any time you are bringing data into](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=345.808307692308) [a BigQuery table or exporting data from a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=348.22516666666655) [BigQuery table, BigQuery will run a job](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=350.53030769230764) [under the hood, and if you click on Job](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=352.3486923076922) [history here on the left navigation pane,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=354.735076923077) [you can see the status of the current job.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=356.61) [Job history will show you all of the jobs](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=359.221) [that have been executed in BigQuery. You](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=361.60779999999994) [can see that the latest job involved](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=363.572) [copying from one table to another. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=366.18299999999994) [see below here other jobs that I have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=368.91669230769224) [executed while playing around with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=370.89946153846125) [BigQuery. If you click through a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=372.441) [particular job, you'll get additional](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=374.835) [details on what exactly that job did. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=376.70880000000005) [was a copy job from a source to a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=379.55816666666664) [destination table. The newly copied table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=382.6106666666664) [is not visible within my](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=384.6969999999999) [spikeysales\_dataset. I'm going to click](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=386.45699999999977) [the Refresh button on the browser, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=387.7947142857143) [once I hit Refresh you can see that the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=389.51971428571426) [newly created shakespeare\_table\_copy is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=392.85900000000004) [now present. You can explore this table if](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=394.44971428571426) [you want to in order to validate for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=396.77542857142845) [yourself that it's indeed a copy of the original shakespeare table in our dataset.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=5&mode=live&start=399.047)

[Creating Views](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live)

[So far, we've worked with datasets and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=0) [tables. Let's see how we can create and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=3.3337499999999998) [use views in BigQuery. Now let's say in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=6.108545454545452) [the spikeysales organization the customer](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=8.898799999999998) [support team needs to be able to view](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=10.744799999999994) [customer name and customer email](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=13.516076923076927) [information, but they are not allowed to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=15.23184615384616)[view the location of the customer. You](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=17.069500000000005) [might have a view which selects just the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=18.858833333333333) [customer name and customer email from the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=21.217499999999998)[special\_customer\_table. Let's execute this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=24.655600000000003) [query and view the results. There is just](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=25.95925) [one customer here. Notice that we have an](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=27.90015384615385) [option just below the query editor which](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=30.119230769230775) [allows you to save this query as a view.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=32.2465) [Click on the Save view button, and this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=35.077) [will allow you to name your view. I'm](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=37.27166666666665) [going to call this the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=39.536142857142856) [special\_customer\_view. Click on Save, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=41.256857142857136) [you have a newly created view within your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=42.750333333333344) [spikeysales\_dataset. You can see the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=45.049) [little view icon to the left there,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=46.89358333333332) [indicating that it's a view, and not a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=49.476) [table. You can click on the view and see](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=52.122222222222206) [that the schema information contains just](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=54.80253846153849)[the customer name and customer email. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=56.675285714285714) [other columns are not present. If you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=59.29083333333333) [click on the Details information, that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=60.61966666666666) [will give you additional information on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=62.0464) [the view. If you scroll down to the bottom](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=64.0486) [here, you have the query that's associated](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=66.62161538461541) [with the view. You can edit this query as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=68.58372727272727) [well. Using the edit query button that you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=71.54227272727277) [can see on screen here, you can click on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=73.99433333333329) [it and change the query that is associated](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=76.36669230769232) [with this special\_customer\_view. Here are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=78.07807692307696) [some other options available with a view.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=80.22599999999997) [You can copy a view, delete a view, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=83.01907142857142) [export the data associated with the view.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=85.5962857142857) [In our demo, we'll pick the first option](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=87.59566666666669) [here to query a view. Remember, this view](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=89.88366666666667) [only has customer name and email](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=92.209) [information, so when you select from this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=94.39145454545455) [view these are the only two fields that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=97.44918181818183) [you can specify. I'm just going to say](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=99.40079999999995) [select star for now, and you'll see that I](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=101.37566666666669) [get the customer name and email](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=103.76186666666673) [information for the one customer that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=105.67109090909089) [exists within the table underlying this view.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=6&mode=live&start=107.644)

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We can achieve this using](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=15.786083333333334) [authorized views in BigQuery. Authorized](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=18.404666666666678) [views is a standard pattern that can be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=20.217) [used in BigQuery to control access to who](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=22.74499999999999) [sees and can access what data. Remember](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=25.820500000000006) [that permissions in BigQuery are applied](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=28.666454545454545) [at a dataset level, so a combination of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=31.081181818181822) [dataset-level access control along with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=34.2706) [views will allow you to set up authorized](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=36.2451) [views. Let's see how this works. Let's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=38.90624999999998) [imagine a hypothetical scenario here where](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=41.443363636363635) [we have two datasets, Dataset A and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=43.797545454545435) [Dataset B. Within Dataset B, we have a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=46.50053846153847)[table which contains the order information](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=49.523307692307725) [across the entire globe for spikeysales.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=52.8902) [We want analysts who are based in the US](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=56.807) [to be able to view only those records](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=59.028800000000025) [which are associated with the US, analysts](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=61.34272727272727) [in Europe should be able to view Europe's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=64.2572727272727) [specific information, and analysts in Asia](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=66.8338181818182)[should be able to view Asia's specific](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=68.6688888888889) [information. We have one BigQuery table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=71.34211111111117) [with all of the data. We'll use authorized](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=73.04199999999999) [views to restrict access to data. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=75.78233333333334) [view will be present in a different](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=79.02058333333333) [dataset, Dataset A here. Let's see how](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=81.77566666666671) [this works. Our users are data analysts](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=84.29739999999998) [who should be able to query view](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=86.64169230769234) [information. We'll assign the curated role](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=89.03946153846161) [bigquery. user to all users at the project](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=91.53628571428575) [level. Both of these datasets are present](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=94.98314285714295) [within the same project. This bigquery.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=97.8362) [user role ensures that for this particular](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=100.09639999999999) [project users can only access the datasets](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=102.35529999999997) [that they have created. They can't access](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=105.2388) [datasets that have been created by other](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=107.88475) [users in the same project. The spikeysales](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=110.07516666666666) [order management information is present in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=113.19520000000001) [one table, which is within Dataset B. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=116.09080000000004) [is private data. No one except executives](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=119.29199999999996) [at the very top level can view the order](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=121.56507692307693) [information for the entire world, so we'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=124.164) [house this private data in a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=126.42118181818184) [self-contained dataset with special](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=128.537) [permissions that allow only high-level](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=130.18900000000005) [executives to access this table. Analysts](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=132.32783333333333) [who can access the order data for their](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=135.12945454545454) [specific region will use a view that has](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=138.06909090909082) [been created in a separate dataset. You](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=140.61400000000006) [can imagine that we have a separate](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=142.67835714285715) [dataset for each of the regions, one for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=144.45885714285717) [the U. S., one for Europe, and one for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=146.6225) [Asia, and we create a view within each of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=149.49124999999995) [these datasets that queries the subset of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=151.7330769230769) [records which are accessible to analysts](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=153.72645454545454) [in that region. That way analysts in Asia](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=156.10081818181817) [can only view those records where the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=158.7893333333333) [region is Asia. We only need to authorize](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=160.8911999999999) [the view that's present in Dataset A to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=163.59908333333328) [access the source dataset, that is Dataset](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=166.45708333333332) [B, which contains our entire orders table.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=168.7536666666666) [And on this note we come to the end of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=172.009) [this module, where we worked with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=174.35233333333323) [datasets, tables, and views in BigQuery.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=175.89957142857142) [We saw that datasets are containers very](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=178.153) [similar to databases in RDBMS, except that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=180.59191666666675) [you specify permissions at a dataset level](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=183.19163636363635) [in BigQuery. Datasets contain other](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=186.19336363636356) [BigQuery objects such as tables. Tables](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=188.37212500000004) [are what hold your actual data. Tables](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=190.97750000000002) [contain records. You can define views over](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=193.80200000000008) [tables. Views are defined by the query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=196.23650000000004) [that they perform on the underlying table.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=198.515) [These views are not materialized unless we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=201.192) [actually execute a query on this view. In](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=203.6496363636364) [the next module, we'll see how we can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=206.49742857142854) [import data into BigQuery and work with partitioned tables.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=9fa75963-6b5f-468e-a61e-188f1bd9f7f3&clip=7&mode=live&start=209.38428571428557)

[Getting Data in and out of BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live)

[Module Overview](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live)

[Hi, and welcome to this module on Getting](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live&start=0) [Data in and out of BigQuery. When you're](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live&start=3.903428571428571) [moving storage and compute to the cloud,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live&start=7.24788888888889) [an important aspect of this move is the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live&start=8.707) [migration of your data. BigQuery has very](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live&start=11.505000000000003) [easy interoperability with cloud storage,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live&start=14.472624999999997) [you can simply upload your data in CSV,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live&start=17.087) [JSON or AVRO formats to cloud storage, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live&start=20.075266666666675) [then load this data from cloud storage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live&start=23.096500000000002) [into BigQuery. When you're working with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live&start=25.94200000000001) [huge data that is time based, it's often](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live&start=27.877) [useful to partition your tables for better](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live&start=30.2288) [performance. You don't have to query an](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live&start=32.569600000000015) [entire table, you can simply query a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live&start=34.422461538461555)[specific partition. BigQuery makes it very](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live&start=36.194) [easy for you to set up and work with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live&start=38.31938461538461) [time-based partitioned tables, and we'll see how to do that in this module.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=0&mode=live&start=41.3555)

[Uploading Data to GCS Buckets](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live)

[Engineers and analysts in the spikeysales](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=0.363) [organization want to migrate some of their](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=3.981666666666667) [e-commerce data to BigQuery in order to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=7.089571428571428) [try it out. They have their data in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=9.362071428571427) [CSV, JSON, and AVRO formats, and they want](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=12.583818181818186) [to first load these files to cloud storage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=15.32225) [buckets from where they can migrate into](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=17.629583333333333) [BigQuery very easily. We start off in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=19.998000000000005) [main dashboard for our spikey-bq project.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=22.662090909090903) [I'm going to use the hamburger icon on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=24.611) [top left in order to access the navigation](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=26.665399999999998) [menu. I'm going to access cloud storage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=28.8404) [buckets, which is present under Storage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=31.659299999999995) [and Browser. Cloud Storage buckets on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=34.50342857142858) [GCP offer elastic storage for objects.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=37.574090909090906) [This object-based storage is very similar](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=40.087) [to AWS's S3 or Blob Storage on Azure.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=42.94771428571427) [Cloud Storage follows a PSU use policy.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=46.762) [You can create buckets and store objects](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=49.33625000000001) [within them. You only pay for the storage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=51.74192307692307) [that you use, not for what you allocate.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=54.00961538461537) [There is no explicit allocation required.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=56.70454545454546) [We don't have any cloud storage buckets](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=58.918) [here. Use the Create bucket button in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=60.98824999999999) [order to create our first bucket. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=63.37250000000001) [bucket can be thought of as a container,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=65.69146153846154) [and it should have a globally unique name.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=67.53515384615386) [This name should be unique across all GCP](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=69.91433333333333) [projects in the world. It's good practice](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=72.829) [to prefix your bucket name with the name](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=75.06141666666666) [of your organization so that it's easy to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=77.69284615384616) [remember and it's easy to get unique names](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=80.45776923076924) [this way. The storage class of a bucket](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=82.79150000000004) [determines how much you pay for storage.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=84.9640769230769) [Multi-regional storage basically means](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=86.86) [that your data will be present across](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=88.38960000000002) [multiple regions and replicated. The cost](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=91.13719999999999) [for multi-regional buckets are also the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=93.6988888888889) [highest. You can also have regional](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=95.9455555555556) [buckets where data is located in a single](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=98.08571428571427) [region. Nearline and Coldline storage is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=100.91085714285713) [for archival storage. 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Within the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=112.569)[Downloads directory on my local machine, I](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=114.85354545454547) [have three files, data. avro, data. csv,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=117.46976923076924) [and data. json. I'm going to upload all](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=120.5282307692308) [three files, and I'm going to do it one by](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=122.935875) [one, but you can upload all three files in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=125.12962499999999) [one go if you want to. Go ahead and upload](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=127.73871428571427) [all three files. You can see here that all](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=130.68642857142862) [three files are now available within my](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=133.286142857143) [spikey\_bucket. Let's take a look at the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=136.7841428571428) [contents of these files. Data. csv](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=138.89999999999995) [contains order information from the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=140.74945454545457)[spikeysales org in the CSV format. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=142.73809090909097) [see here that we have information about](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=145.6416666666667) [orders, ship mode, customer-specific](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=147.93883333333343) [information, the products they bought, how](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=149.446) [much they paid, and so on. Data. json](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=151.75914285714285) [contains geographic data in the JSON](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=154.92200000000003) [format. It contains the name of the region](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=158.14400000000006)[and lat/long information. The data. avro](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=161.53490000000005) [file is a little harder to read. This file](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=163.72279999999998) [format is not really suitable for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=166.65311111111112) [browsing. This contains some ad-related information from the spikeysales website.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=1&mode=live&start=168.6904444444445)

[Importing Data from CSV Files on Cloud Storage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live)

[Let's see how we can create a table and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=0.428) [load data into it using the CSV file that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=4.031) [we uploaded to Cloud Storage. Here are the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=7.827999999999999) [three files that we uploaded to Google](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=10.764538461538462) [Cloud Storage in the last clip. Let's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=12.19146153846154) [switch to our BigQuery web console, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=14.379000000000001) [within the spikeysales\_dataset let's click](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=17.233272727272727) [on the Create Table link. This will open](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=19.68463636363637) [up a dialog that is familiar to us. We're](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=22.889000000000003) [going to specify source data for this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=25.1606) [table though. Click on the menu there, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=27.0058) [you'll see a bunch of options available.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=28.982692307692318) [Within this, we're going to say that our](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=30.674) [source data will come from Google Cloud](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=32.54538461538461) [Storage. You can see that the UI has](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=34.33438461538462) [changed in order to allow us to specify](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=36.811923076923094) [the URL of the file which contains the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=39.21666666666666) [source data. This is a GCS URL that starts](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=41.57773333333332) [with gs://. This is followed by the name](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=46.70633333333333) [of the bucket, that is spikey\_bucket, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=49.42150000000002) [the name of the file within the bucket,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=51.221636363636364) [data. csv. The file format is the next](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=54.27472727272725)[option. The default is Avro. You can click](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=56.837454545454534) [on the menu and choose the CSV option.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=59.33409090909092) [This file contains some sample e-commerce](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=61.993) [data that we can play with. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=64.01050000000001) [destination table will be simply named.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=66.328) [We'll simply call it e\_commerce\_data. Now](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=68.128) [I'm going to ask BigQuery to auto-detect](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=70.49418181818181) [the schema for this file. BigQuery has the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=73.31883333333333) [ability to parse the file header for CSV](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=76.73016666666668) [files and then see the kind of values that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=79.34699999999998) [are stored in each field and auto-detect](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=82.04144444444444) [schema. That's the simplest way to get](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=84.43855555555551) [data into BigQuery. Click on the Create](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=86.44366666666667) [table option, and wait for the job](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=88.68499999999997) [importing data into our BigQuery table to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=91.15249999999992) [complete. You can see in the Job history](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=93.36757142857144) [here that we have one job running, and you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=95.07200000000002) [can see that the job has now completed](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=97.39545454545454) [successfully. Click through, and you'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=101.11327272727273) [see from the job description that this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=102.45327272727272) [involved loading data from a cloud storage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=103.985) [bucket into a BigQuery table. If you look](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=107.23591666666665) [within the spikeysales\_dataset, you'll see](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=110.43150000000001) [that we have a newly created table called](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=111.88733333333336) [e\_commerce\_data. If you click on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=115.19280000000002) [table, you'll be able to view the schema.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=116.7749230769231) [Notice that the schema has been](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=118.45) [auto-detected. You can compare this with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=121.08914285714282) [the header over in the CSV file, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=122.83983333333336) [you'll see that the schema matches. You](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=124.93807692307692) [can click on the Details tab here to view](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=126.77961538461538) [additional information on the table as to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=129.5714444444445) [when it was created and how many records](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=131.92733333333334) [it contains. You can see that this table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=133.96866666666668) [contains around 1200 records. You can use](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=136.73259999999996) [the Preview tab to explore the data.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=139.14490000000004) [Remember, if you use Preview you won't be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=141.268) [charged for querying the table, so Preview](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=143.96646153846152) [is a good way for you to see the kind of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=146.21817647058825) [data that's stored here. We have the table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=149.32664705882365) [selected in the left nav pane. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=151.47619999999995) [click on Query Table, and BigQuery will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=153.57046666666668) [set up the query for you. Now the query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=155.54960000000005) [doesn't specify the columns that you want](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=158.024) [to query. That's up to you to define.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=159.83933333333331) [Because our query is incomplete, columns](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=162.56981818181822) [or fields haven't been specified, which is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=164.74127272727273) [why the query validator shows us a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=167.03918181818176) [warning. When you're using the web](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=169.53236363636358) [console, you can specify the fields that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=171.79490909090896) [you want to query by clicking on the field](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=173.64028571428568) [within the schema. Notice that in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=175.9183076923077) [schema, when I click on a particular](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=178.16046153846156) [field, that field will be populated in my](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=180.4409090909091)[query. I click on OrderDate, and my query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=183.15654545454544) [now selects the OrderDate field from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=186.0965) [e\_commerce\_data. As we include OrderDate,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=188.39633333333333) [notice that the query validator has](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=190.60799999999995) [updated. This is now a valid query which](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=192.94925000000003) [will process 9. 66 KB of data. Let's click](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=195.6539166666668) [on another column here. I'm going to now](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=199.40666666666658)[click on the customerName column that has](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=202.28600000000003) [been added to my query. You can see that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=204.33700000000007) [the amount of data processed by my query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=206.9819999999999) [has now increased to 27. 82 KB. Go ahead](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=209.4175) [and hit the Run query button, execute this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=212.80599999999993) [query, and you'll see the result right](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=215.79084615384613) [here within your browser. All of the data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=218.3313076923076) [that you've loaded in from the CSV file on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=220.75614285714286) [Cloud Storage is available to you now](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=222.94571428571433) [within BigQuery. The data has been loaded](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=225.13525) [into BigQuery and is now stored in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=227.67284615384608) [BigQuery in addition to the CSV file which still exists on Cloud Storage.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=2&mode=live&start=230.3172307692306)

[Configuring Additional Settings While Importing JSON Files](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live)

[In this demo, we'll see how we can load](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=0.318) [JSON data from Cloud Storage buckets into](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=4.019571428571429) [BigQuery. This time we'll also explore](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=6.734666666666667) [some of the other configuration options](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=8.710666666666665) [available when we are importing data.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=10.81425) [Within the spikeysales\_dataset that I have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=13.173) [selected on the left nav pane, I'm going](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=15.382000000000003) [to create a brand-new table, and I'm going](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=18.18228571428572) [to use source data, which is located on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=20.54742857142859) [Google Cloud Storage, exactly like we did](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=23.017999999999997) [earlier. This time, the GCS URL will point](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=25.27199999999999) [to the data. json file that's stored on my](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=27.850999999999996) [Cloud Storage bucket. I need to update the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=30.630615384615385) [file format to specify that it's Newline](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=32.721076923076936)[delimited JSON. I'll leave the other](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=35.65566666666667) [options as is and specify a name for this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=37.82442857142858) [table. I'll call it data\_table\_json. By](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=40.28464285714287) [default, BigQuery creates native tables.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=43.254499999999986) [Native tables are when the data itself is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=45.951) [stored within BigQuery. It's not stored in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=48.800454545454535) [an external source. I'm going to have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=51.370666666666665) [BigQuery auto-detect the schema for this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=53.99858333333333) [table, and I'm going to expand the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=55.799416666666666) [Advanced options menu here at the bottom.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=57.795) [Within Advanced options, I can specify how](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=60.583) [I want to write data into this table. I](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=62.52666666666668) [can write to the table if the table is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=64.96425) [empty, I can append data to the table, or](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=66.91050000000003) [I can overwrite data. I can indicate](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=69.10500000000002) [whether I want the newly created table to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=71.19800000000006) [be partitioned or not. We haven't](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=73.64150000000001) [discussed partitioning yet. I'm going to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=75.39318181818182) [go ahead with the No partitioning option.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=76.90572727272728) [When you're reading in data from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=79.10900000000001) [real-world sources, it's quite possible](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=81.27950000000001) [that there are errors in individual](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=83.01339999999999) [records. You can specify the maximum](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=85.03419999999997) [number of errors that you can tolerate.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=86.94891666666668) [You can enter the number of rows with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=89.158) [errors that can be present when we read in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=91.03628571428575)[data. I'll just put in 10 here. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=93.60689999999998) [also have BigQuery be flexible in how it](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=97.074) [reads unknown values. Columns or fields](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=100.098) [which do not match the schema will be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=101.96146153846153) [ignored and not loaded into BigQuery if](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=103.9066923076923) [you check this checkbox. I'm going to hit](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=106.04855555555557) [Create Table, and I'll take a look at my](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=108.37433333333333) [job history to see the latest upload of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=110.6273333333333) [data into my BigQuery table. As usual, you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=113.41345454545451) [can explore the schema and data for this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=116.13076923076925) [table by clicking on the link on the left](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=118.29815384615391) [navigation pane. Here is the schema for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=121.21222222222222) [this table that has been automatically](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=123.32000000000001) [detected by BigQuery. Clicking on this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=125.036) [Preview link will allow you to explore the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=127.40099999999998) [data stored within this table, our](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=130.52880000000002) [geographical data. Click on the Query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=132.8172000000001) [Table link here to run a query on this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=134.92500000000004) [newly created table. BigQuery will set up](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=137.9512500000001) [the query for you in the query editor. You](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=140.02366666666668) [can choose the schema to select those](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=142.43623076923078) [fields that you're interested in, and you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=144.43284615384613) [can see how the amount of data processed](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=146.48871428571428) [changes based on the columns that you add.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=149.00757142857137) [When we have just the name column, we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=151.74990909090906) [process 1. 96 KB of data. When we add](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=154.67908333333332) [additional columns, such as the location](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=157.68583333333325) [column, we now process 3. 8 KB Of data.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=159.77215384615383) [I'm going to add in another column here,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=162.963) [that is the status column, and now we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=164.94576923076923) [process 4. 45 KB of data. I'm going to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=167.15979999999996) [execute this query, and here is the result right here on screen.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=3&mode=live&start=170.08419999999984)

[Creating External Tables with Data in GCS Buckets](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live)

[In this demo, we'll see how we can load](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=0.196) [AVRO data from Cloud Storage, but this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=3.7002142857142863) [time we'll create an external table where](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=6.2951538461538465) [the data in AVRO format is not stored](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=8.563692307692309) [within BigQuery, instead it continues to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=11.357818181818182) [remain in the Cloud Storage Bucket. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=13.604545454545455) [begin the same way as before. We click on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=16.81557142857143) [the Create Table link within the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=18.917714285714304) [spikeysales\_dataset, and I'm going to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=20.683600000000002) [choose Google Cloud Storage for my source](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=22.762600000000006) [data. Instead of specifying the URL for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=25.25366666666667) [your file directly, you can also choose to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=27.430083333333343) [browse your Cloud Storage bucket. I'm](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=30.379416666666664) [going to click on the Browse option here.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=32.44433333333333) [This will bring up a UI, and I can see the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=33.887) [buckets that I have available.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=36.45481250000001) [Spikey\_bucket is what I'm interested in,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=37.622) [and within that I'm interested in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=39.53659999999999) [data. avro file. Click on the Select](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=41.791923076923084) [button at the bottom in order to select](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=44.07607692307694) [this particular file, and now I'll move on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=46.62730769230768) [to the table that I want to create. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=49.143) [time my destination table is going to be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=51.76907142857144) [an external table. If you click on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=53.95078571428571) [Table type menu, you'll see two options,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=55.87821428571426) [Native Table, that is the default, that's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=57.99260000000001)[what we've been creating so far, and we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=60.354) [can also create external tables, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=62.54600000000001) [that's the choice I'm making here. If you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=64.48433333333334) [already have data in an external source,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=67.20842857142857) [and you don't want to import this data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=68.92842857142857) [into BigQuery, you can have it continue to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=71.01084615384613) [remain in this external source, such as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=73.28776923076916) [Google Cloud Storage buckets, or even](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=75.53311111111114) [Google Drive, and still query the data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=77.69566666666665) [from within BigQuery. That's what an](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=80.57149999999996) [external table does. External tables](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=83.13600000000001)[reference data from an external source.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=85.35600000000002) [I'm going to call this table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=87.47119999999998) [data\_table\_external\_avro. Note that we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=89.312) [can't specify a schema. For external](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=92.09450000000001)[tables, the format of the external source](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=95.6239090909091) [defines the schema for the table. You](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=98.23809090909094) [can't explicitly specify a BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=100.93681818181815) [schema. Click on the Advanced options and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=102.88863636363631) [see what's available here. You can specify](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=105.1618) [the number of records which can have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=107.35872727272728) [errors. You can also choose to ignore](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=109.55609090909093) [unknown values. Click on the Create Table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=111.94375) [button and wait for this table to be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=114.14357142857142) [created. Data\_table\_external\_avro is an](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=116.55728571428568) [external table, and if you click on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=117.91559999999998)[link you can see a few differences in what](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=120.64207142857143) [we have available to view within a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=122.99171428571427) [browser. You can see that there is no](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=124.87578571428571) [Preview tab for external tables. You can't](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=127.11521428571427) [automatically preview data that has been](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=129.4754) [stored in an external source. The schema](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=131.756) [for this table has been auto-detected](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=134.30983333333336) [correctly and is available to us. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=136.46671428571426) [click on the Details tab and see](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=139.08172727272725) [additional metadata information just like](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=141.24727272727264) [we did earlier. For external tables,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=143.09166666666667) [BigQuery is unable to automatically detect](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=145.543) [the number of records and the amount of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=147.53919999999994) [data in that table. We'll know this only](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=149.9862857142857) [when we execute a query on that table.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=152.21885714285713) [There is extra information available here](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=155.20318181818175) [if you scroll down. We have external data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=157.56199999999998) [configuration, which points to the source](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=160.2579999999999) [where the data is actually located, which](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=162.70272727272726) [happens to be the data. avro file in our](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=165.61254545454545) [spikey\_bucket. I'm going to run a query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=169.03745454545455) [here which selects three fields from the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=171.58120000000002)[external table. I'm going to limit my](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=174.10493333333338) [query to return just 1000 records.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=176.4278181818181) [BigQuery has no idea how much data it's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=178.35) [going to process for the external table.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=179.99615384615376) [Hit Run query, and you'll be able to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=181.69533333333334) [observe the query state much longer to run](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=184.37666666666678) [when the data is stored externally. And](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=187.97600000000003) [here are the query results, and notice](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=191.177) [that this data is available to us from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=193.08099999999993) [within BigQuery even though the data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=195.64764285714284) [itself lives on Cloud Storage. If you want](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=198.06092857142852) [to take data from within BigQuery and save](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=201.00050000000005) [it to another destination, you can do so](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=203.47650000000016) [using the Save As. You can download this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=206.00277777777777) [as JSON, CSV, you can save as another](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=208.62838461538462) [table, you can also save to Google Sheets.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=211.32315384615384) [This is fairly straightforward, as easy as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=214.535090909091) [clicking the choice that you are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=216.92499999999998) [interested in. You can try it out and see how it works.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=4&mode=live&start=218.41899999999995)

[Partitioning in BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live)

[Data warehouses store huge amounts of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=0.308) [data, and if you have to query all of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=2.4707692307692306) [records within a certian table, your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=5.972923076923076) [queries will be inefficient, which is why](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=7.9307692307692275) [you might need to partition data to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=10.448) [improve performance. Partitioned tables](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=13.276) [are a special kind of table in BigQuery.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=14.675) [The data within the table is divided into](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=17.039) [segments called partitions. It makes it](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=19.840454545454534) [easier to manage and query your data from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=21.863230769230768) [within partitions. Unlike in a data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=24.455846153846153)[warehouse such as Hive, where partitioning](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=26.29166666666667) [is more general purpose, BigQuery supports](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=28.07316666666668) [only two types of partitioning. It's less](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=30.42566666666667) [flexible than Hive here, partitioning](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=33.46927272727273) [based on ingestion time and partitioning](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=35.58245454545455) [based on a particular column which has](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=38.04746153846154) [time or date information. These are the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=40.75807692307692) [two kinds of partitioning that BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=43.1545) [supports. As you can see, both of these](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=44.84949999999999) [are time and date-based partitioning.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=47.33058333333335) [Ingestion time partitioning is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=48.901)[specifically useful for streaming data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=50.3601111111111) [such as log messages or files. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=52.184) [ingestion time for your data is the load](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=54.497769230769215) [time or the time at which data arrives at](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=57.23683333333333) [BigQuery. BigQuery will take care of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=60.638083333333306) [loading data into daily date-based](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=63.32145454545453) [partitions. Let's say I upload data from a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=65.62690909090908) [particular dataset today, and then another](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=68.36650000000003) [dataset tomorrow. BigQuery will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=70.70912500000001) [automatically partition this data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=72.53062500000003) [internally. When a table is partitioned](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=74.07709999999999) [based on ingestion time, BigQuery will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=76.25929999999995) [automatically add a pseudo-column called](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=79.82800000000003) [\_PARTITIONTIME. This column can be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=83.03300000000006) [queried. It's a pseudo-column in that it](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=84.68800000000002) [doesn't really exist; it's a part of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=86.46250000000003) [BigQuery metadata. Recent versions of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=89.37849999999997) [query also allow you to perform](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=91.48636363636363) [column-based partitioning where you can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=93.31690909090908)[partition data that is stored in a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=94.82199999999999) [particular column in your dataset. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=96.922) [column must be of type DATE or TIMESTAMP.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=99.30749999999998) [Partitioning on other columns are not](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=102.5432) [supported in BigQuery at this point in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=105.0938) [time. When your data is partitioned by the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=107.39191666666665) [values in a particular column, there is no](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=109.72149999999999)[additional PARTITIONTIME pseudo-column](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=112.14149999999995) [that is added to your data. BigQuery also](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=113.59775) [creates two special partitions called NULL](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=118.02180000000001) [and UNPARTITIONED. Records which have null](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=120.91020000000006) [values in the column where we've performed](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=123.236) [our partitioning will go into the NULL](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=125.62125) [partition. Records which lie outside of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=128.39885714285714) [the date range for our partition will go](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=130.3945454545455) [into the UNPARTITIONED partition.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=133.28033333333335) [Partitioning of data is an internal](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=135.237) [BigQuery concept, and BigQuery completely](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=137.97149999999996) [takes care of partitioning your data. To](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=139.877) [improve query performance, everything is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=142.2718) [abstracted away from you. Sharding of data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=144.30580000000003) [involves splitting up your data based on a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=146.93949999999998) [particular value in a column. Sharding is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=149.62349999999995) [an actual split where you store data in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=152.0105384615385) [different tables. Let's compare and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=154.86277777777778) [contrast partitioning data with sharding](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=157.1566666666667) [data. With partitioning, you split data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=159.3366) [into logical horizontal groups which are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=161.74740000000006) [time-based in the query. With sharding,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=164.06299999999993) [you can do the same. You split data into](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=166.11950000000002) [logical horizontal groups. Both achieve](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=168.56975000000014) [the same objective. Data partitioning, as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=170.66428571428574) [you'll see in just a little bit, is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=172.86410000000004) [completely managed and handled by](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=175.24957142857141) [BigQuery. You simply have to configure](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=177.45742857142852) [your table to be a partitioned table based](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=179.25233333333335) [on ingestion time or column-based](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=181.56671428571428) [partitioning. If you want to perform](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=183.66528571428574) [sharding using BigQuery, you have to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=185.68125000000006) [manually set up the sharded tables](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=187.59675000000013) [yourself. With partitioning, BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=190.12537500000005) [gives you improved performance, and takes](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=191.73458333333332) [away a lot of the overhead associated with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=193.43608333333327)[tables. Metadata and access control is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=196.38774999999998) [automatically applied to partitioned](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=199.35566666666665) [tables. With sharding, though, you have to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=201.0023333333333) [individually configure the metadata and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=203.62679999999995) [access control to the individual shards.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=205.70357142857142) [Unless you have an explicit reason to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=209.313) [shard your data, you should go with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=211.04307692307694) [partitioning. It's far more efficient as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=212.94080000000002) [performed in BigQuery. Sharding tends to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=215.4296000000001) [be less efficient. Partitioning is less](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=217.83745454545453) [flexible though. You can't partition on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=220.1643636363636) [any column in BigQuery, only on time and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=222.2906666666667) [date-based columns or ingestion-time](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=224.992) [partitioning. With sharding, you can shard](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=227.3208) [on any column value. Sharding tends to be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=229.91411111111117) [more flexible. If you want to improve](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=232.7446666666667) [query performance in BigQuery by having it](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=234.8825833333334) [query data in smaller segments, you should](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=237.8149090909091) [prefer partitioned tables as opposed to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=240.80516666666668) [sharded tables in BigQuery. Partitioned tables in BigQuery just perform better.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=5&mode=live&start=243.20866666666674)

[Creating and Querying Ingestion Time Partitioned Tables](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live)

[In this demo, we'll see how we can create](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=0.14) [and use partitioned tables. We'll work](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=4.401846153846154) [with both ingestion-time partitioned](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=6.886) [tables, as well as column-based](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=8.066) [partitioned tables. We'll start off in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=9.6256) [BigQuery UI within the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=12.2828) [spikeysales\_dataset. We're going to create](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=13.7252) [a new table that's going to be a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=15.433199999999998)[partitioned one. Here we'll call the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=18.18633333333333) [destination table e\_commerce\_partitioned.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=20.260333333333328) [It's going to hold e-commerce data. I'm](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=21.676500000000004) [going to specify the schema for this table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=25.170923076923078) [in a JSON format, so I'm going to slide](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=27.434307692307687) [over to Edit as text. Let's get the schema](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=30.259999999999994) [specification from the e-commerce\_data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=33.64466666666666) [table that we had set up earlier. I'm](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=35.33533333333332) [going to open up Cloud Shell here and get](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=37.42949999999998) [the schema for the table that already](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=39.84023076923077) [exists within our BigQuery. I use the bq](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=42.427538461538475)[show command with the --schema option. I](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=45.5824) [indicate that the format in which I want](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=48.3802) [to view the schema is prettyjson, and I](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=50.64580000000001) [specify the e\_commerce\_data table within](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=53.42099999999999) [my spikysales\_dataset. And here is the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=56.110999999999976) [schema for this table displayed in JSON](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=58.355000000000004) [format. I'm going to copy over this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=60.399000000000015)[schema. This is the same schema which I'm](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=62.72749999999999) [going to use for the ecommerce\_partitioned](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=65.682) [table. Switch back to the other browser](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=68.43600000000002) [window where I have our BigQuery open.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=71.23638461538461) [We're in the process of creating the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=73.968) [e-commerce partitioned table. I'll place](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=76.05680000000001) [the schema in here within this window.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=77.77311111111112) [This is the Edit as text option. I'm going](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=80.647) [to click on Advanced options here and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=83.10330769230771) [specify that this is a partitioned table.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=85.21079999999999) [The default is No partitioning. Expand the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=87.581) [menu, and I'm going to choose to partition](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=89.69091666666668) [by ingestion time. Observe that the query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=92.59749999999998) [shows me other partitioning options that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=95.20972727272725) [are available to me based on the schema](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=97.02881818181812) [that I've specified. The two date/time](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=99.63080000000001) [columns in my schema specification are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=101.78409090909092) [OrderDate and ShipDate, and those are the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=104.12027272727276) [other options available to me. This is how](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=106.75300000000001) [I do column-based or field-based](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=109.777) [partitioning. I'll just go with Partition](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=111.727) [by ingestion time, that is our first](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=113.50584615384612) [example, and I'll turn my attention to the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=115.45023076923069) [next option here, the partitioning filter.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=117.98630769230772) [Now the partitioning filter basically](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=119.922) [makes the WHERE clause that specifies the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=121.99149999999999) [partition from which you want to query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=124.74572727272727) [records compulsory. If you check on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=127.14227272727267) [Require partition filter, any query that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=129.45950000000005) [you run on this data must specify the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=131.4185000000001) [partition in the WHERE clause. It can't be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=134.16816666666674) [left out, you can't query all of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=136.708) [partitions in one go. I'm going to leave](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=138.86533333333333) [this unchecked, and go ahead and create](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=140.83399999999997) [this partitioned table. The partitioned](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=142.39149999999995) [table has been created. When I click on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=144.38049999999996) [the table on the left nav pane, the data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=147.12273333333331) [for this table immediately tells me that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=149.3181333333333) [this is a partitioned table, and here is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=151.50200000000004) [the schema that we specified in JSON](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=154.12472727272726)[format. You can take a look at the details](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=156.28709090909084) [for this table. The details will also tell](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=158.52545454545452) [you this is a partitioned table, and it's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=160.53854545454547) [partitioned on the field \_PARTITIONTIME.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=163.59199999999998) [The presence of this pseudo column should](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=167.357) [immediately indicate to you that this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=169.317) [table is partitioned on ingestion time.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=171.37125000000003) [For column-based or field-based](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=174.174) [partitioning, this pseudo column](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=176.1695) [\_PARTITIONTIME is not present in your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=178.165) [table. If you click on the Preview tab](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=181.01071428571427) [here, this will show you that this table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=183.19799999999998) [is completely empty at this point in time.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=185.1271111111111) [We haven't loaded in any data yet. In](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=186.856) [order to load data into this partitioned](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=189.97516666666667) [table, let's query data from the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=191.86633333333324) [e\_commerce\_data table. Click on the Query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=193.78336363636362) [Table button and let's query 1000 records](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=196.29245454545446) [from e\_commerce\_data. We'll simply SELECT](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=199.63899999999998) [\* from the e\_commerce\_data table. I'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=202.02374999999998) [specify within the query settings, that is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=204.5496923076923) [available in the More menu, that I want](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=206.61253846153852) [the destination table to be our](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=209.2219090909091) [partitioned table. E\_commerce\_partitioned](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=211.49372727272726) [is the name of our destination table. I](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=212.65325) [accept the other options, and go ahead and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=215.73153333333332) [click on Save in order to load this data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=217.8317999999999) [into the partitioned table. Now that I've](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=220.64300000000003) [specified my query settings, I just need](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=223.14484615384617) [to execute this query in order to populate](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=225.13715384615392) [my partitioned table. Observe something](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=227.932875) [here just under the query editor. These](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=229.82774999999998) [tags give you quick info about the query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=232.31925) [settings that apply to the current](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=234.73725000000013) [execution of this query. Click on Run](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=236.658) [query and go ahead and populate our](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=239.11849999999995)[partitioned table. Once the query has run](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=241.70499999999987) [through, if you click on the partitioned](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=243.45438461538464) [table and click on the Preview tab, you'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=244.86892307692315) [see that this table now has data. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=247.71299999999997) [table has a pseudo column called](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=250.6850909090909) [\_PARTITIONTIME, but you can't explicitly](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=252.66563636363628) [view the information in this column when](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=254.33926666666665) [you take a look at the preview. Let's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=256.8121333333333) [switch back to our query editor, and see](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=259.52153333333337) [how we can run a query on a partitioned](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=261.4138000000001) [table. The SELECT \* FROM table is exactly](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=263.8294)[the same as before. The interesting](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=266.4864666666667) [details lie in the WHERE clause. Notice](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=268.57225) [that you can reference the \_PARTITIONTIME](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=271.3575833333333) [column within the WHERE clause. Our table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=274.4390833333332) [is ingestion time partition, and we loaded](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=277.6631538461539) [all of the data in at one go, which means](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=279.9596923076924) [only the partition for the current date](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=283.1836923076923) [has data within it. I'm looking for all](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=285.414) [records that have been ingested at this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=288.08799999999997) [particular date, 9 September 2018. I'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=291.2107500000001) [execute this query, and the results will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=294.44768750000003) [be all of the data in my table. All of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=296.27250000000015) [data is currently present in the same](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=299.198) [partition because they all have the same](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=301.1579999999998) [ingestion time. I'm going to update the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=303.20569230769235) [WHERE clause of our query to query a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=305.2884615384616) [different date. Now PARTITIONTIME should](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=308.0017777777779) [be 2nd September 2018, and you can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=309.86889999999994) [immediately see that the query validator](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=312.615) [tells us that this query will process just](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=314.80172727272713) [0 bytes. There is no data in this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=317.69125) [partition. Execute this query, and you'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=320.53725000000003) [see that it returns no results. All of our](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=322.53118181818184) [data is present in a single partition. If](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=325.3310000000001) [you switch the WHERE clause back to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=327.5397142857143) [September 3, you'll see that it now](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=329.37871428571447)[processes all of the data, all of the records in our table.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=6&mode=live&start=331.955)

[Creating Column Based Partitioned Tables Using the Command Line](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live)

[We'll create a new partition table. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=0.23) [time we'll do two things differently.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=3.1974166666666664) [We'll use the command line, and secondly,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=5.664) [we'll have this table partitioned on a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=8.093) [particular field. We'll use the bq. make](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=10.741333333333337) [--table command here, and we specify that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=13.23838461538461) [the schema of the table should contain an](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=15.674923076923067)[OrderID, an OrderDate, an order Quantity.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=18.858700000000006) [We want this table to be partitioned on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=21.249750000000002) [the OrderDate column, which we specify](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=24.385083333333338) [using the --time\_partitioning\_field flag.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=28.39866666666667) [We'll call this table the order\_data table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=31.296) [within the spikeysales\_dataset. Go ahead](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=34.73579999999999) [and hit Enter, and this will create the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=36.71933333333333)[new table. We can now switch back to the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=38.75666666666665) [web console. If you click refresh on your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=41.3247777777778) [browser window, you'll be able to see this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=43.58700000000002) [new order\_data table within the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=46.043142857142854) [spikeysales\_dataset. Click on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=48.55885714285713) [order\_data, and you can see that this is a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=49.893428571428565) [partitioned table, and you can see the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=52.38771428571427) [schema for this table as well. If you take](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=54.30109090909092) [a look at the table details, you'll find](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=56.84657142857144) [that this table has been partitioned by](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=59.2854285714286) [the OrderDate field, and it's partitioned](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=61.93466666666667) [by day. The PARTITIONTIME pseudo-column is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=64.53666666666668) [only available for tables that have been](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=66.80759999999998) [partitioned based on ingestion time. It's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=69.2495) [not available in this table, and this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=71.2360909090909) [pseudo-column cannot be used in queries to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=73.36472727272722) [this table. This table is currently empty.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=76.015) [Let's populate it using the bq command on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=78.56191666666666) [the command line. We want to run a query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=81.19113333333334) [using bq, and the results of that query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=83.71233333333339) [will feed into this newly created](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=86.30918181818181) [order\_data table. The --location flag](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=88.70154545454544)[specifies where we want the query to be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=90.6075) [run. Nouse\_legacy\_sql indicates that we're](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=93.56350000000002) [using standard SQL for our query. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=95.91019999999999) [destination\_table that we want to populate](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=99.25218181818182) [here is the order\_data table that we just](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=101.50927272727274) [created. This is a table that has been](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=104.09369230769231) [partitioned on the OrderDate column. We'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=106.25307692307693)[populate order\_data with records from the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=109.40799999999999) [e\_commerce\_data table. So we select the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=112.70150000000001) [OrderID, the OrderDate, and Quantity from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=115.15250000000003)[e\_commerce\_data. We'll query 1000 records](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=118.01099999999998) [from this table, and we want only those](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=120.73266666666662) [records where OrderDate is not null. Once](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=123.94776923076918) [the query has executed successfully, you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=126.58833333333332) [can use the bq show command in order to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=128.6963333333333) [see the metadata information for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=132.117) [order\_data. You can see that order\_data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=134.19699999999997)[now has 1000 rows. You can also see here](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=136.8674444444445) [that this table has been partitioned using](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=139.9421538461538) [the values in the OrderDate field. Let's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=141.7217692307691) [query this order\_data table from the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=145.14339999999993) [command line itself using a bq query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=147.93) [command. We want to select all those](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=150.29250000000005) [records where OrderDate is the 1st of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=152.47799999999995) [November 2014. And you can see here that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=154.634) [there is exactly one record in this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=157.9613846153845) [partition, one order for this date. You](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=160.90275000000003) [can try a couple of other queries if you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=163.725) [want to, but the significance and the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=165.85799999999995) [performance improvement when you query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=168.20800000000003) [partitioned tables will only be apparent](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=170.084) [to you when you have a huge dataset, a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=171.88400000000007) [table with many, many rows. And on this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=174.89200000000002) [note, we come to the very end of this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=177.923625) [module where we saw how we could import](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=180.20849999999993) [data into BigQuery from Google Cloud](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=182.7429090909091) [Storage. We saw that BigQuery works with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=185.0212727272728) [CSV, JSON, as well as AVRO formats. You](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=187.36992307692304) [can also create external tables where the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=190.01158333333333) [data continues to live in external storage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=192.42366666666666) [but can be queried from within the query.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=194.96900000000002) [We also saw how we could improve the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=198.081)[performance of our queries by partitioning](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=200.08223076923068) [our table so that the queries run on a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=201.67791666666668) [smaller dataset. We saw that there are two](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=204.78216666666677) [kinds of partitioning, ingestion time](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=206.75866666666664) [partitioning and partitioning based on a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=208.21533333333332) [column which is of type, date, or](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=210.65533333333332) [timestamp. In the next module, we'll see](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=213.42600000000004) [how we can set up BigQuery with nested and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=215.35342857142865) [repeated fields. We'll study some advanced](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=217.8308888888889) [analytical queries, including windowing functions.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bcc8725b-2c59-43d8-a2b9-90dbc956eea9&clip=7&mode=live&start=220.42822222222227)

[Performing Advanced Analytical Queries in BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live)

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[Hi, and welcome to this module where we'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=0) [see how we can perform some advanced](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=3.24923076923077) [analytical queries in BigQuery. We start](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=6.360666666666667) [off by understanding some complex field](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=9.1302) [types that BigQuery can support. BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=10.9548) [supports both nested, as well as repeated](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=12.958600000000002) [fields. Nested fields in BigQuery are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=15.504666666666667)[effectively like structs in programming](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=18.220666666666663) [language. In fact, we use the STRUCT](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=20.211999999999996) [keyword to create nested fields. This is a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=22.745999999999984) [logical grouping of fields, such as city,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=25.553545454545464) [state, and other information within an](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=28.269199999999998) [address. Repeated fields in BigQuery are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=30.905599999999993) [effectively array fields. These are fields](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=33.606249999999996) [which contain repeated information or a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=36.029999999999994) [list of values. BigQuery also supports](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=38.16399999999998) [subqueries which allow you to perform very](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=40.377900000000004) [complex analysis, and it also has support](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=43.054) [for windowing functions. Windowing](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=46.69680000000002) [functions are where you can partition and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=48.531363636363636) [order data within a window and then perform an aggregation over the window.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=0&mode=live&start=50.44490909090907)

[Normalized Storage in a Traditional Database](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live)

[When you work with data stored in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=0.465) [traditional relational databases, the data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=4.1666) [is typically in normalized form. Let's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=6.505000000000001) [understand what normalized storage means](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=8.669599999999999) [before we see how BigQuery is different.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=10.092599999999996) [In a traditional database, the objective](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=12.428300000000002) [is to minimize redundancy, so data is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=14.822900000000006) [stored in a very granular form. The same](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=17.475500000000004) [piece of information will be stored in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=20.198692307692305) [just a single table, and other tables will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=21.842615384615375) [reference this information. In an](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=24.318)[organization, if you have a relational](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=26.008181818181818) [database to store employee information,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=27.622727272727275) [here are bits of information that we might](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=29.08109090909091) [want to capture, and we'll store each](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=31.685454545454554) [logical group in a different table, so you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=34.464000000000006) [might have three tables to minimize](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=37.60383333333334) [redundant storage of data. You might have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=39.66433333333336) [an employee details table, a table which](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=42.009499999999996) [holds the subordinates of a particular](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=44.276333333333326) [employee if he or she is a boss, and then](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=45.96066666666666) [you'll have the employee address table.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=48.65225)[Each of these three separate tables will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=50.507) [hold different information about an](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=53.45470000000002) [employee. One will hold personal](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=55.5355) [information, another subordinate](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=57.57924999999999)[information, and the third, addresses.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=58.94171428571428) [Let's take a look at these tables in turn](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=61.326) [starting with the employee details table.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=63.77192307692307) [All of the employees' personal information](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=65.57554545454546) [will be in one table, and each employee](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=67.72518181818187) [will have a unique ID that can be used to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=70.36928571428572) [reference that particular employee. All](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=73.6401)[employees who are managers will be present](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=75.87060000000001) [in the Employee Subordinates table.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=78.8775) [Employees will be referenced by IDs](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=80.915) [everywhere else other than the main](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=82.97518181818181) [Employee Details table. You might have a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=85.0731) [third Employee Addresses table, which](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=87.74080000000002) [holds contact information for a particular](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=89.78429999999999) [employee. Notice how logical groups of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=92.34689999999996) [information that we have about an employee](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=94.35127272727271) [is split across multiple tables, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=96.6913) [employees are always referenced using](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=99.37509999999999) [their unique IDs. This granular](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=101.88875) [representation of data across multiple](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=104.81812500000001) [tables is called normalization, and this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=106.73636363636365) [is how typically data is present in a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=108.73490909090913) [traditional database. If you want to query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=112.18533333333336) [information that spans more than one](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=114.56850000000001) [table, you'll have to perform a join](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=116.35950000000004) [operation. Let's say you want to query for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=118.65514285714282) [Emily's department and all of the people](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=120.59800000000003) [who report to her. You'll have to perform](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=122.27516666666666) [a join operation across two tables using](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=124.65250000000002) [the employee's unique identifier. Remember](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=127.59150000000001) [the objectives of traditional database are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=130.0205) [different, which is why data is stored in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=132.30949999999993) [a normalized form. We want to minimize](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=134.46620000000004) [redundancy and minimize our storage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=136.87619999999995) [requirements. Remember, this space was](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=138.9376999999999) [expensive back in the day. We used foreign](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=140.79533333333333) [keys to ensure that joins we performed](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=143.68400000000003) [across multiple tables were valid. All](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=146.20866666666674) [updates to information was in one table or](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=148.445) [one location. There was no duplication of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=151.475) [data. This made it easier for databases to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=154.36775000000003) [provide transactional support and support for ACID properties.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=1&mode=live&start=157.3605000000001)

[Denormalized Storage, Nested, and Repeated Fields](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live)

[BigQuery is a data warehouse, and not a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=0.268) [traditional RDBMS. Data in BigQuery is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=4.5352000000000015) [stored in denormalized form. Let's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=7.102499999999999) [understand what that means. Denormalized](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=9.055555555555555) [data basically means that data is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=11.318333333333333) [compressed in such a way that all of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=13.5398) [data regarding a particular entity is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=16.1312) [stored in a single table so that it can be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=17.783142857142856) [read in one operation. Analytical data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=20.410285714285706) [warehouses try to pack together as much](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=23.015499999999992) [information about an entity as possible so](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=25.877076923076924)[that they can be queried to extract](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=27.693846153846156) [business insights. Denormalized storage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=30.193000000000005) [works for data warehouses, because this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=32.14100000000001) [space nowadays is very, very cheap.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=34.9514) [Storage capacity on distributed clusters](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=37.706) [is no longer a constraint in the modern](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=39.44750000000001) [world. When we have denormalized storage,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=42.301333333333325) [you don't have to set up foreign key or](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=44.526) [other constraints in order to make sure](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=47.17971428571426) [you reference data in a unique way.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=49.26777777777777) [Denormalized storage works very well when](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=51.416)[most of the operations that you perform](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=53.70620000000001) [are read operations. They don't work very](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=56.145) [well if you want to perform a lot of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=58.27300000000002) [updates to your data. When we store data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=60.715) [in denormalized form, we are optimizing](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=63.097) [our data layout to reduce the number of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=65.098) [disk seeks we have to perform when we read](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=67.71500000000002) [in data. We store data for an entity in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=70.66528571428572) [one location, so all of the employee](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=73.66614285714284) [information will be present in a single](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=75.91107692307692) [table. We don't worry about redundancy.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=78.12038461538461) [What we want to do is to minimize joins.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=80.22207142857147) [Denormalized storage works very well for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=83.437) [extremely large datasets. Join operations](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=86.65100000000002) [on extremely large datasets can get very](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=89.261) [expensive. That's what we want to avoid](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=92.77149999999995) [here. Let's say we want to query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=95.19214285714287) [information about the employee, Emily, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=97.61418181818183) [all of her subordinates. We don't want to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=99.66566666666667) [perform joins on multiple tables, instead,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=102.063) [all of the subordinate information should](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=104.20280000000001) [be included in the same table that holds](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=106.68440000000002) [information about Emily. So we have a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=109.85459999999999) [single large employee table. This will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=112.75650000000002) [hold employees' personal information, as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=115.17340000000002)[well as the subordinates who report to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=116.91440000000004) [that employee. A single manager can have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=119.73566666666665) [multiple reports, which means the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=122.21999999999997) [subordinate information has to be in a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=123.816) [list form, so there are multiple](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=127.03599999999996) [subordinates associated with a single](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=129.672) [manager. The subordinate field is a part](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=131.817) [of the larger employee table. It will be a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=134.1267272727272) [repeated field of subordinate IDs. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=137.07044444444446) [same table should hold the contact](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=139.1576) [information for individual employees as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=141.35720000000003) [well. We can logically group the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=143.361) [individual fields which corresponds to an](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=146.07299999999998) [address into a single field, which is of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=148.2671538461539) [the struct format. A structure is a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=150.84746153846166) [logical grouping of fields, which means](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=153.4872) [city information and zip code information](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=155.76436363636364) [will be nested together into the same](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=157.96145454545453) [address field. In this way, the original](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=160.63422222222226) [employee data that was spread across three](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=163.1804) [different tables can be compressed](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=165.20479999999995) [together into a single table, provided it](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=167.31844444444445) [supports repeated fields and nested](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=170.5725) [fields. Now if you want to get all of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=173.00625) [information pertaining to a single](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=175.66080000000008) [employee, you can do so with one read](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=176.86513333333346) [operation of this larger denormalized](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=180.21507692307696) [table. BigQuery has the capacity to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=182.43584615384623) [support nested, as well as repeated](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=184.97500000000005) [fields. A struct is what creates a nested](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=187.48900000000012) [field. A struct is a logical grouping of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=189.64507692307697) [data which can have data of different](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=191.7188) [types. It can hold any number of fields or](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=193.7655999999999) [values, and each field is referenced by a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=196.64261538461528) [name. BigQuery also supports repeated](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=200.09175) [fields, which can be thought of as an](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=202.0980769230769) [array. An array is a collection data type.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=204.88823076923066) [There is no fixed size to the number of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=206.80900000000005) [values that can be stored in a repeated](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=208.955) [field, but all of the values in that field](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=211.25100000000006) [should be of the same type. BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=213.66809090909095) [supports repeated fields of primitive](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=215.6687777777778) [types or collection of nested fields as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=218.05766666666673) [well, so the type within the repeated field can be a record or a primitive type.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=2&mode=live&start=220.93746153846158)

[The UNNEST, ARRAY\_AGG, and the STRUCT Operators](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live)

[BigQuery has special operators that can be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=0.336) [used with nested and repeated fields.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=4.263) [Let's study those operators here in this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=7.629) [clip. The first is the UNNEST operator](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=9.465625000000003) [that allows us to flatten repeated fields.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=12.331999999999995) [We have the ARRAY\_AGG operator, which does](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=15.37) [the opposite of UNNEST. It aggregates](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=17.61318181818182)[primitive data to create a new repeated](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=19.661199999999997) [field. And finally, we have the STRUCT](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=22.34289999999999) [operator that allows us to create a nested](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=24.61800000000001) [field by logically grouping together](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=27.44888888888889) [different columns. The UNNEST operator is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=29.796111111111117) [used to split an array field into](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=32.33130769230769) [individual rows. Let's see how that works](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=35.12484615384617) [here with an example. Here a student with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=37.26744444444444) [ID 1 has had three different addresses](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=39.71499999999999) [during the course of his or her study.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=42.115999999999964) [Notice that the StudentId is a single](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=44.58314285714285)[value, and there are a list of addresses](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=46.66114285714285) [associated with that student. The UNNEST](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=49.74400000000002) [operator will flatten the list of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=51.988181818181815) [addresses associated with this particular](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=53.94472727272726) [student so that each address is present as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=55.72633333333333) [a separate record or row. Notice here that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=58.93966666666664) [the StudentId goes from one record to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=62.159) [three different records, and each record](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=64.98466666666667) [is associated with a separate address in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=67.39569230769231) [the list. UNNEST is a flattening of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=70.20215384615386) [repeated fields to have individual records](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=72.73445454545453) [associated with each repeated value. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=74.811) [ARRAY\_AGG operation does the opposite of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=78.49612499999999) [UNNEST. It aggregates individual records](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=80.56687499999997) [into a single array field or repeated](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=82.78299999999999) [field. Let's say we start off with three](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=86.05724999999995) [different records for a student, each](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=88.62266666666667) [associated with a different address. When](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=90.52263636363637)[we use the ARRAY\_AGG operation on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=92.93245454545459) [address field, you'll end up with one](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=95.55046153846152) [record and a list of addresses. We go from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=97.9105384615384) [three records for the student with ID 1 to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=101.11928571428575) [a single record corresponding to the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=104.42309090909092) [student, and his multiple addresses have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=106.66763636363638) [been compressed into a single list field](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=109.06083333333333) [or repeated field. And finally, we have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=112.19975000000005) [the STRUCT operator in BigQuery which](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=114.94100000000002) [aggregates individual columns or](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=117.03500000000004) [individual fields into a struct, or a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=118.75374999999998)[nested field. If you group these field](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=121.94983333333327) [values together, let's say that the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=124.56758333333336) [address information for a student was in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=126.61308333333339) [three separate fields, the street in one](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=128.88049999999996) [field, city in one, and the state in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=131.1712727272727) [third. Using the STRUCT operator on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=134.4497272727272) [street, city, and state, and aggregating](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=137.21177777777774) [it together into a single address field](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=139.8023333333333) [would give us us a logical group or a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=142.1554999999999) [nested field. The original field names in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=145.25938461538453) [the nested field can be accessed using the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=147.704) [dot notation, Address. Street, Address.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=150.30880000000008) [City, Address. State, as you can see here](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=152.2056923076923) [on screen. The three original fields now](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=155.52753846153837) [belong to a new nested field, the Address field.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=3&mode=live&start=157.77436363636366)

[Working with Nested Fields](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live)

[In this demo, let's see how we can create](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=0.333) [nested fields in BigQuery. Within the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=5.2151538461538465) [spikeysales\_dataset, let's create a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=8.3435) [brand-new table. We'll call this table the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=10.260500000000002) [special\_customer\_details table. Let's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=13.421142857142854) [define a few fields that will live within](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=14.584545454545454) [this table. We'll use the Add field button](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=16.844909090909095) [and specify a field for customer\_name,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=19.0885) [which is of type STRING. We want this to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=20.767) [be a required field. Go ahead and click on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=23.47392307692307) [Add field once again and add a second](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=26.365214285714284)[field. This contains the customer's date](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=29.06635714285714) [of birth, it's a string field, and it's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=30.558090909090915) [nullable. Go ahead and add a third field](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=32.632) [for addresses. An address can have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=35.38799999999997) [multiple components. We'll specify this as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=37.34463636363637) [a nested field or a record. The type of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=39.246090909090924) [data that we're going to store here is a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=41.68528571428574) [record, and for a record type you'll see](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=44.174200000000006) [that just next to the addresses field](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=46.56673333333335) [there is a plus button which allows us to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=48.77884615384616) [add subfields into the address record.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=51.82638461538465) [Click on the plus button and specify the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=54.11727272727273) [components that make up the addresses](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=57.13711111111112) [record. The first is the status of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=59.16844444444447) [address, whether it's an active or an old](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=61.004000000000005) [address. Then click on plus once again and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=62.98591666666666) [specify additional fields. We have a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=66.86524999999997) [string subfield corresponding to the city](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=69.29199999999999) [of the address. We can go ahead and click](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=71.23599999999998) [on Create table. This will create a new](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=73.43866666666665) [table with a nested addresses field. click](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=76.03763636363638) [on the special\_customer\_details table on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=78.83550000000001) [the left navigation pane, and if you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=80.92300000000003) [notice the schema, you'll see how a nested](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=83.56285714285715) [field is represented. We have addresses as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=86.14914285714289) [a record, and we have the status and the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=88.0912857142857) [city fields within the addresses record,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=90.27892857142854) [which are of type string. Let's insert one](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=92.46049999999998) [record into this table which has a nested](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=95.36574999999999) [field. We'll use the INSERT INTO command.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=97.94374999999997) [We want to specify values for the customer](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=100.05723076923074) [name, date of birth, and addresses. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=102.53842857142858) [have John here, born in 1989. Notice how](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=105.31707142857142) [we specify the values for the record](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=108.75764285714281) [addresses. The values for the subfields](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=111.7588) [within the addresses record are specified](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=114.31119999999997) [within parentheses. Execute this query. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=118.30533333333332) [get the results saying one row has been](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=120.97515384615382) [inserted. If you click on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=123.17146153846146) [special\_customer\_details table, you'll be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=125.17899999999997)[able to preview the data that now lives](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=126.56539999999995) [within this table. Notice how address.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=129.1912) [status and address. city contains John's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=131.9339090909091) [address components. For practice, let's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=135.46572727272732) [run another inert query to add another](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=137.79090909090905) [record to this table. This is for Rachel,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=140.4693636363635) [and notice once again we specify the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=143.05430769230776) [components of the address within](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=145.46757142857143) [parentheses. Execute the query and preview](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=148.09542857142856) [the data, and you can see that the new](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=149.8067142857143) [record for Rachel has also been added.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=151.941)[Let's see how we can query this table with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=154.3710769230769) [nested fields. I'm going to query for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=157.37909090909088) [customer\_name and the addresses record.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=159.53763636363624) [Remember, addresses is a nested field.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=161.3284) [Execute this query, and take a look at the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=163.552) [results at the bottom of your browser. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=165.8610625) [status and city fields are named using the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=168.00472727272728) [dot notation, addresses. status,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=170.78654545454543) [addresses. city. You can use the same dot](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=172.41036363636366) [notation within the query as well. I want](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=176.12381818181828) [to select the customer\_name, and only the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=178.7993636363636) [city information. Notice how I specify](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=181.37345454545454) [addresses. city within my select](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=183.99436363636363) [statement. Execute the query, and here you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=185.7825) [can see the name of the customer and the city where he or she lives.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=4&mode=live&start=187.91633333333334)

[Populating Data into a Table with Nested Fields Using STRUCT](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live)

[In this next part of the repeated fields](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=0.103) [demo, we'll start off logged into a Cloud](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=4.024230769230768) [Shell terminal window. We'll create a new](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=7.535363636363637) [table containing the same data which is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=10.009545454545451) [present in our e\_commerce\_data table, but](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=12.858454545454546) [this time our new table will have a few](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=15.31075) [nested fields. We start off with a JSON](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=18.6655)[schema from another table, the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=21.03519999999999) [e\_commerce\_partitioned table, which](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=22.541375) [contains the exact same information as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=23.8115) [e\_commerce\_data, but it is a partitioned](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=26.386999999999997) [table. We just want the schema here, which](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=29.03299999999999) [doesn't change based on whether the table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=31.224) [is partitioned or not. We use the bq. show](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=33.05661538461538)[command with the --schema flag, and the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=35.67838461538459) [format is prettyjson. This will print out](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=38.96037500000001) [the JSON schema of the table. We'll copy](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=41.701199999999986) [over this JSON schema, and we'll use the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=43.97530769230769) [schema in order to create a new table. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=46.34453846153843) [are now in the BigQuery web console.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=49.523153846153825) [Within the spikeysales\_dataset, I'm going](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=52.195) [to create a brand-new table. We'll call](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=54.102) [this table e\_commerce\_data\_nested because](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=56.93077777777778) [it's going to contain nested fields, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=58.77433333333333) [within schema I'm going to choose the Edit](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=61.46572727272728) [as text option so that I can specify the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=64.0564) [schema in a JSON format. Now this is the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=66.75999999999996) [original JSON format which contains no](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=70.082)[nested fields. All of the field values are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=72.81199999999998) [flattened. I'm going to get rid of a few](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=75.14560000000002) [fields here so that I can put these values](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=77.281) [in a nested field. This contains the sales](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=79.76707692307689) [and order quantity, and this contains the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=82.07854545454545) [OrderID and OrderDate. I delete these four](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=84.19) [fields, and create a new nested field](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=87.19941666666669) [called OrderInfo. Observe that OrderInfo](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=90.3764) [is a nullable field of type record, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=92.9449) [the subfields within the orderInfo are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=96.19099999999997) [OrderID, OrderDate, Sales, and Quantity.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=98.237) [We can now group the components of address](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=102.104) [into one nested field as well.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=104.83942857142854) [Address\_Country, City, State, Postal\_Code,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=106.891) [and Region will be put into one nested](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=108.84344444444444) [field called Address. Address is a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=112.42275) [nullable field of type RECORD, and within](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=114.70024999999997) [it it has subfields for country, city,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=117.61266666666666) [state, postal code, and region](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=120.7165833333333) [information. Go ahead and create this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=122.84036363636366) [table, and once the table has been](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=125.36090909090916) [created, you can click on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=127.20518181818184) [e\_commerce\_nested and take a look at the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=128.392) [schema. You can see here that OrderInfo is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=131.39412500000003) [now a nested field, as is Address.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=134.22349999999992) [OrderInfo contains four subfields, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=136.624) [Address contains five subfields. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=140.05066666666673) [remaining fields in this table are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=143.132625) [unchanged. They are the same as the fields](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=145.17637499999992) [in e\_commerce\_data or](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=147.46020000000004)[e\_commerce\_data\_partitioned, and this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=148.293) [table is currently empty, as you can see](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=149.8002857142857) [from the Preview pane. Let's use an insert](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=153.04784615384614) [statement to insert some data into this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=155.5235384615384) [newly created table. We want to insert](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=158.2463333333334) [into e\_commerce\_data\_nested, OrderInfo and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=161.53122222222217) [Address our record fields. We'll query the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=163.60944444444434) [data that we want to insert into this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=166.26592307692314) [table from another table. The SELECT](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=169.12124999999997) [statement will be run on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=171.2947499999999) [e\_commerce\_partitioned table. Notice how](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=173.69133333333332) [the flattened fields are selected as is,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=176.03266666666661) [the nested fields are selected as structs.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=179.73959999999997) [The values in the fields for OrderID,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=182.926) [OrderDate, Sales, and Quantity form one](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=185.68272727272722) [nested field, Address\_Country, City,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=188.37199999999999) [State, Postal\_Code, and Region form](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=190.59999999999994) [another nested field, and they are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=193.17275000000004) [specified as STRUCTs. The other individual](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=196.0902500000001) [fields are queried as is from the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=198.49069999999998) [e\_commerce\_partitioned table. If you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=200.688) [execute this query, this query will run](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=202.75085714285717) [and populate your nested table. If we view](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=205.9957777777778) [the Preview tab here, we can see how](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=209.0204375) [exactly the data is stored. Notice that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=211.42693750000007) [OrderInfo is a nested field, and we use](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=213.6379230769231) [the dot notation for subfields within this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=216.46561538461546) [nested field. The same is true for the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=218.76433333333335) [Address nested field as well. Let's run a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=221.241) [simple query on this table with nested](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=224.16715384615375) [fields. We want the OrderDate and OrderID](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=226.80140000000003) [information from the OrderInfo nested](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=229.6203000000001) [field, we want the entire Address record,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=231.40154545454547) [we want Discount and Profit field](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=233.814) [information. Execute this query, and you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=236.52342857142864) [can see the result right here on screen.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=238.57538461538462) [OrderDate and OrderID are present as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=241.136) [individual fields in the result. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=243.21527272727278) [address is still a record, or a nested field.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=5&mode=live&start=245.948)

[Working with Repeated Fields](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live)

[Now that we've understood nested fields,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=0.103) [let's see how we can work with repeated](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=2.9) [fields in BigQuery. We'll start off in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=6.803) [BigQuery web console. I had way too many](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=10.155750000000005) [tables under my spikeysales\_dataset, which](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=12.61366666666667) [is why I've cleaned them up a little bit.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=14.05533333333334) [We now have the e\_commerce\_data,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=16.43975)[e\_commerce\_data\_nested,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=17.731) [e\_commerce\_partitioned, and the OrderData](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=18.581000000000003) [tables. I've deleted the remaining tables,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=21.98100000000001) [and now I'm going to create a brand-new](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=24.274214285714287) [one. This table will have repeated fields.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=26.583357142857146) [I'll call this table the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=28.770727272727264) [customer\_order\_details table, and I'm](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=30.353) [going to use the Add field button to add](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=31.854599999999998) [individual fields. The first field will be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=35.08472727272728) [called customer\_name. It's of type String,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=37.36609090909093) [and it's nullable. The second field is the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=39.80700000000001) [order\_id, it's of type integer, and it's a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=42.34599999999999) [required field. Within a particular order,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=44.705) [a customer could have bought multiple](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=46.883) [products. This is what is held in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=49.10642857142859)[product\_names field, which is of type](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=51.317999999999984) [string, but it's not a nullable field,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=52.896) [instead it's a repeated field so that it](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=55.38333333333334) [can hold multiple products. Specify](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=58.33299999999999)[product\_names as a repeated field, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=60.2356) [click on the Create table button. A](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=62.267199999999995) [brand-new table will be created. Click on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=64.78477777777778) [the table name in the left nav pane in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=67.16650000000001) [order to view order details. Here is the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=69.43675000000005) [Schema for the table. Notice that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=71.62700000000001) [product\_names is a repeated field. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=73.48500000000004) [Preview pane will tell us that this table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=75.309) [is currently empty. Let's go ahead and add](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=77.69566666666665) [some data into it by using the INSERT INTO](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=80.17530769230765) [command. We want to insert into this table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=83.06527272727271)[customer\_name, order\_id, and product\_names](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=85.786) [information. Observe in the values that we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=88.92680000000001) [insert into this table that the names of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=91.72157142857147) [products are specified within square](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=94.401) [brackets. This is what denotes a list or a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=96.34516666666669) [repeated field. Once the new rule has been](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=99.38679999999995) [inserted into our table, we can preview](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=101.67646153846151)[the contents of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=103.574) [customer\_orders\_details table, and here is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=105.03727272727274) [what a repeated field looks like. We have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=106.86636363636366) [one record here with a customer name and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=109.59349999999999) [order\_id, and there are four products](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=112.40483333333333) [within this particular order. Let's insert](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=114.85233333333332) [another record here; this time for the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=117.21090909090908) [customer Rachel who has bought four](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=119.7550909090909) [products as well, keyboard, umbrella,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=122.00000000000003) [curtain, and phone. These products are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=123.89750000000006) [specified within square brackets. Execute](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=126.20857142857143) [the query, click on the table, and preview](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=128.0768181818182) [the results, and you can see that this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=130.51536363636362) [table now has two records, one for John](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=132.78100000000006) [and one for Rachel. The record for Rachel,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=134.989)[which did not exist before, has now been](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=137.5760769230769) [added. Let's run a simple query here to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=140.15992307692312) [select the name of the customer and the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=142.73838461538475) [product that he or she has bought. Click](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=145.0777692307693) [on Run query, and you can see the results](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=147.31400000000002) [right here in the lower part of your browser window.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=6&mode=live&start=149.64500000000015)

[Populating Tables with Repeated Fields Using ARRAY\_AGG](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live)

[In order to get some more practice with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=2.204) [repeated fields, let's create a new table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=3.760000000000001) [within the spikeysales\_dataset. This time](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=6.125874999999999) [this table will have two repeated fields.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=7.976222222222222) [We'll call this the customer\_product\_price](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=10.301) [table. Use the Add item link here to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=13.207666666666666) [specify the schema for this table. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=15.432923076923082) [first is the CustomerID field, which is of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=17.18246153846154) [type string and nullable, and we have the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=19.906153846153856) [Products\_Bought field, which is of type](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=22.40981818181818) [string, but is a repeated field. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=24.122545454545453) [imagine that this contains a list of all](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=26.64584615384615) [the products that the customer has bought](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=29.198363636363638) [on spikeysales, and the price that the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=31.41863636363637) [customer has paid for these products.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=33.76481818181818) [Price\_Paid is also a repeated field. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=35.819) [repeated field is of type float. Once we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=39.012076923076926) [have all of our fields, we can go ahead](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=42.26433333333333) [and create this table. Click on the table](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=44.58333333333332) [name on the left, and let's take a look at](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=46.43826666666666) [the schema for this table. We have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=48.498933333333305) [CustomerID of type string. Products\_Bought](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=50.920800000000014) [and Price\_Paid are both repeated fields.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=52.91271428571429) [In order to populate this table, we'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=56.001) [extract information from the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=58.01572727272727) [e\_commerce\_data table that we had set up](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=59.167) [earlier specifically. We want all of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=62.481111111111126) [products that the customer bought, and the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=64.75607692307693) [price the customer paid for each product.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=66.61538461538464) [We get this information using the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=69.06500000000003) [ARRAY\_AGG BigQuery operator, which allows](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=71.249) [us to aggregate individual records into a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=73.98233333333333) [single list or array, or repeated field.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=77.597) [Every product bought by a particular](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=80.929) [customer is a separate record in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=83.21827272727276) [e\_commerce\_data table. We perform the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=86.00480000000002)[ARRAY\_AGG operation on the Product\_Name](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=88.20180000000005) [field from the original table. All of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=90.3022857142857) [products are aggregated as a list and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=93.05853846153848) [saved in the Products\_Bought field. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=94.9264615384616) [perform the same ARRAY\_AGG operation on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=97.09233333333333) [the sales field as well, which contains](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=99.823) [the price that the customer paid for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=101.7818333333333)[individual products. We query this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=103.9892) [information from the e\_commerce\_data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=106.0097) [table, and we group this information by](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=107.72533333333332) [CustomerID so that we can perform our](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=111.24866666666664) [ARRAY\_AGG aggregations. Group by](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=114.55774999999998) [CustomerID is required in order to get all](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=116.025) [of the products and the corresponding](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=118.15300000000005) [prices in the form of a list associated](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=119.93074999999999) [with a single customer. There are 641](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=122.54341666666664) [unique customers in our e\_commerce\_data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=125.73140000000001) [table. These have now been aggregated into](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=128.00266666666667) [the customer\_product\_price table. Let's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=130.5483333333333) [take a look at what the data looks like.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=132.2015) [Here is the preview pane. There are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=136.07) [customers here who bought just a single](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=138.29016666666675) [product. These are flat records, or so it](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=140.56699999999998) [seems, and you can see there are customers](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=143.33099999999988) [here who bought multiple records. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=145.93077777777776)[Products\_Bought and the Price\_Paid are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=147.94655555555556) [both repeated fields. Here is another](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=150.41433333333336) [customer here who has bought two products](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=153.15925) [from spikeysales. Click on the Compose](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=156.1091666666666) [query button on the top right in order to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=158.00830769230765) [query this table with repeated fields.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=160.385) [There is nothing really special about this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=162.30499999999995)[query. We ask for the CustomerID,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=164.74660000000003) [Products\_Bought, and the Price\_Paid.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=167.06980000000007) [Execute this query, and here is the result](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=168.28075) [right here at the bottom of the browser.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=170.47741666666673) [Here are customers who bought just one](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=173.05823076923082) [product, and here are customers who bought](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=175.4591) [multiple products. Products are available as a list associated with each CustomerID.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=7&mode=live&start=178.42780000000008)

[Using Nested and Repeated Fields Together](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live)

[Nested and repeated fields are new](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=0.028) [features in BigQuery which you may not](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=3.046500000000001) [have encountered earlier if you're working](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=6.4454) [with regular SQL. Let's see an example now](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=8.7278) [of using nested and repeated fields](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=11.57275) [together. In this demo, we'll run a new](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=13.617249999999999) [query on the e\_commerce\_data table. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=15.978083333333334) [is the one with all flattened fields.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=17.7635) [We'll write a query on this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=20.161) [e\_commerce\_data table in order to find all](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=22.173500000000004) [of the customers who live in a particular](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=24.5009) [city. We want additional information about](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=27.020100000000014) [a customer. We want the CustomerID, as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=29.146428571428576) [well as the CustomerName, aggregated into](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=31.751000000000005) [a single nested field. So we create a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=34.01616666666667) [struct called CustomerInfo which holds the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=37.06083333333334) [CustomerID as well as the CustomerName,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=39.524400000000014) [and we apply the ARRAY\_AGG operator in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=42.078)[order to create an array of CustomerInfo](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=44.75523076923079) [objects associated with every city. In](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=47.6605) [order to perform this array aggregation,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=51.03853333333333) [we have to group our data by city. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=52.99173333333333) [order by city as well. Execute this query,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=55.85092857142857) [and let's take a look at the results. And](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=57.89035714285714) [here are the results on a per-city basis.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=60.46566666666667) [We can see that spikeysales has three](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=63.067) [customers from the city of Akron, and here](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=65.53584615384615) [are their CustomerID and CustomerName](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=68.51925) [information within the CustomerInfo nested](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=70.68737500000003) [field. Spikeysales has just one customer](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=73.6538) [in the city of Allen. Let's write another](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=76.03949999999999) [query here. This time we want to aggregate](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=78.67975000000001) [all of the order information associated](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=81.04708333333338) [with a particular state. The order](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=83.45744444444446) [information contains the OrderDate,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=86.1464) [OrderID, the sales in that order, and the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=88.1412)[quantity of products in that order, and we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=91.73960000000002) [want to aggregate this information into a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=94.9180909090909) [repeated field associated with a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=97.6239090909091) [particular state. In order to do this, we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=99.2896153846154) [need to group by state. We order by](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=101.66992307692313) [address\_State as well so that we can view](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=103.85800000000002) [this in an alphabetical order. You can see](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=105.982) [all of the orders that are associated with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=108.1334285714286) [Alabama, and here are all the orders](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=110.63533333333332) [associated with Arizona. If you want to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=113.74449999999995) [save the state-specific information, we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=115.98833333333334) [can use the Save as link here. We can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=117.12750000000003) [choose the option Save as table. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=119.52200000000002) [also download this JSON as JSON. Because](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=121.90899999999999) [this table is fairly complicated with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=124.27499999999995) [nested repeated fields, Download as CSV](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=126.552) [and Save to Sheets is not enabled option.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=129.32700000000003) [We'll call this new table orders\_by\_state.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=133.46099999999998)[Click on the Save button, and you can see](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=136.887) [that this new table will be created and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=139.05300000000003) [your data saved. Click on orders\_by\_state](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=141.18027272727272) [in the left navigation pane, and here is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=143.23009090909085) [the schema for this table. OrderInfo is a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=145.989) [repeated field, it's also a record, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=149.09376923076928) [these are the subfields that are contained](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=152.2922307692309) [within every record in the OrderInfo field.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=8&mode=live&start=157.663)

[Using UNNEST to Query Repeated Fields](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live)

[Let's run a few queries on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=1.724) [customer\_product\_price table that we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=3.7520909090909096) [created earlier. This is the one with two](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=4.911) [repeated fields. For every customer, we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=7.841399999999998) [have a list of all the products that he or](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=9.4764) [she bought on spikeysales, and the price](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=11.7324) [that he or she paid for that product. In](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=13.896857142857142) [this query, we want to retrieve all of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=16.741615384615383) [CustomerIDs and the products that they](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=19.078153846153832) [bought, but we want to do this in a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=20.64557142857143) [flattened manner. So we retrieve](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=23.01128571428572) [CustomerID and Products, but here the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=24.831363636363637) [Products field is basically the flattened](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=27.420090909090913) [version of the Products\_Bought field. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=30.65188888888889) [UNEST operator in BigQuery flattens the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=34.06066666666667)[Products\_Bought array into individual](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=36.74666666666669) [records, and associates each of these](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=38.3984) [records with the CustomerID who bought the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=40.6676) [product. Go ahead and click on the button](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=43.41566666666667) [to execute this query, and you'll see the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=46.4625) [results here at the bottom. You can see](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=48.53049999999998) [that there are certain customers who](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=50.60807692307692) [bought just one product, and there are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=52.178230769230765) [other customers who have bought multiple](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=54.35990000000001) [products. You can see that the value in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=56.62970000000003) [the Products\_Bought field has been](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=58.78308333333332) [flattened and converted to individual](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=60.051) [records associated with the CustomerID.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=62.519000000000005) [Let's see another query here, this time](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=64.987) [with two UNNEST operations. You want to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=67.47200000000002) [select the CustomerID, Products, and the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=69.74309999999998) [Price. We get the products that a customer](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=71.44529999999996) [bought in flattened form by calling the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=74.09791666666663) [UNNEST operator on the Products\_Bought](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=76.76475) [field. We then call the UNNEST operator on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=79.201625) [the Price\_Paid field to get the price for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=82.03669230769228) [each product in a flattened form as well.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=84.72220000000002) [Execute this query, and you can see that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=87.415) [the result is in completely flattened](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=89.7054615384615) [form. For every CustomerID, we have the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=91.4584)[product that he or she bought and the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=93.70819999999998) [price that he or she paid for that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=96.30499999999998) [product. Let's practice the UNNEST](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=98.91033333333328) [operation a little more. This time we'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=100.54550000000002)[try it on the orders\_by\_state table. Here](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=102.75066666666666) [is the schema of the table. You can use it](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=104.7924) [to refresh your memory. For every state,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=107.29639999999999) [we have all the orders that are associated](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=109.47892857142855) [with that state. Let's get the information](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=112.62807142857136) [about all of the orders associated with a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=114.98499999999999) [particular state in flattened form. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=117.337) [query the Address\_State and the OrderInfo.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=119.53499999999998) [The OrderInfo comes from the UNNEST](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=122.0095) [operation on the original repeated](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=124.76050000000001) [OrderInfo field. This query is valid, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=127.25900000000001) [it runs just fine, but it doesn't really](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=129.6861428571428) [do what you might expect. You can see that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=131.93757142857132) [the order information hasn't really been](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=134.71966666666657) [flattened into individual records. It](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=136.835) [still remains as a nested repeated field.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=139.0105) [Let's try this query once again with a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=142.129) [slight modification. We want to select the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=144.69539999999992)[Address\_State and Orders, and we've](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=147.1806363636364) [unnested the OrderInfo and aliased it as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=149.02427272727283) [Orders, and now we'll see the flattening](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=151.83599999999993) [really happens. Here in the result you can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=154.59975) [see that the nested fields remain nested,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=157.16575000000003) [but all of the repeated fields have been](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=159.73163636363637) [flattened into individual records. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=162.9283) [use the UNNEST operator and extract](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=165.27009999999999) [specific subfields from your Orders field](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=167.75554545454546) [as well. Here we want only the OrderDate.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=170.38463636363636) [We've unnested OrderInfo as Orders and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=173.75918181818176) [extracted only the OrderDate from here.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=176.32114285714286) [Run this query, and here you'll see in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=179.202) [result the OrderDate associated with all](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=181.4564999999999) [of the orders from each state, Alabama](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=183.48000000000002) [here, Arizona is available here. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=186.44800000000006) [scroll down and view the results in all of the states if you want to.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=9&mode=live&start=188.639)

[Aggregations](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live)

[In this demo, let's see some of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=0.153) [aggregation operations that we can perform](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=3.2674615384615393) [in BigQuery. BigQuery supports almost all](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=5.6515) [of the aggregations that SQL supports, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=8.2765) [some of these things should be familiar to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=11.058538461538463) [you. We are going to run our aggregation](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=13.997615384615388) [queries on the e\_commerce\_data\_nested](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=15.737699999999997)[table. This is the schema of the table.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=16.753777777777778) [This contains nested fields for order](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=20.176) [information and address information. You](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=23.101000000000003) [can take a quick look at the data in order](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=25.317999999999998) [to refresh your memory. Let's start](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=27.987999999999992) [writing our queries here within the query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=29.774) [editor. In our first example here, we'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=32.28700000000001) [get introduced to the ANY\_VALUE function.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=34.76599999999999) [This function will retrieve at random any](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=36.886) [record that meets our selection criteria.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=39.4371818181818) [ANY\_VALUE of OrderInfo will retrieve any](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=42.00455555555556) [order within the Address\_State of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=45.33322222222224) [California. Execute this query, and here](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=48.66079999999999) [is an order retrieved at random. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=50.94399999999999) [order is from the state of California. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=53.296124999999996) [can use the average aggregation in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=56.789) [BigQuery as well. Here we want to find the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=59.093) [average price of products bought by a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=61.85715384615383) [particular customer, so we perform the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=63.738) [average function on the OrderInfo. Sales](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=65.6694) [field. When you perform aggregations, you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=67.8142) [need to group by the non-aggregated](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=70.38580000000002) [fields, which are CustomerID and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=73.02979999999997) [CustomerName. We'll also order our result](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=75.26329999999993) [by average price. Run this query, and you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=77.54500000000002) [can see the results at the bottom here,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=79.92099999999998) [the average price paid by customers for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=81.961) [products that they bought on spikeysales.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=84.80246153846151) [Let's run another query here. We want to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=87.238) [retrieve information about all the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=89.43945454545457) [customers who have made purchases of over](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=91.32957142857144) [$100 from within our data. We use the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=95.05557142857148) [COUNTIF function for this. COUNTIF will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=98.80409090909092) [apply the condition that we have specified](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=100.97827272727275) [within brackets. Here the condition is the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=103.15442857142858) [sales should be greater than $100, and it](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=105.58) [will alias it as NUM\_OVER\_100. This will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=108.85714285714285) [give us all of the customers when they](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=112.04115384615385) [have bought products over $100 on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=114.14576923076923) [spikeysales. We need to group by the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=116.27425) [non-aggregated columns, group by](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=119.39916666666664) [CustomerID, CustomerName, and order by the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=121.05545454545455) [number of items over $100 that the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=123.3458181818182) [customer has purchased. Execute this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=126.65271428571431) [query, and you'll see that there are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=128.73745454545457) [several customers who made purchases of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=130.35954545454555) [over $100. Sanjit Chand here is one](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=132.48100000000002)[customer who has bought four such items.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=135.38250000000005) [Let's see some examples of aggregation](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=138.82) [operations that create lists such as the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=141.04060000000004) [STRING\_AGG function. The STRING\_AGG will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=144.08127272727268) [create a single list of all the customer](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=146.68172727272716) [names in our table. Execute this query,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=150.0575555555556) [and you can see that the result is a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=152.4395714285714) [single list of all customer names. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=155.22828571428568) [click on the More link here to view all of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=157.5858571428572) [the customer names in a separate dialog.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=160.66099999999997) [The ARRAY\_AGG operator that we use to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=163.314) [create lists or repeated fields is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=165.8561666666667) [actually very powerful. Let's see some](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=167.94963636363636) [different ways in which we can use this.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=169.61545454545453) [Here we've performed an aggregation on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=171.9918181818182) [Address\_City column. This will give you a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=174.207) [list of all of the cities where](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=176.5342307692307) [spikeysales has customers as a list, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=178.95675) [this list will have all of the city names](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=181.95100000000002) [specified in quotes. You can click on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=185.18075000000005) [More link here and view the entire](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=187.47557142857147) [contents of this list in a separate](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=189.4125714285715) [dialog. By default, ARRAY\_AGG will not](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=192.20016666666666) [eliminate duplicates. If you want to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=195.09700000000004) [eliminate duplicates in your list of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=196.7722727272727) [cities, you need to add the DISTINCT](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=197.81518181818177) [keyword as you see here on screen within](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=199.78900000000007) [the ARRAY\_AGG operation. Running this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=202.3481818181818) [query, will give you a list of all of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=204.64409090909083) [unique cities where spikeysales has](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=209.05272727272728)[customers. You can see that this list is a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=211.16545454545457) [much shorter one. You can specify limit](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=213.59672727272735) [operations within the ARRAY\_AGG function](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=215.806) [as well. Here we want to aggregate cities,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=217.62600000000003) [but we want to limit it to just five](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=220.02500000000006) [cities, so we specify Address. City LIMIT](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=222.53150000000014) [5. Run this query, and you can see that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=224.88728571428578) [the resulting list has just five cities within it.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=10&mode=live&start=228.657)

[Subqueries](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live)

[BigQuery allows you to specify subqueries](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=1.085) [in the FROM clause, as well as in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=4.0388) [WHERE clause, and let's see some examples](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=7.648357142857143) [of subqueries. Here is a SELECT statement](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=9.944857142857144) [for the OrderDate, Product\_ID, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=12.726000000000004) [CustomerName that uses a subquery in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=14.7811) [FROM clause. We want to select r.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=17.2668) [OrderInfo. OrderDate. Notice how OrderInfo](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=20.634857142857143) [is a nested field and OrderDate is a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=22.740250000000003) [subfield within the nested field. R is the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=25.519583333333344) [alias that we give our subquery. We'll see](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=28.175384615384612) [that in just a bit. Take a look at the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=30.639142857142854) [FROM clause. You'll see that we don't](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=33.06485714285714) [specify a table directly. Instead we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=35.08388888888887) [specify a subquery that queries the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=37.189181818181815) [e\_commerce\_data nested table. This is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=39.82372727272726) [simple, SELECT \* subquery, the alias to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=41.999) [subquery AS r, and this is the r that we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=45.00200000000002) [reference in the SELECT clause. We want](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=48.82241666666666) [the resulting data ordered by the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=51.19566666666666) [OrderDate field in the ascending order.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=52.88666666666665) [Execute this query, and you can see the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=54.533818181818184) [result right here at the bottom of your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=56.61309090909091) [browser. Let's try another subquery in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=60.41149999999998) [FROM clause. This time we'll use an](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=62.696749999999994) [aggregation. We want to find the sum of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=64.66392857142857) [all sales within a particular segment. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=66.86221428571427) [subquery in the FROM clause specify the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=69.33845454545454) [data that we are querying in the outer](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=71.84045454545455) [query. Here we want to only extract those](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=74.51027272727273) [records that the Address\_State is equal to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=77.1044166666667) [California. You can see SELECT \* FROM](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=79.53639999999999) [e\_commerce\_data WHERE Address\_State is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=82.39729999999996)[equal to California in the subquery. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=83.89066666666666) [alias the subquery AS r, and use r within](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=86.52869230769231) [our SELECT clause. We are preforming an](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=90.74692307692308) [aggregation here, which means we need to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=93.37433333333335) [specify a GROUP BY clause as well. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=95.51166666666671) [group by segment. Execute this query, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=98.36500000000002) [you'll get as the result the segment wide](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=100.894)[sales in the state of California. Here is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=103.768) [a typical query that your analyst team](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=106.3766153846154) [might want to run. You want to find the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=108.55976923076923) [total sales on a birth date basis. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=111.04723076923077) [select the Address\_State, and sum up the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=113.53615384615384) [sales information as Total\_Sales. We know](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=115.795) [that spikeysales is very popular in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=118.615) [states of California and Washington. We're](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=121.503) [only interested in the Total\_Sales data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=123.53218181818183) [for these two states, so we GROUP BY](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=125.62727272727274) [Address\_State, and we only display](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=128.332) [information for California and Washington,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=129.96699999999998) [and this is what you see here in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=131.53576923076923) [result. But let's say the states that we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=134.2800769230769) [are interested in is not from a fixed](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=136.46599999999998) [list; the list of states comes from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=138.64860000000002) [another query. This is possible using](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=140.75980000000007) [subqueries in BigQuery. In this query, we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=143.11842857142852) [retrieve the state and the total sales for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=145.67785714285714) [that state, for all of the states that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=148.1635714285714) [have same day shipments. So in the WHERE](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=151.47119999999998) [clause we specify that the Address\_State](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=154.6803333333333) [should be in only those states where](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=156.80783333333324) [ShipMode is equal to Same Day is present.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=159.31546153846156) [Group the result by Address\_State, execute](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=162.193) [this query, and here in the result you can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=164.15799999999993) [see that there are 23 states which have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=167.3375714285714) [same day shipment, and here are the total sales in those states.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=11&mode=live&start=170.57642857142852)

[Windowing Operations](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live)

[An important feature typically available](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=0) [on data analytics warehouses are window](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=3.224444444444445) [functions, and window functions are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=6.631) [available in BigQuery as well. Window](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=8.6985) [functions are very powerful functions](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=11.22) [which operate on logical groups of rows,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=13.490000000000004) [and you can specify what those rows are.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=16.322454545454544) [Window functions may be a little hard to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=19.033) [understand at first, but they make very](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=21.379181818181806) [complex mathematical operations simple](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=24.25588888888889) [without needing many intermediate](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=26.25277777777778) [calculations or temporary tables that you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=27.85066666666667) [need to set up. Analysts in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=30.048) [spikeysales organization often write](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=32.98800000000001) [queries such as these. What were the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=34.668) [top-selling N products in each category](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=37.22427272727272) [over a particular week? Here the partition](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=39.587) [is one week, and the operation that we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=42.74400000000001) [need to perform is to order the products](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=45.77469230769231) [by sales and then find the ranking.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=48.459) [Analysts who work with supplier data might](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=51.17441666666669) [have to answer a query such as this one.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=53.714363636363636) [What revenue percentile did this supplier](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=56.416) [fall into for this month? The partition](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=59.05927272727274) [here is one month, and the operation that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=61.832153846153844) [we want to perform is to order the data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=64.11276923076922) [and find percentile values on revenues on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=67.81500000000004) [a per-supplier basis. When we have window](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=71.07422222222223) [functions, complex queries such as these](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=73.95977777777782) [can be expressed in a single query, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=76.02991666666664) [that's why window functions are so](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=78.6595) [powerful. Let's see an example of how](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=80.51049999999996) [window functions work. Consider that this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=82.91300000000003) [data belongs to an organization that runs](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=84.86524999999999) [a chain of grocery stores in different](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=86.97749999999998) [locations. We want to find that store](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=89.62433333333331) [which has the lowest price for a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=92.28219999999997) [particular product. We will first take all](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=94.90626666666661) [of the data available in this table and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=97.10561538461538) [perform a partition on the Product field.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=99.425)[Partitioning is a logical operation that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=102.486) [will group our data based on products.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=104.66169230769229) [Bananas will be in one partition, potatoes](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=107.2) [will be in a separate partition. Once we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=110.1082307692308) [have our partitions, the next step is to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=113.35146153846154) [order within each partition all of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=116.35330769230768) [records based on the price for that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=118.79192307692308) [particular product. This ordering of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=121.08953846153848) [products by price is performed within each](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=122.79736363636361) [partition, so within the bananas partition](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=125.25054545454539) [we have an ascending order of bananas by](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=127.61891666666665) [price, and within the potatoes partition](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=130.774) [we have the same. Now we can find the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=132.75400000000008) [store with the lowest price, and that will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=135.45733333333337) [be the first record within each order](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=137.67066666666673) [partition. Window functions allow you to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=141.25316666666674) [partition and order data within a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=143.57983333333334) [partition. In addition, you can specify a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=145.64483333333334) [window range, forming a window of records](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=148.16099999999997) [within a certain partition, for example,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=150.83214285714286) [unbounded preceding and current row. Let's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=153.827) [see how this window range works. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=156.18149999999997) [window function will be applied to every](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=158.89625) [record within a partition. This is the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=161.41800000000006) [current record within the partition, this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=163.84346153846153) [is the current row, so only that record is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=165.81238461538456) [included within the window. When we move](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=168.59500000000006) [to the next record, unbounded preceding](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=170.89463636363635) [basically means include all the records](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=173.14190909090908) [all the way to the beginning of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=175.12669230769225) [partition. That means the first and the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=177.59807692307677) [second record will be included here. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=179.69549999999995) [have all of the records from the beginning](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=181.71564285714285) [of the partition up to the current row.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=183.5687857142856) [When we move to the next record, we'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=185.69415384615382) [include all of the records from the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=188.27323076923068)[beginning of the partition up to the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=189.95764285714284) [current row, which is now the third row in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=191.41314285714282) [this partition. And finally, when we come](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=193.84422222222221) [to the last record in this partition, we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=195.84624999999994) [include all of the records starting from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=198.17649999999998) [the beginning of this partition up to the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=200.51100000000008) [current row, which is now the fourth row.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=202.99133333333336) [This window range is applied to each](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=205.284) [partition in our table. When you use](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=208.0763636363636) [windowing operations in BigQuery, you can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=210.83872727272728) [partition by values in any column, you can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=213.17218181818185) [order by any column, and there are a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=215.72642857142853) [number of different options available for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=218.095) [the window range as well. Unbounded](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=220.0019090909091) [preceding and current row is just one example.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=12&mode=live&start=222.591)

[Performing Window Operations Using "Partition By" and "Order By"](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live)

[In this demo, we'll see some examples of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=0) [window operations in BigQuery. Let's try](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=4.989333333333334) [our very first window query. This is going](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=7.970428571428572) [to be a simple one on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=9.91614285714286) [e\_commerce\_data\_nested table. We want to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=13.035200000000001) [calculate the value of total sales on a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=15.624461538461537) [per-segment basis. and we do this using a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=18.713692307692305) [window function. This is the general](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=21.04230769230769) [structure of any window function. We have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=22.598615384615382) [an aggregation operation, and then the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=24.980666666666675) [OVER keyword. The actual window over which](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=27.197545454545452) [this aggregation operation is applied is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=29.89381818181817) [specified within parentheses. This window](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=33.114) [can specify a partition and order within a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=35.466818181818184) [partition, and a window range within that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=38.07409090909093) [partition. Here we only use the PARTITION](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=40.465714285714306) [keyword. We want to partition our data by](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=42.78953846153844) [segment and find the sum of sales for each](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=45.47172727272727) [segment. Execute this query, and let's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=48.826272727272745) [take a look at the result. We can see that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=50.38400000000001) [we have multiple rows corresponding to the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=53.35738461538462) [same information. We have the total sales](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=56.0723076923077) [for each segment, but we have one record](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=58.41549999999999) [for each order in our table. This is not](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=60.92349999999997) [exactly what we were looking for. We can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=63.36842857142856) [fix our query a little bit in order to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=65.59771428571428) [view the information a little differently.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=68.43592857142852) [Here is the data for the Corporate](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=70.42218181818184) [segment, the total sales corresponding to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=72.84927272727279) [Corporate, multiple records with the same](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=74.95377777777774) [information, and we see that the same is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=76.88042857142857) [true for the Home Office segment as well.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=78.96214285714284) [Let's fix our query here. We modify the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=81.49366666666664) [SELECT clause so that we specify a Select](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=84.34725) [Distinct. This will extract only the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=86.98791666666668) [distinct records. The partition and the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=89.77514285714285) [function over the partition remains the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=91.92507692307693) [same as before. If you execute this query,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=93.67569230769233) [you can see that we get the result with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=95.82599999999998) [three records, the total sales for Home](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=98.121) [Office, Corporate, and Consumer. Let's run](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=101.34927272727269) [another query here that will track every](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=103.83933333333333) [customer within a particular state by](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=106.09799999999997) [total sales, by how much they bought on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=108.35325000000002) [spikeysales. Here we have the individual](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=111.78591666666672) [fields, CustomerID, CustomerName,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=114.20062500000002) [OrderInfo. Sales, and Address\_State, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=115.392) [here is our window function. We want to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=117.61149999999999) [perform a ranking operation over the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=120.94592857142858) [partition that we have specified. The rank](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=123.17578571428574)[operation is over PARTITION on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=126.102) [Address. State, and within the Address.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=129.30599999999995) [State partition we want to order by](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=131.98046153846153) [OrderInfo. Sales. Run this query, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=134.7917692307692) [let's take a look at the result, and you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=136.27100000000004) [can see that within the state of Alabama](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=137.79200000000014) [we have rankings for individual customers.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=140.47599999999994) [You can see that Irene Maddox has bought a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=142.822) [total of $1800 worth of products. She is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=146.0536000000001) [the customer with rank 1 in Alabama. We've](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=149.03666666666666) [partitioned our data by state, and ordered](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=152.25310000000002) [by sales, and applied a ranking function](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=154.46580000000006) [within Arizona. We have Susan who is at](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=156.93657142857137) [number 1. If you scroll down to the state](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=159.90174999999996) [of Arkansas, you can see that Sanjit Chand](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=162.41707692307696) [is at number 1 here. Just like the rank](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=164.67783333333333) [function, BigQuery has the percent rank](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=168.01608333333326) [function as well, which allows us to find](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=169.8374166666667)[the percentile rank. We want to use this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=172.15307692307692) [query to find the percentile rank by total](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=174.43369230769235) [sales for every city in a particular](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=177.32300000000004) [state. We query the state, city, and total](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=180.38375000000008) [sales information, and apply a window](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=183.1753333333333) [function to find the percent rank. We call](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=185.24257142857144) [the percent rank function, we specify a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=188.26579999999998) [partition, we partition by state and order](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=190.7500999999999) [by total sales in the ascending order](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=193.05961538461534) [within the state. In order to find the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=195.34) [city by its total of sales for every](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=198.01257142857148) [state, we use a subquery. This subquery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=200.8605) [finds the total sales for a particular](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=203.81275000000002) [city by grouping by Address. State and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=206.95646153846158) [Address. City. Execute this query, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=210.24376923076935)[let's take a look at the result. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=212.08336363636363) [see that within the state of Alabama,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=214.2953076923077) [cities have been ordered by their](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=216.52238461538462) [percentile rank. You can see that the city](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=218.39423076923075) [Auburn has a percentile rank of 0. Then](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=220.79115384615378) [the cities have gradually increasing](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=223.82750000000004) [percentile ranks until we come to Florence](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=225.965) [with a percentile rank of 1. For Arizona,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=228.60184615384617) [the city Sierra Vista has the lowest total](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=231.578) [sales; it has a percentile rank of 0, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=234.44200000000004) [the city here, Tucson, has the percentile](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=237.6326666666667) [rank of 1 with the highest total sales within Arizona.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=13&mode=live&start=242.049)

[Windowing Operations Using a Window Range](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live)

[Let's see one last example of a more](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=1.641) [complex window operation which uses a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=3.908333333333333) [window range before we move on. This query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=5.838461538461539) [is a slight modification of the previous](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=9.024307692307696) [one that we have seen. We're still looking](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=11.655444444444447) [at Address. States and Cities within](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=14.325499999999998) [states and calculating the total sales.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=16.074499999999993)[We're ordering cities by the total sales,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=18.38225) [and then we want to perform a cumulative](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=21.205) [sum operation. You can calculate a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=24.62660000000001) [cumulative sum in BigQuery using a window](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=26.705) [range. Let's see how to do that. We're](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=28.845249999999997) [selecting the state, city, and total](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=31.496999999999993) [sales. This is exactly the same as before.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=33.50785714285713) [Our window function will use the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=35.942999999999984) [partition, the order by, as well as the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=37.743) [window range. We want to perform a sum](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=40.241400000000006) [operation on the total sales field. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=43.03800000000001) [is our aggregation. We want to partition](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=45.543416666666666) [by state and within this partition we want](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=47.87733333333332) [to order by the total sales field. We want](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=50.51354545454545) [cities in the ascending order of sales](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=53.42023076923076) [from the lowest sales to the highest, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=55.615538461538435) [then we specify a window range. range](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=58.4788) [between unbounded proceeding and current](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=61.41885714285714) [row. This window range will apply the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=64.05314285714284) [aggregation function in such a way that we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=66.21499999999996) [get a cumulative sum of sales starting](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=68.46846153846153) [with the city within the state which has](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=70.63307692307689) [the lowest sales, and going up to the city](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=72.91628571428572) [with the highest sales. We extract this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=75.27042857142858) [information from the same subquery that we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=77.76945454545454) [ran earlier. There is no additional](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=80.24472727272727) [information needed here. Let's execute](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=82.0769090909091) [this query and understand how the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=83.89354545454546) [cumulative sum works. Here are all the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=86.59518181818186) [cities arranged on the basis of their](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=89.14866666666668) [Total\_Sales within the state of Alabama.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=91.25333333333339) [Notice the very last column here which has](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=93.07263636363636) [the cumulative sum. You can see that the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=95.48269230769232)[value in the second record is the sum of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=97.8334615384616) [the total sales in the first, as well as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=100.51259999999999) [the second record from the beginning of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=103.209) [the partition up to the current row. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=105.20649999999996) [cumulative sum in the third record is the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=107.59926666666667) [sum of the first three records, the sum of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=110.76140000000004) [Total\_Sales for Auburn, Hoover, as well as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=114.4429090909091)[Montgomery. And on this note, we come to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=117.49936363636367) [the very end of this module where we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=119.19319999999996) [studied advanced analytical queries that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=120.63) [we can run on BigQuery. We saw that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=122.91749999999998) [BigQuery supports both nested, as well as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=126.10450000000002) [repeated fields. Nested fields are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=128.20333333333338) [effectively generated using the STRUCT](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=130.329)[operator. They are a logical grouping of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=132.87233333333336) [your field data. Repeated fields are like](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=135.2416666666666) [arrays in programming languages. BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=138.04899999999995) [also allows you to run subqueries to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=140.3380909090909) [perform complex analysis. BigQuery also](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=143.22272727272735) [has support for windowing functions. In](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=145.34557142857142) [the next module, we'll see how we can use](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=147.84615384615387) [Data Studio for visualizing data that's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=150.40353846153857) [contained in BigQuery. We'll also see how](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=152.65400000000002) [we can access BigQuery programmatically using client libraries in Python.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=bbeb26b5-81a0-4005-b63b-458ab0119292&clip=14&mode=live&start=155.75239999999997)

[Programmatically Accessing BigQuery from Client Programs](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=0&mode=live)

[Module Overview](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=0&mode=live)

[Hi, and welcome to this module where we'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=0&mode=live&start=0) [see how we can programmatically access](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=0&mode=live&start=3.41) [data in BigQuery from client programs.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=0&mode=live&start=6.14175) [We'll first study Data Studio, which is a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=0&mode=live&start=9.222) [powerful visualization tool offered by](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=0&mode=live&start=12.767454545454546) [Google. BigQuery has built-in integrations](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=0&mode=live&start=15.099222222222222) [with Google's Data Studio, which helps you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=0&mode=live&start=17.604777777777777)[create very powerful and cool-looking](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=0&mode=live&start=20.495500000000003) [visualizations very easily. We'll also see](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=0&mode=live&start=22.384) [how we can set up Datalab notebooks from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=0&mode=live&start=25.004999999999995) [within GCP. Datalab is basically a VM](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=0&mode=live&start=28.382727272727276) [instance that allows you to prototype and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=0&mode=live&start=31.03127272727274) [visualize your data using Jupyter](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=0&mode=live&start=33.98999999999999) [notebooks hosted on the cloud. We'll write](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=0&mode=live&start=36.192) [code using Python and Datalab, giving us](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=0&mode=live&start=38.84791666666665) [programmatic access to BigQuery using Python client libraries.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=0&mode=live&start=42.745)

[Integrating BigQuery with Data Studio](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live)

[In this demo, we'll see how you can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=0.391) [visualize the data that you have stored in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=3.3287142857142857) [BigQuery using Google's Data Studio. Data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=6.380285714285714) [Studio can generate some pretty](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=8.905199999999999) [nifty-looking charts and graphs. So what](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=10.926199999999996) [exactly is Data Studio? It's a tool used](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=13.259166666666665) [for interactive dashboard building and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=16.12383333333333) [reports. This has built-in connectors to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=18.11233333333333) [several GCP services including BigQuery.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=20.657) [If you have your data stored across](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=24.514) [different services on the GCP, you can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=26.112333333333325)[directly access the data there and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=28.037538461538464) [visualize it using Data Studio. Data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=30.388153846153852) [Studio also makes it very easy for you to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=32.633785714285715) [share your reports and visuals within your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=35.214857142857134) [team or organization. Data Studio follows](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=38.393) [the point-and-click pattern to build](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=41.84466666666667) [dashboards. It's very intuitive and easy](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=44.21244444444445) [to use. It's available at datastudio.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=46.170999999999985) [google. com. Once you log in, this is the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=49.05966666666667) [welcome page that you'll see. You can use](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=51.959916666666665) [this tutorial here to get started. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=54.30133333333333)[says Welcome to Data Studio. Take a look](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=56.78228571428571) [at the left navigation pane. Whatever](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=59.20057142857144) [function you want to perform, you can take](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=61.0276) [a look at the tutorial here. We'll just](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=63.55239999999997) [plow ahead with Data Studio. We'll go](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=66.01584615384616) [ahead and create a new blank report and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=68.0103076923077) [use it to test out different](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=70.92127272727274) [visualizations. I'm going to rename this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=73.57818181818183) [untitled report to be called](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=76.10372727272728) [spikeysales\_report, and this report will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=78.18645454545457) [be automatically added to the Google Drive](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=79.91933333333331) [linked with your GCP account. 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Data Studio has automatically](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=164.89250000000004)[chosen a time dimension which made sense](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=166.887) [from our e\_commerce\_data datasets. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=169.68) [time dimension chosen by Data Studio was](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=172.09166666666673) [the ShipDate, and the metric is the record](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=175.28149999999997) [count, the number of orders for every ship](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=178.64283333333324) [date. Let's click on the metric to change](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=181.82362499999996) [the data that we want displayed. 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I'm](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=257.60800000000006) [also going to change the Y axis to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=260.37928571428574) [represent sales information by state. You](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=263.06957142857163) [can see from the bar graph here that the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=264.97378571428567) [state of California has the highest sales,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=266.9788571428569) [the state of New York comes second. If](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=269.3115) [you're not really impressed with the theme](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=272.892) [of your graphs, you can change these using](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=274.4109999999999) [the STYLE tab. You can make your bar chart](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=276.84887499999996) [less boring by orienting it horizontally](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=280.23899999999986) [or you can switch back to vertical because](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=282.557) [that's easier to read. You can also](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=284.98299999999995) [specify how many bars you want displayed.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=287.00059999999996) [I've chosen to display fewer bars here. I](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=288.878) [go from 10 to 8, and it's the default.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=291.72066666666666) [There is a color palette available here.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=294.0486666666667) [You can click on it and update the colors](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=295.88815384615384) [to match the colors of your organization.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=298.3458461538462) [As you click around and make changes, your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=300.6240833333332) [visualization is automatically updated. If](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=303.7612) [you want to display labels on your X and Y](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=306.895125) [axis, you can click on the checkbox that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=309.74637499999994) [says show axis title on the X, as well as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=312.3626250000001) [the Y axis. I think the white background](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=316.3313750000003) [for this chart is a little boring. I can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=318.59533333333343) [choose the background color palette in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=320.734) [order to update the background color. Now](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=322.6419999999999) [I have a bright yellow. You can select](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=324.98575000000005) [multiple charts by dragging your mouse](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=327.8140909090909) [over them, and you can hit the delete](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=329.89827272727274) [button in order to delete everything from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=332.62780000000004) [this report. Once I have a clean report,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=335.0017333333334) [I'm now going to try out a pie chart. Once](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=337.10399999999987) [again, Data Studio automatically populates](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=339.6743) [the pie chart with data it thinks it is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=341.84580000000005) [interesting. Then I mentioned here the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=344.87163636363636)[Sub\_Category and the metric is a Record](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=346.418) [Count. Click on Sub\_Category, and you can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=349.43149999999997) [change this to a different dimension. I'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=351.60650000000004) [choose Address\_City here, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=353.80054545454544) [automatically my pie chart gets updated.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=355.5987272727272) [I'm also going to change the metric to be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=358.296) [Sales. And here you can see Sales by City](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=360.9573000000001) [are displayed in my pie chart. If you want](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=364.22728571428553) [to perform a different aggregation on a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=367.26036363636365) [metric, and not the sum aggregation, you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=369.13254545454544) [can click on the pencil icon there in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=371.0301538461539) [order to change your aggregation. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=373.31875) [pops up a window showing you all of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=375.63925000000006) [different aggregations that are available.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=378.7538888888888) [As you select an aggregation, your pie](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=380.23) [chart will automatically update. I'm going](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=382.6475454545454) [to get rid of this pie chart and take a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=384.45375) [look at this really cool visualization,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=386.5775000000001) [the Geo map. The Geo map will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=388.4978) [automatically plot location data from your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=392.24559999999985) [dataset. Notice that Data Studio has](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=394.92418181818186) [detected that the Address\_Country field is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=397.496) [geographical information, and all of our](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=401.1769999999999) [orders in the spikeysales are based in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=403.81907692307686) [US. Based on how large your dataset is,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=406.6492307692306)[the Geo map might take a while to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=409.0414999999998) [populate, so you might need to be a little](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=411.32481818181816) [patient. Let's click on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=413.52818181818174) [Address\_Country dimension and change the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=415.22860000000003) [dimension to be Address\_City. Notice that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=417.04810000000003) [our Geo map has now zoomed into the United](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=419.5316666666665) [States. I'll wait a little bit for the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=423.3470666666663) [data to populate, and this Geo map will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=425.701) [automatically give me sales information](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=428.14877777777775) [based on region. You can see that the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=430.73766666666666) [largest sales come from New York,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=434.35516666666655) [California, and the state of Washington.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=436.8321666666664) [When you use Data Studio, you have all of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=438.9676923076922) [this cool information and visualization at](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=442.1117777777778) [your fingertips without writing a single query or a single line of code.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=1&mode=live&start=444.4384444444445)

[Connecting to Datalab](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live)

[In this demo, we'll see how we can access](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=0.305) [data that is stored in BigQuery,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=3.712142857142857) [programmatically. We'll use Datalab](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=6.1472500000000005) [notebooks to write Python code, and we'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=8.31625) [access information from BigQuery. Google's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=11.906999999999998) [Cloud Datalab is a powerful interactive](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=14.211833333333333) [tool that is used to build machine](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=16.25683333333333) [learning models on the GCP. Datalab is a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=19.012999999999998) [VM instance which has data exploration and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=22.988090909090914) [visualization tools preinstalled on that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=26.12663636363638) [VM. Datalab is software that runs on a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=28.00166666666666)[special VM which runs Jupyter notebooks.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=30.855) [Jupyter notebooks are an interactive](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=33.317400000000006) [browser-based shell which is widely used](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=35.405) [by data analysts, engineers, as well as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=38.08099999999999) [data scientists to prototype ML models and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=40.93900000000001) [visualize data. Working with Datalab is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=43.599) [very cool because it has built-in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=46.10918181818182)[connectors for other GCP services. It's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=48.71066666666667) [automatically integrated with other](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=51.627272727272725) [services, and you can pull in data from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=53.100363636363625) [other GCP sources. We start this demo off](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=56.5548) [in a Cloud Shell window. This is where we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=60.189) [are going to use the command line in order](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=62.79226666666666) [to create a new Datalab VM instance.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=64.67386666666667) [Datalab creates the command. This command](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=67.81199999999998) [is automatically available within Cloud](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=70.74924999999999) [Shell. Bq-datalab-vm is the name of our](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=72.65237499999996) [virtual machine. GCP will ask you to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=75.83800000000001) [specify the zone where you want this VM](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=78.1939375) [instance to live. I'm just going to select](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=80.46743750000002) [zone 50, us-west2-a. Datalab instances](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=83.67812500000001) [take a little while to spin up. You have](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=85.72922222222222) [to be a little patient. You can view the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=88.4162857142857) [log messages and see where exactly you are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=90.48757142857137) [at. Google automatically sets up an SSH](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=93.40299999999996)[connection to your Datalab instance. For](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=96.518) [this you need to generate SSH keys. Yes, I](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=98.07145454545451) [do want to generate keys, and when](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=100.62514285714288) [prompted for a passphrase, I'm just going](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=102.82864285714291) [to specify the empty passphrase for my RSA](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=105.13772727272729) [private public keypad. You need to do this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=107.97066666666666) [process exactly once for each project.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=111.52799999999996) [Once the SSH keys have been propagated,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=114.176) [you can wait for your Datalab instance to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=117.242) [be up and running, and then connect to it.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=119.30400000000002) [The Web preview button at the top right](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=121.8684615384615) [corner of your terminal window allows you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=124.322) [to connect to Datalab. I'm going to change](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=126.905) [the port to be 8081, because that's where](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=129.55576923076924) [my Datalab instance is running. Change and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=131.90530769230773) [Preview, and you'll immediately get a new](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=134.76528571428565) [browser window where you connect to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=137.52838461538468)[Datalab. If you've used Jupyter IPython](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=139.86376923076935) [notebooks, you'll find this interface very](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=141.97411111111106) [familiar. Datalab has automatically set up](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=144.1352) [a few examples that you can try within the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=146.4878) [docs and notebooks folder here. We'll use](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=149.68583333333328) [a new notebook to write our Python code.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=151.99640000000002) [Click on the notebook link here. This will](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=154.342)[open up a new browser window. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=156.9088571428571) [change the name of your notebook from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=159.3550909090909) [Untitled Notebook. I'm just going to call](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=161.17890909090906) [it bq-datalab. Click on Rename. We now](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=163.6825) [have a browser-based interactive shell where we are going to write Python code.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=2&mode=live&start=166.43416666666664)

[Running Queries Programmatically](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live)

[We'll first see how we can access data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=1.822) [within BigQuery using built-in connectors](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=4.730000000000001) [that come preinstalled with Datalab. I'm](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=6.6625) [going to set up a couple of import](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=9.280571428571427) [statements here to get the libraries that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=11.085142857142849) [I need. I'm importing the google. datalab.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=13.135399999999999) [bigquery library aliased as bq. I'll also](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=16.363799999999998) [import the open source pandas library that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=19.175363636363638) [makes it very easy for me to work with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=21.85476923076923) [tabular data. Use Shift plus Enter to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=25.098230769230756) [execute the code that you write in each](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=27.406499999999994) [cell of this notebook. The results of your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=29.946499999999986) [execution will be available right here on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=32.32900000000001) [screen for you. Once I have these](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=34.695750000000004) [libraries imported, I can use the bq-magic](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=37.464833333333345) [command to invoke the BigQuery Datalab](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=40.81933333333334) [connector. %%bq will give me automatic](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=43.89533333333335) [access to BigQuery. The bq query -n](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=46.86862500000001) [request command indicates that I want to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=50.10161538461537) [specify a query here. I want this query to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=53.17569230769227) [be stored in the requests variable. And](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=56.60199999999998) [here is the query that I want to execute](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=59.09523076923077) [on the e\_commerce\_data within my](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=61.87830769230766) [spikeysales\_dataset. The structure of the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=63.742000000000004) [query is exactly like how you would run it](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=66.08200000000002) [using the BigQuery web console or the bq](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=69.32707692307692) [tool on the command line. I'm retrieving](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=71.82239999999999) [the OrderDate, Quantity, and ShipMode for](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=74.25419999999994) [all orders in the state of California and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=76.42900000000002) [New York. This particular query has been](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=79.38900000000005) [stored in the requests variable. I can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=81.87850000000003) [sample 10 rows from this query by](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=84.68083333333333) [executing this request. Bq sample --count](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=88.36574999999996) [10 will sample 10 rows, and the query that](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=90.91900000000001) [I want to execute is the request query.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=93.84100000000007) [And if you execute this particular cell,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=96.8195833333333) [here are 10 rows from the table. Observe](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=99.626) [how seamless it is to work with BigQuery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=102.41) [from within a Datalab notebook. If you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=105.41228571428572) [check the type of the request variable,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=108.32585714285715)[you'll see that it's a special class](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=110.52335714285718) [within google. datalab. bigquery called](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=113.37650000000001) [query. You can execute this query by](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=116.58525000000002) [invoking the execute function on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=119.27549999999997)[requests variable as well. The query was](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=121.324) [executed, as you can see from this job](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=123.82474999999997) [specification here, but we didn't really](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=126.78330769230772) [store the results anywhere. Let's see how](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=129.1279230769231) [we can execute a query and store the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=131.64279999999997) [result in a pandas data frame. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=134.1809333333332) [specify that you want the output rows of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=136.8213846153846) [this query as a pandas dataframe by simply](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=139.56415384615383) [saying bq. QueryOutput. dataframe within](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=143.5508181818181) [your options. Call the result function](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=146.11854545454545) [after you've executed it, and then the df](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=149.03181818181812) [variable will contain your query results.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=152.26280000000003) [There are 372 records within df, and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=154.196) [executing the head function on your](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=157.01350000000002) [dataframe will give you the first five](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=159.44055555555556) [records. You can see the data types](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=162.34244444444442) [associated with each column in this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=164.6705384615385) [dataframe. We have the OrderDate and the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=166.58407692307702) [ShipMode that are objects. The quantity is](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=168.49479999999997) [of type int64. Once you have data in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=170.47120000000004) [form of a dataframe, you can apply all](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=173.21680000000012) [data manipulation and plotting techniques](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=176.14550000000006)[that pandas has to offer. Here I'm](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=178.159) [grouping my information by ShipMode and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=180.59500000000008) [performing a sum aggregation on the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=182.85077777777778) [quantity so that I can see the total sales](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=185.44211111111113) [on a per-ShipMode basis. You can see from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=188.96666666666667) [the results here that there are 206](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=191.98700000000005) [shipments which were shipped first class,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=194.56650000000013) [53 same day shipments, and so on. Pandas](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=196.89291666666665) [offers you visualization tools as well.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=200.05871428571427) [You can call groups. plot. pie to view](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=202.607) [this data in a pie chart format, and here](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=205.5120666666667) [is the resulting pie chart. You can see](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=208.708) [that the vast majority of shipments are of](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=211.32399999999998) [standard class. you can ignore the warning](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=214.39071428571432) [that you see on screen here. That's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=216.30954545454549) [because certain forms haven't been set up](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=217.9350909090909) [correctly on Datalab. Nothing to worry](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=220.20372727272718) [about as far as our demo goes. If you want](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=222.02230000000003) [to access BigQuery programmatically using](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=225.3210909090909) [Python client libraries, you have to first](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=227.52790909090908) [install them on Datalab using pip install.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=230.3487272727273) [Call pip install --upgrade](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=232.968)[google-cloud-bigquery. This is the step](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=235.67840000000004) [that you'll perform in order to access](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=237.62166666666667) [BigQuery from any Jupyter notebook, even](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=239.83658333333335) [one that's running on your local machine,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=241.85424999999998) [not just on Datalab. We'll import the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=244.236) [BigQuery module from the google. cloud](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=247.71520000000004) [namespace, and use this module to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=250.11160000000012) [instantiate a bigquery. Client and assign](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=252.11558333333338) [it to the client variable. Even with](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=254.04108333333343) [Python libraries, you can use magic](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=256.89454545454544) [commands from within your Datalab](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=259.4838571428571) [notebook. You have to explicitly load](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=261.87814285714273) [these magic commands by calling the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=263.9556363636364) [%load\_ext magic command. Loading these](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=265.874) [magic commands is a good choice to make](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=268.23350000000005) [because it will allow you to execute](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=271.4512500000001) [queries on BigQuery with minimal code. If](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=273.45383333333353) [you want to specify a query, you simply](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=276.02554545454547) [say %%bigquery. This will execute the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=279.3904545454546) [query and store the results in a pandas](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=282.2868181818183) [dataframe. Here is the query that we want](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=285.5046666666666) [to execute. We want the CustomerID,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=288.3361333333331)[CustomerName, and Sales data from](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=290.87199999999996) [California or New York. We want just 10](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=293.1569999999999) [records. When you execute this query in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=295.9579230769232) [the cell where you specify the bigquery](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=298.3039) [magic command, you see the results right](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=300.6622000000001) [here on screen in front of you. The](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=303.0385000000001) [results are in a pandas dataframe. You can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=305.7039166666667) [specify a variable. Here it is state\_info](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=307.9592500000002) [to hold this dataframe as well. We specify](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=310.7609999999999) [a new query here to get the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=314.5796666666667) [Total\_Customers and Total\_Sales by state](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=317.67600000000016) [and store it in the state\_info dataframe.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=320.0167777777778) [A summary of the query results will be](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=323.565) [displayed to you within your browser. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=325.9421428571427) [information is also present in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=328.15090000000004) [state\_info pandas dataframe, and if you](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=330.7063000000001) [call the head function you can view a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=333.04679999999996) [sample of the results. Once you have a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=335.88093333333325) [dataframe, you can use the pandas](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=338.41363636363644) [visualization libraries to plot graphs. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=340.0870909090911) [use state\_info. plot. bar to view a bar](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=342.8343333333334) [chart representation of Sales\_data, as](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=346.84527272727274) [well as Total\_Customers by state. Let's](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=349.62163636363636) [see a different way by which we can](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=352.6544615384616) [execute queries using the Python](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=354.7061538461541) [libraries. Here I have specified the same](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=356.14518181818187)[query within a query string. I'm now going](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=359.03745454545475) [to call client. query, pass in the query](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=361.9673846153846) [that I specified, and indicate that I want](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=364.672) [the results in a dataframe format. I'll](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=367.1880000000001) [store the resulting dataframe in the](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=370.08018181818176) [variable state\_df. This is exactly what we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=373.3485454545452) [did before, but with magic commands. This](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=375.68890909090914) [time we do it by specifying Python code.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=377.5903333333333) [If you invoke the head function on this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=380.793) [dataframe, you'll see that we do have the query results.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=3&mode=live&start=383.1000769230767)

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[And this brings us to the very end of this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=0.423) [module. In this module, we saw how we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=4.092090909090907) [could visualize data that we stored in](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=6.242999999999997) [BigQuery using Data Studio. We set up very](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=8.027) [complex visualizations without writing a](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=12.234999999999998) [single query or a single line of code. We](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=14.14009090909091) [then moved on to our next demo where we](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=16.670357142857142) [saw how we could programmatically access](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=18.96857142857143) [BigQuery APIs from within Cloud Datalab.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=21.248749999999998) [And this brings us to the very end of this](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=25.025) [course on BigQuery, the data warehouse](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=27.76346153846154) [that is available on the GCP. If you found](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=29.676666666666662) [this course interesting, and you're](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=32.68470000000001) [interested in studying data warehouses and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=34.05920000000002) [other cloud computing platforms, here are](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=36.2015) [some resources that you might find useful.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=38.46244444444444) [Building Your First Amazon Redshift Data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=40.802) [Warehouse will talk about Redshift on AWS.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=43.18279999999999) [Introduction to the Azure Data Lake and](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=46.22336363636364) [U-SQL will introduce you to the data](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=49.61454545454547) [warehousing solution that the Azure](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=52.11766666666667) [platform has to offer. If you want to](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=54.074999999999996) [learn more about other GCP technologies,](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=57.22939999999999) [here are some courses that you might find](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=59.117) [interesting. Creating and Administering](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=61.579222222222235) [Goggle Cloud SQL Instances will talk about](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=63.489) [Google's relational database service on](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=66.64679999999998) [the cloud. Architecting Google Cloud](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=68.34979999999996) [Storage Configurations will talk about how](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=70.40612500000002) [you can create and manage object storage](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=73.12392307692308) [using buckets on the GCP. And this is all I have for today. Thank you for listening.](https://app.pluralsight.com/player?course=google-bigquery-architecting-data-warehousing-solutions&author=janani-ravi&name=3a99ccda-1a30-454a-a148-d688681f9005&clip=4&mode=live&start=76.10538461538466)