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Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=6fea6bcb-20e3-4c99-b56e-3c6643986050&clip=0&mode=live&start=91.32399999999998)[effectively indexes every column, unlike](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=6fea6bcb-20e3-4c99-b56e-3c6643986050&clip=0&mode=live&start=93.732) [BigTable, which only indexes a single](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=6fea6bcb-20e3-4c99-b56e-3c6643986050&clip=0&mode=live&start=96.29466666666666) [column, that's the row-key. 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We will study all of these](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=6fea6bcb-20e3-4c99-b56e-3c6643986050&clip=0&mode=live&start=107.1604) [aspects of Datastore. 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It is a schemaless NoSQL](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=18.73914285714286)[service, which is optimized for document](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=21.646833333333326) [data and does really well with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=23.88799999999999) [hierarchical queries. Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=26.88) [specializes in very fast reads; that's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=28.581666666666667) [because it only satisfies queries for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=31.770833333333332) [which it already has an index in place. As](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=33.825) [a result of this, it can achieve](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=37.121625) [millisecond level latencies, even for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=39.198) [large data sets on the order of terabytes.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=41.36049999999999) [Datastore promises that reads are going to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=44.256) [scale independent of data set size; in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=47.605) [other words, the amount of time which it](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=50.62925) [takes to execute a read query only depends](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=52.2835) [on the results of that query and not on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=55.206125) [the size of the underlying data set. This](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=58.04166666666667) [property is something like that offered by](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=60.4975) [a hash index. This is a fairly stiff SLA](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=63.4562) [to satisfy, and in order to do so,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=66.86525000000003) [Datastore imposes some pretty stringent](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=69.049)[regulations, both on the types of queries](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=71.114) [which are allowed, and on the indexes](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=74.151) [which can be maintained in Datastore. And](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=76.63600000000002) [finally, Datastore has a somewhat peculiar](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=79.85033333333334) [data model. As we shall see, this is one](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=82.52757142857142) [important reason why its adoption has not](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=85.45771428571429) [been as great as Google would have hoped.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=88.03000000000002)[For all of that, Datastore remains a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=90.74957142857143) [pretty widely used service amongst a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=92.93650000000001) [dedicated core, particularly of App Engine](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=95.35420000000002) [users on the Google Cloud platform, and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=97.94385714285715) [for its niche use cases, it really is an excellent product.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=0&mode=live&start=100.31899999999999)

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[Let's now turn our attention to some of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=1.998) [the course prerequisites and a quick](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=4.463) [outline of the course. The prerequisites](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=6.305) [include a basic understanding of cloud](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=8.808799999999998) [computing, a basic understanding of Python](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=11.423749999999998) [and some familiarity working with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=14.055285714285718) [databases. Never fear; if you don't](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=16.55025) [possess these prerequisites, you can](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=18.686000000000007) [always check out some of our excellent](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=20.300499999999996) [courses here on the Pluralsight catalog.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=22.524000000000004) [In terms of experience with the Google](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=24.79)[Cloud platform, this probably should not](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=26.741) [be your first course on the GCP. 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Either or both of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=41.617666666666665)[these ought to give you all of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=44.18411111111111) [experience on the Google Cloud platform](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=45.947250000000004) [that you need for this course. Let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=47.23414285714286) [quickly talk about the course outline and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=49.676199999999994) [what's coming up ahead. The first module](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=51.90628571428572) [is all about introducing Cloud Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=54.59842857142857) [and going through a whole lot of theory,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=56.533571428571435) [some of it quite complex, on Datastore and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=58.743750000000006) [other GCP services. In particular, we'll](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=62.25750000000001) [talk about namespaces, kinds, entities,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=65.0165) [properties, and other aspects of the data](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=67.70333333333332) [model which tend to intimidate a lot of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=70.67175000000003) [Datastore users. I hope you will not be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=73.40399999999997) [intimated by these concepts and that you](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=75.2976666666667) [will stick through the first module,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=77.04542857142857) [because once we get to the second module,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=78.69875000000002) [things will seem a lot simpler. We will](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=81.17933333333332) [use the web console to populate Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=84.24425000000001) [with entity data, and then run queries,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=86.91728571428571) [make use of transactions, and composite](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=89.4942) [indices. And in the third and final](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=92.83966666666667) [module, we'll shift focus to managing and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=94.98057142857145) [administering Cloud Datastore, including](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=97.565) [the use of the admin console, the export](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=99.56242857142857) [facility, importing these exported files](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=103.76033333333332) [into BigQuery, and scheduling exports](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=105.76160000000002) [using cron jobs from App Engine, as well](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=108.74880000000002) [as dataflow templates. A quick word about](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=111.08800000000004) [all of the demos; these are all based in a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=114.50500000000002)[hypothetical e-commerce retailer course](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=117.78214285714284) [SpikeySales. As the name would suggest,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=119.89424999999999) [SpikeySales specializes in flash sales.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=121.844) [This makes it vulnerable to constant](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=124.891) [spikes in user traffic. This is the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=126.95414285714288) [precise reason why SpikeySales has decided](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=128.7534285714286) [to move to the cloud, specifically to the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=130.83528571428567) [Google Cloud. The model of cloud computing](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=134.00625000000005) [where you pay-as-you-go and where you do](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=135.90157142857146) [not need idle compute capacity lying](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=138.33357142857142) [around during off-peak periods suits the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=140.73766666666663) [business model of SpikeySales just perfectly.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=1&mode=live&start=143.39000000000001)

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It](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=10.445)[provides autoscaling, ACID transactions,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=13.0846) [and a SQL-like query language called GQL.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=15.115) [It's probably fair to say that Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=19.497) [hasn't gotten all of the adoption that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=21.32) [Google would have hoped for, and its](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=23.212) [future roadmap is a little uncertain.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=25.66725000000001) [There is talk of folding it into Google](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=27.934) [Cloud Firestore. Even so, Datastore is a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=30.551) [powerful and scalable product, and it is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=33.452) [widely used in existing applications,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=35.714) [particularly App Engine applications,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=38.648) [which were very, very popular in the early](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=39.809) [days of the Google Cloud. So it's worth](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=41.88) [our while to study it in quite a bit of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=44.138749999999995) [detail. Let's begin by understanding](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=46.490499999999976)[Datastore strengths. It's a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=48.963) [document-oriented database, so it's ideal](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=50.868500000000004) [for highly structured data such as XML or](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=52.86742857142856) [HTML. It was typically used in highly](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=55.70720000000001)[scaled web serving applications, which](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=58.52424999999999) [require very fast reads of a reference](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=60.657000000000004) [data, but are relatively low on the need](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=62.94266666666668) [for interactivity. Datastore has a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=66.20511111111114) [transactional mode, and so we can use it](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=68.54519999999998) [for use cases where ACID support is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=71.13519999999998) [important. ACID is an acronym for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=73.36699999999999) [Atomicity, Consistency, Isolation, and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=75.57766666666667) [Durability. On the other hand, there are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=78.21825000000001) [some situations which clearly do not play](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=79.84100000000004) [to Datastore's strengths. So you should](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=82.194) [avoid Datastore if you need a relational](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=85.13925) [data with full SQL support. GQL, which is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=87.43157142857144) [the Datastore equivalent of SQL, is a lot](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=90.79999999999998) [like SQL, but differs from it in annoying](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=93.76239999999999) [and somewhat quirky ways. You certainly](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=96.35633333333334) [should avoid Datastore for unstructured](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=98.46433333333334) [data, such as blobs, and you probably are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=100.4646) [better off avoiding it if you need to run](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=103.76071428571429) [a lot of interactive queries. As we shall](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=106.1745454545455) [see, an important way of using Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=108.38633333333335) [is to export automatically into BigQuery,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=110.68166666666667) [where the full power of BigQuery's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=113.81333333333333) [interactive UI comes into play. Let's talk](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=115.529) [about a feature of Datastore called](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=119.20528571428571) [multi-tenancy. Datastore was originally](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=121.587) [meant for use in web apps where incoming](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=123.7317142857143) [data might be from multiple different](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=126.6135) [organizations, and Datastore's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=129.233) [multi-tenancy feature creates separate](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=131.249) [data partitions for each client](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=133.57433333333336) [organization. In this way, we can have the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=136.21699999999998) [same schema for data from all of our](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=138.58199999999997) [clients, but vary their physical location.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=141.08400000000003) [Multi-tenancy is achieved via the use of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=143.571) [namespaces. Kinds and entities and other](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=146.65362499999992) [parts of the Datastore data model need to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=148.494) [exist within namespaces, then there are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=151.4775714285714) [individual silos for each namespace in a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=154.42780000000002) [project. This way the data within](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=157.03728571428573) [different namespaces is kept separated and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=158.5783333333333) [isolated. And this leads us into](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=161.75783333333334) [Datastore's data model, which is somewhat](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=163.88242857142856) [notorious and not very easy to remember or](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=166.99780000000004)[understand. There are four terms which we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=170.2681249999999) [need to keep in mind here. The first is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=171.7246666666667) [kind. Kinds refer to categories of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=174.8568571428571) [objects, such as Products or Customers,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=177.52233333333328) [and they are analogous to tables in the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=179.706) [relational database world. Next come](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=182.319) [entities, which refer to specific objects](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=185.0105714285714) [of a particular kind. Entities are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=187.4194) [equivalent to rules in the relational](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=189.45242857142858) [database world, or individual documents in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=191.604) [a document-oriented world. These](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=194.1956) [individual entities are going to possess](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=196.6755) [properties, so properties are attributes,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=199.345) [as they would be in a document, or they](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=201.9687142857143) [can also be thought of as the individual](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=204.298) [columns in the row of an RDBMS. And](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=206.57728571428575) [finally, the last term worth keeping in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=209.85200000000003) [mind is keys. Keys are used to uniquely](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=212.48099999999997) [identify entities, and these consist of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=216.11183333333335) [the entity name, the kind, as well as](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=219.29385714285712) [ancestors. We'll come back to keys in just](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=222.1784285714286) [a moment. The most intuitive way that I](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=224.188) [know of to make sense of the Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=226.1853333333334) [data model is to imagine entities as](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=228.32374999999996) [hierarchically arranged documents within a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=231.6236) [namespace. So these are like document](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=234.89860000000002) [files on a directory system. Each entity](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=236.87362499999998) [can have a designated parent, or it could](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=239.22285714285718) [be a root entity. This idea of an entity](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=242.47111111111107) [as having ancestors makes Datastore's data](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=246.47887500000007) [model very different from a relational](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=249.00300000000004) [one. Do remember that the parent is an](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=251.20874999999998) [entity and not a kind. Also do remember](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=253.97475000000009) [that that entity, the parent, need not](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=257.19062499999995) [even actually exist. All of this will](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=259.22785714285726) [become a lot more clear once we jump into](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=261.87800000000004) [the examples. Now that we've understood](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=264.7235555555554) [what ancestors are, let's come back to the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=266.16) [idea of an entity key. Each entity in a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=268.9155) [Datastore is uniquely identified by a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=272.5747142857144)[combination of the namespace, the kind, an](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=274.9814999999999) [identifier attribute, and the ancestor](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=278.31385714285716) [path. So we can see that the entity key in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=280.75314285714285) [Datastore is very different from a primary](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=283.085) [key in an RDBMS. Those primary keys there](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=285.781) [are simply one or more column values](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=288.604) [contained within the row. Here the entity](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=291.862) [key includes information which is external](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=294.91949999999997) [to the entity, such as the parent and the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=297.48049999999995) [namespace. One of the important](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=300.37357142857144) [attractions of Datastore, at least in its](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=301.9150000000001) [early days when it was mostly used for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=303.71775) [HTML and XML, was that it was entirely](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=306.6209999999999) [schemaless. Let's be a little more](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=309.8983333333334) [specific about this. We say that Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=311.212) [is a schemaless form of NoSQL because](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=314.2875000000001) [entities of the same kind can have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=316.843125) [different properties. The equivalent in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=319.683)[the relational database world would have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=321.8059999999999) [been if rows of the same table could have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=323.98666666666674) [had different columns. Clearly that's not](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=327.0635000000001) [allowed in the RDBMS world, but it is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=329.3202857142858) [allowed in the Datastore schemaless world.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=332.3080000000001) [And there's another way in which Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=334.5456666666667) [is schemaless. Different entities can have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=337.17600000000004)[properties of the same name, but those can](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=339.6613333333333) [have different types. Again, let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=343.2656666666668) [translate into relational database speak.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=345.7266) [Different rows can have columns of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=348.2823333333333) [same name, but of different types. Again,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=351.07466666666664) [we can see that this clearly would not be allowed in the RDBMS world.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=2&mode=live&start=353.19124999999997)

[Queries and Indexes in Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live)

[In this video, we are going to try and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=2.506) [understand queries and indexes in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=4.142) [Datastore. This can get a little](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=7.095333333333333) [confusing, but it all will make sense if](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=9.313222222222224) [we remember one fundamental fact about](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=11.465874999999999) [Datastore. Datastore will only support](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=14.213124999999996) [queries whose performance is independent](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=16.78966666666667) [of the size of the underlying data set.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=18.668428571428574) [This might sound a little complex, so](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=21.83) [let's break this down. Datastore will only](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=23.4218) [support queries whose performance is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=25.965500000000006)[independent of the size of the data set,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=27.87742857142857) [and scales with the size of the result](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=30.885666666666665) [set. Now we all know a data structure](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=33.16122222222223) [which behaves exactly in this way, and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=35.98) [that is a hash index. That's no](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=38.42314285714286) [coincidence Datastore is a lot like a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=41.44033333333333) [gigantic hash index on multiple columns.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=43.993750000000006) [So no matter how big the data on which you](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=47.069) [run this query, its performance is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=50.232) [constant and depends only on the query](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=52.79314285714287) [results. And, of course, this is an](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=55.73142857142855) [extremely attractive property for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=57.22314285714284) [applications which need very fast constant](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=58.84139999999999) [time reads and are okay with slow writes.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=62.04442857142858) [Datastore achieves this by imposing some](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=66.721) [pretty severe restrictions, both on the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=68.815) [indexes that are built in our database and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=72.012) [on the types of queries that are allowed.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=75.413) [Given this, the typical Datastore query](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=77.445) [needs to satisfy a few conditions. It's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=79.453) [going to be a read-only operation which](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=82.24814285714285) [only deals with entities of the same kind.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=84.87644444444445) [It's okay to have filters on property](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=88.52) [values on keys or on ancestors. All of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=90.882) [these operations are fair game as far as](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=94.45875000000001) [Datastore is concerned. Such a query might](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=97.4858) [entail a filter to define the kinds of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=99.61699999999999) [entities to which that query applies. It](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=101.75899999999999) [may have zero or more sort orders to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=103.97225) [define the sequence of the results, and it](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=107.00312500000001)[may have zero or more filters. These are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=109.41633333333333) [conditions which will decide which](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=111.664) [entities are included in the query result.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=113.739875) [And it turns out that all acceptable](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=116.441) [queries in Datastore can be classified](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=117.859) [into three groups. Ancestor queries, which](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=119.95214285714285) [will filter on an entity and its](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=123.44622222222222) [descendants. Kindless queries, which will](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=126.05177777777776) [return all entities of all kinds in an](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=128.396) [app. Endless queries are the one exception](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=131.38942857142854) [to the rule that a query can only work](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=133.5231428571429) [with entities of the same kind. And](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=135.99544444444442) [finally, there are projection queries](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=138.88116666666667) [which restrict the properties that are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=140.697) [actually returned. As we shall see, there](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=142.437) [are important restrictions on the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=144.93766666666667) [properties that can be included in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=146.996) [projection queries. Let's turn now to the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=148.674) [restrictions on queries. These are the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=151.80700000000002)[kinds of operations not allowed in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=154.07457142857146) [Datastore queries. No substring matches,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=156.27750000000003) [no case-insensitive matches, or full text](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=159.2328) [search, and no native support for the NOT,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=161.8845) [OR, and the! = operator. In addition,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=165.16611111111115) [Datastore also does not permit joins,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=168.52628571428573) [subqueries, or any quality filtering on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=171.17666666666668) [multiple properties. The reason for this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=174.69933333333333) [is simple. Queries of this sort cannot be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=176.86133333333336) [dealt with in constant time, and that will](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=179.45575) [violate Datastore's SLA, so Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=182.1862857142858) [simply deals with the situation by](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=184.39733333333334) [disallowing such queries. Let's also take](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=187.11571428571432) [a moment to understand strong and eventual](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=189.55942857142858) [consistency on Datastore. Strong](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=192.46000000000004)[consistency refers to a situation when an](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=194.25566666666666) [update request comes in. That update](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=197.02466666666666) [request changes the state of the data in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=199.56114285714284) [all replicas without exception and only](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=203.03157142857143) [then does the update request return.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=206.049) [Because the update request is a blocking](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=208.371) [one, there's no possibility of another](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=211.08) [re-request happening simultaneously, which](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=213.746) [picks up a stale value. That's the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=216.007) [advantage of strong consistency. Of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=218.44833333333335) [course, the downside is that both reads](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=220.2362857142857) [and writes take much longer, so latency](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=222.50766666666667) [can be a problem. In order to improve](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=224.70033333333333) [performance, distributed systems often go](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=227.15779999999995) [with eventual consistency. Here an update](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=228.88859999999997) [request comes in, and the master copy of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=232.47199999999998) [the data is updated and then update](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=235.79577777777777) [request is returned. In the meantime, a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=238.572) [read request which comes into a replica](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=241.24049999999997) [might pick up a stale value. In such](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=243.7356666666667) [systems, there is a perceptible lag](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=246.79042857142858) [between the master and the other replicas](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=249.17685714285713) [being updated. Strong consistency has the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=251.265) [advantage that no read operation can ever](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=253.55033333333333) [fetch stale data. That is a possibility in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=256.397625) [eventually consistent databases. However,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=259.18233333333325) [the downside of strong consistency is that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=261.62120000000004) [the latency of writes is going to go up,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=264.41542857142866) [and it's going to depend on the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=266.9149999999999)[replication latency. Eventually consistent](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=268.77700000000004) [databases have far lower write latencies.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=270.7) [With all of this background, let's now](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=274.165) [understand Datastore's consistency](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=276.12749999999994) [guarantees. It offers a mix of strong and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=278.12800000000004) [eventual consistency, so operations such](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=281.44975000000005) [as entity lookup by ancestor or key will](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=283.39) [always receive strongly consistent data.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=286.8371428571428) [That's the default setting, but it is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=289.768) [possible to relax this and allow eventual](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=291.493) [consistency even for such operations. All](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=294.63) [other queries are going to be eventually](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=297.5157142857143) [consistent by default. What does this mean](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=299.52824999999996) [for you as a Datastore user? The](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=302.8318) [implication is that highly related data](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=305.153) [which needs to be strongly consistent](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=307.43385714285716) [should all be within the same entity](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=310.469) [group. That is, it should all have the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=312.7789999999999) [same ancestor path. This is also a good](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=314.88174999999984) [place for us to talk about indices in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=317.3802499999998) [Datastore. There are built-in indices,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=319.86825) [which Datastore predefines for each](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=322.322) [property of each kind, and then there are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=324.715) [composite indices, which have multiple](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=326.801) [property values per indexed entity.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=329.43) [Datastore will only allow the execution of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=331.845)[queries which have either a built-in or a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=334.561) [composite index to return the results.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=336.512) [Built-in indices are automatically](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=339.832) [provided for kindless queries. These are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=342.03599999999994) [queries which return all of the entities](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=344.12674999999996) [in a database, and for queries with only](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=345.90157142857146) [ancestor and equality filters. In](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=349.65833333333336) [addition, built-in indices can be used for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=352.10085714285714) [single property inequality filters, as](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=355.04) [well as for queries which have no filters](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=358.30150000000003) [at all, but have just the one sort order.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=359.6504) [If this sounds needlessly complicated,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=362.876) [have no fear; it will make a lot more](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=365.903) [sense once we get to the demos. If a query](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=367.55449999999985) [cannot be returned immediately using a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=370.9038571428571)[built-in index, we as developers must](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=373.15157142857146) [provide a composite index; otherwise,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=375.8752) [Datastore will disallow our query. This](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=377.83483333333334) [means that composite indices must be built](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=380.59457142857144) [if our queries have multiple sort orders](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=382.84) [or sort on keys in descending order. We](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=385.76125) [also need composite indices if you have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=389.212) [any quality filters on multiple](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=391.354) [conditions, or a combination of inequality](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=394.1081666666667) [and equality filters on different](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=396.52471428571425) [properties. And now perhaps you have a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=398.84900000000005) [sense of why Datastore's adoption has been](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=401.14766666666674) [somewhat disappointing for Google. All of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=402.9204000000001) [this fine print seems to make it just so](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=405.70244444444444) [hard to use that a lot of users or](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=407.751)[prospective users are intimidated.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=410.3884) [However, as we shall see, when we get to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=412.826) [the demos, it's actually not all that bad.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=414.479) [So please just keep an open mind and stick with this.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=3&mode=live&start=417.221)

[Datastore vs. Other GCP Storege Services](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live)

[Next, let's move to a conversation about](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=2.584) [Datastore versus other GCP storage](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=4.452) [services. Let's start out with a tree](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=7.5520000000000005) [diagram. This is a taxonomy of the GCP](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=9.55725) [storage options. The big first level](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=12.036) [question is whether our data is structured](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=14.722571428571428) [or unstructured. If it's unstructured](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=16.954666666666665) [data, then we can go with either cloud](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=18.492375000000003) [storage buckets or persistent disks from](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=21.281499999999994) [within compute engine instances. Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=24.055) [is clearly meant for very structured](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=26.28516666666667) [hierarchical data, so this is not very](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=28.339499999999997) [important or relevant for us. Let's move](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=31.55014285714286) [now to the other branch of the tree. If we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=33.768600000000006) [have structured data, then the question is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=36.3918) [whether we would like to access it using](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=38.021) [SQL or NoSQL. SQL probably makes the most](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=40.58671428571427) [sense for interactive querying; NoSQL](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=43.760000000000005) [probably makes more sense for programmatic](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=45.9498) [usage from client code. SQL can be used as](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=48.620999999999995) [a way for two types of applications;](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=52.0671) [online transaction processing and online](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=54.72) [analytical processing. Without going into](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=58.063) [the nitty-gritty of each of these, OLTP](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=60.32457142857143) [technologies typically support the asset](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=63.2284) [properties, and on the GCP these are Cloud](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=65.50085714285713) [SQL and Cloud Spanner. In the OLAP space,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=68.303) [the GCP has a really competitive offering,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=71.13866666666667) [and that's BigQuery. Coming now to the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=73.72080000000001) [NoSQL side of things, here there are two](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=76.41149999999999) [services offered on the GCP, BigTable and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=79.1367142857143) [Datastore. BigQuery is by far the most](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=82.28840000000001) [popular of all these services, so let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=84.52766666666668) [start by comparing Datastore to BigQuery](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=86.54257142857143) [as a benchmark. To begin with, BigQuery is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=88.70499999999998) [a SQL-oriented data technology, while](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=92.77157142857146) [Datastore is inherently NoSQL. Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=95.31299999999999) [does have its own query line which is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=97.86450000000002) [called GQL, but really the best way of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=100.8785714285714) [interacting with it is programmatically.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=102.68457142857145) [In addition to this very broad difference](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=104.557) [between the two, let's also compare them](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=106.768) [on various other axes. BigQuery scales to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=109.497)[petabytes scale data, while Datastore is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=112.304) [probably best for data in the terabyte](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=115.02485714285713) [range. BigQuery and Datastore are both](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=118.00249999999998) [serverless and both support autoscaling,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=120.83849999999998) [so there's no need to design a cluster.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=122.45728571428573) [However, BigQuery works best for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=125.331) [two-dimensional relational data, although](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=126.871) [it does also have support for structs,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=129.82728571428572) [records, and arrays. Datastore is clearly](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=131.80700000000002) [document-oriented, and that's a big point](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=135.42875000000004) [of difference. BigQuery works best for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=137.65014285714292) [analytical queries, while Datastore works](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=140.3896666666667) [best for hierarchical queries. And coming](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=142.5384285714286) [to performance, the latency for reads on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=144.75128571428573) [BigQuery is probably going to be on the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=147.22249999999997) [order of seconds, and it's probably going](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=149.28775) [to be in the order of milliseconds for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=151.24212500000002) [Datastore. Next, let's compare the two](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=154.2375)[NoSQL offerings on the GCP, Datastore and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=156.31885714285713) [BigTable. Datastore works best at the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=159.53949999999998) [small end of BigData, so on the order of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=162.02275000000003) [terabytes. BigTable works best for really](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=164.71642857142857) [large data sets on the order of petabytes.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=167.19471428571427) [Datastore is serverless and involves no](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=169.857) [cluster provisioning or upkeep. BigTable](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=172.113)[does require cluster maintenance and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=174.8436) [that's quite an art with BigTable.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=177.0312857142857) [Datastore is optimized for hierarchal data](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=179.079) [with fast hierarchical reads. BigTable is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=182.4876) [optimized for sequential data and fast](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=185.44766666666666) [sequential reads and also fast sequential](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=188.299) [writes. Datastore has a free tier, so if](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=190.95933333333335) [you don't use it, you don't end up paying.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=194.09300000000002) [BigTable has a complex cluster which will](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=196.03300000000002) [stay on and incur pretty heavy charges if](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=199.03199999999998) [you forget to turn it down. Datastore is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=201.58499999999998) [schemaless; BigTable, on the other hand,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=204.24433333333332) [is schema-driven. In fact, getting your](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=206.97285714285715) [BigTable schema write is a big part of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=209.32114285714283) [using BigTable. And let's round off this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=212.50914285714282) [analysis with a comparison between](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=214.82225000000005) [traditional RDBMS and Datastore. A](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=217.08466666666666) [traditional relational database is built](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=220.414) [around atomic transactions and only atomic](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=223.294) [transactions are possible. In Datastore,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=225.7) [on the other hand, atomic transactions are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=228.00133333333332) [possible. But you would not use them](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=230.80575) [unless you had an explicit reason for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=232.55566666666672) [doing so. Both traditional databases and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=234.7633333333333) [Datastore use indices for fast lookup.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=237.85739999999996) [However, in a traditional RDBMS, only some](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=240.79) [queries use indices. However, in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=243.2984) [Datastore, as we have seen, if a query](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=245.43500000000003) [cannot be satisfied using an index,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=247.73037499999998) [Datastore will simply disallow it. The](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=249.90616666666665) [upshot of this is that traditional RDBMS's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=252.38785714285714) [have query times which depend on both the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=254.168) [size of the data set and the size of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=257.11379999999997) [result set. In Datastore, however, the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=260.27899999999994) [only queries which are supported are those](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=262.8235714285714) [which are independent of the size of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=265.5041428571429) [data set and whose performance depends on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=268.0732857142857) [the result set alone. The types of data](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=269.88100000000003) [that these technologies support differ as](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=271.94214285714276) [well; traditional RDBMS's work best with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=274.43300000000005)[structure relational, that's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=277.32800000000003) [two-dimensional data. Datastore is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=278.66366666666664) [document-oriented data such as XML or](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=280.9742) [HTML. We've already discussed the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=284.2704285714285)[equivalence between rows in tables in a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=286.7384285714286) [traditional RDBMS and entities of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=289.78) [different kinds in Datastore. The](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=292.285) [individual values are called fields in a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=294.36600000000004)[traditional RDBMS and properties in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=297.098) [Datastore. Primary keys in an RDBMS](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=299.74800000000016) [uniquely identify a row using information](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=302.8079999999999) [within that row. In Datastore, a key](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=305.8234285714287) [includes information from outside the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=308.60400000000004) [document, or the entity, such as the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=310.8394285714285) [ancestor and the namespace. And the final](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=313.9777142857142) [set of differences between these two](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=315.96814285714294) [technologies come down to schemas,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=317.65133333333335) [traditional RDBMS, and for schemas very](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=319.84133333333335) [rigorously, Datastore is entirely](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=323.18466666666666) [schemaless. Rows of a table must have the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=325.7313333333333) [same columns, that is the same names and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=328.9432222222223) [the same value types. Entities of the same](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=331.0991999999999) [kind can have different properties. From](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=333.6802857142856) [all of this we can see that Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=336.61122222222224) [occupies a pretty unique spot in the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=338.893) [taxonomy of GCP storage technologies.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=341.826) [Because it so niche and so different from](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=344.173) [almost anything else out there, many users](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=346.19) [have a hard time figuring out what exactly](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=348.86625000000004) [to do with it. That said, it has its own](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=351.2063333333333) [core of loyal followers, particularly from](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=354.49566666666664) [the initial users of the Google Cloud](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=357.15380000000005) [platform from back in the day when App Engine was a leading service there.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=4&mode=live&start=359.49742857142866)

[Pricing](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live)

[We've already alluded on more than one](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=2.063) [occasion so far the fact that Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=4.333) [has had less adoption than Google would](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=6.839) [have hoped for. This is no secret. In](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=9.436) [fact, in August 2018, which is a couple of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=12.34311111111111) [months before this course has been made,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=15.287749999999999) [Google indicated plans to merge Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=16.91) [into another service on the GCP called](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=19.283) [Firestore. It makes sense for us to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=22.70162500000001) [quickly understand what Firestore is all](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=25.123142857142852) [about. Firestore is an existing GCP](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=27.215750000000003)[service, which is optimized for real-time](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=29.753) [database users. It is also a NoSQL](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=32.096) [document-oriented database. Unlike](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=34.958) [Datastore, which is in general](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=37.33316666666666)[availability, Firestore is still in Beta.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=39.209) [Google has recently added a Datastore mode](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=42.099) [to Firestore, and we'll come to the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=45.271) [nitty-gritty of that in a moment. The big](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=47.222) [advantages of Firestore or Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=50.231333333333325) [really come down to its far simpler data](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=52.179857142857145) [model. Secondly, its support for real-time](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=55.54833333333334) [updates, and finally for a new and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=59.045) [strongly consistent storage layer. Given](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=61.25525000000001) [this, it makes sense for us to quickly](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=63.141) [contrast the data models of Datastore and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=65.78657142857143)[Firestore and also include the relational](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=67.96985714285717) [database equivalence to keep us grounded.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=70.95059999999998) [Here are the four concepts from](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=73.11) [Datastore's data model, along with their](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=75.198) [RDBMS equivalents and the Firestore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=77.5085) [equivalents. Kinds are like RDBMS tables,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=80.61940000000003) [also known as collection groups in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=83.35524999999998) [Firestore. Entities are like individual](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=86.29000000000002) [rows in an RDBMS, or documents in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=88.13300000000001) [Firestore. Properties are similar to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=92.042) [columns in an RDBMS or fields in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=93.89942857142856) [Firestore. Keys are similar to familiar or](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=96.95500000000001) [primary keys in an RDBMS, and document IDs](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=99.59014285714288) [in the Firestore world. And finally, let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=102.55266666666665) [talk just a little bit about Firestore in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=105.271625) [Datastore mode. Remember that Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=108.3725) [has both eventually consistent and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=111.38) [strongly consistent queries. That will](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=113.53833333333336) [change in Firestore; all queries will be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=116.24466666666669)[strongly consistent. That really is the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=119.64342857142854) [big headline of Firestore and Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=121.66514285714288) [mode. Then, there are two little details.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=124.36075) [In Firestore, writes to an entity group](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=127.129) [will no longer be limited to 1 per second.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=129.268) [This is an arcane limitation in the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=132.519) [Datastore world, and transactions will no](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=134.787) [longer be limited to 25 entity groups or](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=136.784) [less. Both of these last two points are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=140.6151111111111) [pretty arcane, so if you've never heard](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=142.54125) [about them or thought about these](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=144.88742857142864) [limitations before, you're probably not](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=146.07649999999995) [alone. Let's move on now and quote the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=148.3526) [Google Docs on this topic of Firestore and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=151.41050000000004) [Datastore. The Docs tell us that "After](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=154.38475000000008) [Cloud Firestore is released as a general](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=156.8717142857142) [availability product, we will gradually](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=159.558) [upgrade existing Cloud Datastore databases](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=161.466) [to Cloud Firestore in Datastore mode. "](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=165.16) [And that beautifully clear piece of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=168.185) [technical documentation gets us to the end](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=170.74749999999997) [of this module. Let's summarize the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=173.35557142857138)[territory that we covered. We introduced](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=175.258) [Datastore, which is a schemaless NoSQL](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=177.495) [service on the Google Cloud platform. We](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=179.73033333333336) [saw that it is optimized for document data](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=182.24228571428569) [and hierarchical queries. Datastore only](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=185.48559999999995) [supports queries with very fast read](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=188.23199999999997) [latencies on the order of milliseconds.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=190.9465)[The way it does this is by only supporting](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=193.312) [queries that it can execute in a time](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=196.385) [which is independent of the data set size.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=198.9041111111112) [And this in turn is made possible by a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=201.863) [combination of a fairly peculiar and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=204.459) [distinctive data model and some pretty](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=206.16) [stringent restrictions on indexes and the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=209.014) [queries that can be run. A lot of this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=212.183) [technical talk might give you the wrong](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=214.81199999999998) [impression. You might feel that Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=216.44324999999998) [is really hard to use. In fact, it's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=218.12785714285715) [remarkably easy to use, and I hope that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=221.02325000000005) [you will allow me to prove that to you in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=223.11019999999994) [a series of demos on the other side of this module break.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=fb0dc15e-617d-4527-9e1a-9842b27cbf2b&clip=5&mode=live&start=225.74939999999995)

[Querying and Using Cloud Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live)

[Module Overview](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live)

[Hello, and welcome to this module on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=0) [Querying and Using Cloud Datastore. This](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=4.423) [module is absolutely packed with demos. We](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=7.226800000000001) [will begin by exploring Datastore's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=9.900000000000002) [somewhat confusing data model. We will see](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=12.0442) [what properties, entities, and kinds are.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=15.906) [We will then see how these can be mapped](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=18.152666666666672) [to analogous concepts in the RDBMS world.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=21.194374999999997) [So kinds are roughly analogous to tables,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=24.054666666666666) [entities correspond to rows within tables,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=27.445) [and properties are similar to individual](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=29.7875) [columns. We will move on from CRUD](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=32.80325) [operations to queries and transactions. We](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=35.263249999999985) [will execute all of these in three](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=38.12275) [different ways using the web console,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=39.717) [using a Google-specific query language](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=42.296) [called GQL, and finally, using Python](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=44.385) [client libraries. After that, we'll move](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=47.694500000000005) [onto the topic of composite indices. GQL](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=49.8075) [is very similar to SQL, but it explicitly](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=52.7135) [disallows a lot of queries which seem](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=56.509750000000004) [perfectly natural to SQL users. It turns](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=58.971666666666664) [out that those queries are often](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=61.13999999999999) [disallowed because there is not an](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=63.341499999999996) [underlying composite index to support](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=65.88757142857142) [those queries. We will see how such indices can be constructed and deleted.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=0&mode=live&start=68.089)

[Enabling APIs](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live)

[Let's go ahead and get started. In this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=2.083) [demo, we will enable all of the required](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=4.816) [APIs, and then go ahead and explore how we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=6.877714285714285) [can create and work with entities, kinds,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=9.834749999999998) [and properties. Let's switch over to the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=12.151499999999999) [web console. We first check that the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=14.785571428571425) [project which we are using has billing](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=16.602625000000003) [enabled. We can find the project name over](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=19.425999999999995) [up top. In this example, it's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=22.231666666666676) [spikey-datastore, and we can check the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=24.670200000000005) [billing card over on the middle right. As](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=26.328000000000003) [we can see here, billing has indeed been](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=28.719500000000004) [enabled. Next, we click on the navigation](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=31.926199999999994) [menu. That's the three horizontal lines](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=34.918571428571425) [over on the top left. The navigation menu](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=36.4822857142857) [also known as the hamburger is the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=39.29085714285715) [starting point; it's the easiest way to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=41.62614285714286) [navigate through all of the GCP services,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=43.88028571428572) [and we will be coming back to it again and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=46.859) [again. Let's find the APIs and Services](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=49.19172727272727) [section and click on the dashboard. There](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=52.22442857142856) [we enable APIs and services. That in turn](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=54.57666666666667) [takes us to an API browser. We search for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=58.02833333333332) [the Compute Engine API. We will need that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=61.301) [to be enabled in order to create Datalab](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=63.805888888888894) [VM instances. It turns out that the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=66.4654) [Compute Engine API is already enabled, so](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=68.58266666666667) [no need to do anything here. Let's go back](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=70.47066666666669) [and enable the Cloud Source Repositories](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=73.778375) [API. This is also required by Datalab.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=76.21083333333334) [Finally, let's go back to the API library](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=78.46942857142858) [one last time. There let's find the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=81.63300000000001) [Datastore API and go ahead and enable that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=84.4255) [as well. At this point, we are ready to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=87.3553333333333) [actually start using Datastore, so we find](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=89.44187499999997) [it, it's listed in the navigation menu in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=92.26771428571428) [the storage section, and we click on the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=94.778) [Entities pane. We are taken to a dialog](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=97.159) [where we are prompted for the precise](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=99.955) [service which we would like. Note here](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=101.672) [that there are three choices; Cloud](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=104.23714285714286) [Datastore, Cloud Firestore in Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=106.2516) [mode, and Cloud Firestore in Native mode.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=108.58466666666666) [It's quite clear from this dialog that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=111.24685714285715) [Google thinks of Firestore as the future](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=113.74985714285715) [of Datastore. Do note that whatever choice](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=116.727) [we make here is going to be permanent for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=119.16574999999997) [this project. Let's go ahead and make our](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=121.60850000000002) [choice. Let's pick Cloud Datastore. Notice](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=123.90342857142858) [here the differences between each of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=126.699) [three options. Cloud Datastore is in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=129.3785) [general availability, Cloud Firestore is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=132.2536666666667) [still in Beta. We can see that the data](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=134.475) [model relies on kinds and entities in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=137.67766666666662) [Cloud Datastore, but on collections and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=140.84400000000002) [documents in Cloud Firestore. Firestore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=143.70400000000006) [clearly scores over Datastore in query](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=145.9865) [consistency, the presence of real-time](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=148.8524) [updates, offline data persistence, and the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=151.13049999999998) [mobile and web client libraries. On the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=153.84666666666675) [other hand, Firestore is still not in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=157.2295) [general availability, and so if you need](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=160.012) [production-level SLAs, Datastore is still](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=162.841) [the way to go. So we select Cloud](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=164.9941428571429) [Datastore and then we are prompted for the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=167.85999999999999) [location information. Notice here that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=170.9763333333333) [Cloud Datastore offers both multi-region](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=173.2875) [and regional configurations. These, once](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=176.0892) [again, are going to be at the level of a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=178.60044444444446) [project. So us-central and europe-west are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=181.50671428571425) [the currently available multi-regional](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=184.56900000000002) [locations. This choice is going to have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=187.0235) [the data in a replicated configuration.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=189.18133333333327) [You'd go with this if you like to increase](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=191.757) [the availability of your data. There are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=194.134) [also various regional locations available](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=197.05133333333333) [down below, one each in Asia, Australia,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=199.2817142857143) [and Europe. We should store our data close](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=202.511) [to where its users are going to be. For](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=205.60550000000003) [the purposes of these exercises, we'll go](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=208.211) [with us-central. Do note that this choice](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=210.7365) [of location is permanent as far as a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=213.83887499999994) [project goes, and it's also going to apply](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=217.26685714285708) [it to the app engine associated with the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=219.33466666666666) [project. In any case, we are now ready.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=221.8111666666667) [Let's go ahead and click on the Create](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=223.962) [Database button. Our Datastore database is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=226.931)[going to come into existence. It's now](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=229.69383333333332) [ready for us to use. We can now go ahead](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=232.1985714285714) [and work with entities, indices, and so on.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=1&mode=live&start=235.0283333333334)

[Creating Our First Entity](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live)

[Let's go ahead and get started with the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=2.151) [process of populating our database with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=3.529) [entities. To do so, we click on the Create](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=6.470714285714285) [Entity button or up top, and that brings](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=9.449) [us to our dialog where we can start](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=11.74255555555555) [entering the entity information. The first](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=14.162250000000002) [bit of information that we are prompted](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=16.484666666666666) [for is the namespace. Here we will go with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=18.654142857142865) [the default namespace, but you should be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=20.995750000000008) [aware that namespaces are a way for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=23.089285714285705) [Datastore to implement multitenancy. This](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=25.61125000000001) [is a way in which we can provide separate](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=28.532999999999998) [data partitions for data coming in from](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=30.934166666666666) [different client organizations. Each of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=33.9268) [those organizations is known as a tenant.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=36.215888888888884) [So, the namespaces allow us to have the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=38.627) [data siloed separately. Datastore uses](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=41.338) [partitions to silo data for each tenant.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=44.243857142857145) [Each partition is going to be defined by a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=47.081250000000004) [project ID and a namespace ID. An entity](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=49.85733333333333) [can only belong to a single partition.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=52.866888888888894) [Let's move on, and the next field that we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=55.838) [are prompted for is the kind. Here we have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=57.825) [specified the kind to be customers. That's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=60.779333333333334) [because we would like to hold information](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=62.659) [related to individual customers of our](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=65.1745) [e-commerce website. Next comes a key](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=67.9972) [identifier. Here we just go with a numeric](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=70.85840000000002) [ID, or an auto-generated key. We could](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=74.07287500000001) [also choose to specify properties of this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=76.90785714285714) [entity to make up the key identifier.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=79.1198888888889) [Right below the key identifier is a way to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=81.762)[specify the parent of this entity. Let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=83.917) [skip that for now and move onto the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=86.99270000000001) [properties. We've discussed how properties](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=89.54230000000007) [can be thought of as analogous columns in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=91.12966666666667) [a database structure. So let's go ahead](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=93.83571428571425) [and start configuring the name properties](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=96.79442857142861) [by clicking on that Add Property button.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=99.05249999999998)[Just like database columns, each property](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=102.188) [here is going to have a name, a type, and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=104.20955555555557) [a value. So the first property that we go](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=107.587) [with is called name, its type is going to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=109.94000000000004) [be string. Let's take a moment, however,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=113.47377777777781) [and explore the other possible choices. We](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=115.516) [can see that allowable types include date](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=118.525)[and time, integer, floating point,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=120.57816666666666) [Boolean, key, geopoint, and array. For now](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=122.594) [let's just go with the simplest possible](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=127.02525000000001) [choice, which is string. And finally, we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=128.7742) [actually type in the value which is Alice.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=131.712125) [At this point, we have successfully](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=134.243) [created the first property of our entity.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=136.6925) [Note again the similarity between a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=139.642) [property and a column in an RDBMS. There's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=142.321) [a name, a type, and a value. Next is a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=146.14762499999998) [checkbox asking whether we would like to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=149.68962499999998)[index this property. Note how this is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=151.8838) [enabled by default. In other words,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=154.58300000000003) [Datastore is going to default, index every](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=156.53728571428567) [property in any entity. At this point, we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=159.19642857142856) [are done defining this property, so let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=162.57250000000005) [click on done and then let's go ahead and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=164.55399999999997) [add yet another property. This time that's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=167.592) [going to be named Gender, the type is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=170.25699999999998) [String, and the value is Female. Let's go](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=173.26300000000003) [ahead and add a third property of a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=176.03522222222222) [different type. This time let's call it](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=178.35711111111112)[Purchases. This has type integer, and it](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=181.1298888888889) [represents the number of purchases that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=183.77857142857135) [Alice has made on our site, which is 6.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=185.392125) [And let's add in one last property. This](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=188.847) [captures the date when Alice joined Spikey](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=191.23157142857144) [sales. This is of type date and time. At](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=193.34877777777777) [this point, we have specified all the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=196.905) [property values for this entity and we are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=198.851) [finally ready to go ahead and create the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=201.298) [entity and persist it in our database. And](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=203.464) [once we do that, we can see that she shows](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=207.1678) [in our entity dashboard. Let's click on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=209.334) [it. Notice that it has a system-generated](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=212.00566666666663) [identifier. This identifier, which is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=214.755) [called the ID field, is a part of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=217.36499999999995) [overall key for each entity. The entity is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=220.76466666666673) [identified by a key, which is a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=224.40975000000003) [combination of the ancestor\_path. That's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=227.22128571428576) [optional, and we have not set it in this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=229.45033333333333) [particular entity, followed by the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=231.74511111111107) [namespace, the kind, and the identifier.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=234.29979999999998) [Remember the Datastore is schema-less, so](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=237.48) [we can go ahead and add properties at any](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=239.9188888888889) [point. Let's go ahead and add a new](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=242.4512) [property. Let's call it Average\_spending.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=245.88480000000007) [Let's give it a value of 200, and once we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=248.258) [are ready, let's go ahead and save the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=250.603) [changes to our entity. And that will now](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=253.051) [appear in the entity browser. So we have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=255.80211111111112) [successfully added a new property on the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=258.4530000000001) [fly. This property is specific to our](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=260.89275000000004) [entity, and it does not necessarily](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=263.5542857142857) [generalize to other entities of the same](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=265.1624285714285) [kind. Notice that this is not something](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=267.8099999999999) [which we would easily have been able to do in a relational database world.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=2&mode=live&start=269.56624999999985)

[Creating Entities with Ancestor Information](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live)

[Let's keep going and let's create a few](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=1.697) [more entities for us to work with. This](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=3.477) [time we stick with the default namespace.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=5.89225) [The kind is pre-populated to still be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=8.19) [customers; that's just because that was](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=10.6) [the last entity we created. We can edit](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=13.233) [that. And the same goes for the properties](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=15.661666666666665) [of this entity. The schema this time has](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=18.2798) [been pre-defined or pre-populated;](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=20.92528571428572) [however, we can go ahead and edit this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=22.33557142857143) [just as we like. Let's first click through](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=25.244142857142858) [and edit the property values. We can see](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=27.719) [initially that all of these are set to 0.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=30.895857142857146) [So average spending is 0, the gender, name](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=33.71) [are empty, and the purchases are 0 as](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=36.5801) [well. So, the average spending, which is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=39.43690000000002) [currently set to 0, let's change that to a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=41.619) [value of 30. In exactly the same manner,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=44.600000000000016) [let's go through and edit all of these](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=46.89) [property values, and pretty soon we have a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=48.988) [new fully constructed entity. The name of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=51.782599999999995) [this customer is Ben. He has made 1](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=54.686714285714295) [purchase, his gender is male, and his](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=57.45700000000001) [average spending is set to 30. Now, let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=59.85399999999999) [do something a little different. Let's go](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=62.202285714285715) [up and add a parent. This is where it gets](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=64.63971428571428) [really interesting and also somewhat](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=68.27185714285717) [confusing. Here we are specifying a key](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=70.39675000000001) [for a parent entity. So in this example,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=73.67220000000003) [when we say key is equal to Member, yes,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=76.51944444444445) [we are specifying the kind of the parent](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=79.4742857142857) [entity as member and the identifier as the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=82.81374999999997) [value yes. Now, the important thing to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=86.00471428571426) [note is that the entity need not even](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=88.05100000000003) [exist when we specify it as the parent.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=90.79166666666666) [This is permanent and cannot be changed](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=93.531) [once the entity has been created. We are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=96.253) [now ready. Let's go ahead and create our](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=98.43024999999999) [second entity. We can see that this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=100.762) [entity, which corresponds to the name Ben,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=103.43899999999996)[does indeed have a parent entity. That](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=106.274) [parent entity is defined using the key](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=108.87285714285714) [Member, yes. Let's keep going with the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=111.86875) [process of creating a few more entities.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=114.492) [So we once again click on the Create](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=117.286) [Entity box. This time let's specify the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=119.3476) [parent right away. The key Member, yes, is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=122.03049999999998) [the same that's as before. And then we go](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=125.1545) [ahead and update all of the properties of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=127.89399999999999) [the entity. The only property which did](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=130.2055) [not explicitly need to edit was the date](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=132.62085714285718) [property, which automatically picked up](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=135.88885714285715) [the current date and time. We could change](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=137.2716666666667) [that, of course. Let's go ahead and create](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=139.83533333333327) [this entity, which corresponds to Cathy.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=142.56942857142857) [This is entity number 3. Let's keep going.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=145.104) [Let's create yet another entity. This one](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=147.65025) [is for the user Dan. And at this point, we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=150.27485714285717) [have four entities in existence. Let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=153.51512500000004) [just see very quickly how we can delete](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=155.36714285714282) [one of them. From the entity browser, we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=157.96200000000002) [simply go ahead and check or select the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=160.38462500000003) [entity that we are interested in. Here](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=162.7561111111111) [that's the entity Dan. And then we can](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=165.26114285714283) [click on the Delete button right up top.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=168.1057777777778) [You need to confirm the deletion. This is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=170.21799999999996) [going to permanently get rid of it from](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=172.2986666666667) [our Datastore database. And that is all](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=174.584) [that there is to it. Notice how each one](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=177.22922222222223) [of these entities can most easily be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=179.79799999999997) [understood as corresponding to an object](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=182.38049999999998) [from an object-oriented world. So, an](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=185.21100000000004) [entity is like an object and the kind is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=187.94144444444447) [like the class from which those objects](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=191.06775) [were instantiated. But this analogy breaks](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=193.408) [down in some important ways. For instance,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=195.78428571428572) [we can create an entity which is of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=198.55175) [kind of customers, but it can have a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=201.52366666666668) [different parent. So here we are defining](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=203.822) [the parent as key Member, no, instead of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=206.45599999999996) [Member, yes. We can now go ahead and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=209.5493333333333) [update all of the property values for this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=211.63880000000003) [entity, but we can also add a new](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=213.72950000000003)[property. Let's call this Feedback. This](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=216.20340000000002) [shows that not all entities of the same](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=218.79025000000001) [kind need to have the same properties.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=221.09) [This demonstrates yet again the schemaless](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=223.897) [nature of Datastore and it also shows the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=226.308) [differences between Datastore and objects](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=229.592) [in an object-oriented language, such as](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=232.949) [Java. So here we specify that this column](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=235.18614285714278) [Feedback is of type array, and this is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=237.905) [going to have multiple integer values.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=240.883) [Notice the JSON-like representation which](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=243.807) [we use should define these values, so we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=245.949) [have an array and inside that array we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=249.27033333333335) [have a set of values corresponding to each](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=252.03187499999999)[element of the array. So we are done.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=254.358) [Let's go ahead and save this new property.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=256.837111111111) [We can create our entity, which looks a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=258.9575714285715) [lot like the other entities of the same](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=261.63999999999993) [kind, but is not quite exactly the same](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=263.895) [because this entity is the only one which](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=266.4549999999999) [has a feedback column, and in the entity](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=269.43800000000005) [browser notice how that feedback column](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=271.95500000000004) [appears as a nice list with the values 5,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=273.66575) [4, 3. Now here's another interesting](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=277.1654000000001) [detail. The next time we create an entity,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=279.82259999999997) [that entity is going to show up with the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=282.553) [feedback as one of the properties.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=284.718) [However, we can always go ahead and delete](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=287.447) [the feedback or restore it as we so](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=290.087) [choose. But in either instance, we will](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=293.83899999999994) [always have the ability to add and get rid](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=296.0697500000001) [of properties, even from entities of the same kind.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=3&mode=live&start=298.4525000000001)

[Running Queries on the Web Console Using GQL](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live)

[By this point, we've created a bunch of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=2.072) [entities. Let's now go ahead and query](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=4.128000000000001) [them. There are two ways to query these](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=6.45242857142857) [entities. One is using the query by kind](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=8.42625) [optionality, the other is using query by](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=11.865000000000002) [GQL. Let's start out on the query by kind](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=14.68785714285714) [page of the entities browser. Right now](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=17.535333333333323) [all of the entities are of a single kind.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=20.12344444444444) [That kind is customers. Let's now go ahead](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=22.688666666666663) [and filter these entities. In this dialog](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=25.526999999999994) [we can enter the key. Note that we can](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=28.276124999999997) [also choose another attribute, such as the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=31.03071428571428) [average\_spending, date, feedback, or](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=34.11340000000001) [pretty much any other property of our](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=35.60257142857142) [kind. Notice also that this drop-down is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=38.25200000000001) [populated with a union of all of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=39.998) [properties contained by any entities of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=42.854) [this kind. So let's pick the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=45.513) [average\_spending and set this to be equal](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=47.664) [to 250. And now if we click on the Apply](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=51.286) [Filters button, as expected, just the one](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=54.486) [entity gets selected. This is the entity](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=57.203) [for David, which has average spending 250,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=60.74566666666666) [exactly as we wanted. Let's now change](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=63.869) [from the query by kind to the query by](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=66.31166666666668) [GQL. Our GQL, which is an acronym for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=68.86066666666667) [Google Query Language, is a language very](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=71.57879999999999) [much like SQL, as its name would suggest;](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=74.277) [however, it differs from SQL in some](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=76.789)[important and sometimes confusing ways.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=79.533) [The best way to understand GQL is to just](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=82.66) [run a few queries and see when it works](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=85.157) [differently than we would expect. Let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=87.601) [start out nice and easy with the simplest](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=89.79925) [possible GQL query. SELECT\* from Customers](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=92.0265) [where Gender is equal to Female. There's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=94.617) [really nothing remarkable about this. This](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=97.16133333333332) [has a single equality operator in the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=100.07528571428571) [where clause, and this is acceptable to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=102.52874999999999) [GQL; it runs through successfully. It](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=104.865) [returns the entities for Alice, Eliza, and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=108.04142857142858) [Cathy, all of which are gender female.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=110.769375) [Next, let's go ahead and make our queries](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=112.795) [somewhat more complex by adding another](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=115.199) [equality operator in the where clause. So](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=117.491) [this time we are selecting all customers,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=120.11057142857143) [that is, all entities of type customer,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=122.60471428571428) [where the Gender property is equal to Male](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=124.99433333333333) [and the Purchases property has the value](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=128.674) [4. This again is supported by GQL and we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=131.61187500000003) [can run this query successfully. We get](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=135.0812222222222) [back just the one entity with Gender Male](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=137.495) [with Purchase equal to 4. That's the user](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=139.92516666666668) [David. So far, the GQL has been behaving](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=143.04600000000002) [pretty much exactly like SQL, so let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=145.32712500000005) [continue in this way. Let's run another](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=148.12371428571421) [query in which we select all of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=149.9931428571429) [entities from the kind Customers. And now](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=152.67699999999994) [we are going to order the results on the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=155.03499999999997) [property Purchases in descending order. So](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=158.2347142857143) [when we run this, we get back all of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=161.02769999999998)[entities of this particular kind, sort it](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=163.76049999999998) [descending order on Purchases. So far, so](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=167.0453333333333) [good. Now for the first time, let's go](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=170.19833333333332) [ahead and run a query which is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=172.3947777777778) [definitively not a SQL query. So here we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=174.424) [are going to try and find all entities](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=177.67460000000003) [which have a specific ancestor key. Notice](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=179.59514285714286) [a few different things about this query.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=182.42600000000002) [First off, we use the key keyword preceded](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=184.848) [and followed by a pair of underscores.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=188.921) [This is GQL-specific syntax, and we use](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=191.277) [this in order to refer to the key. Next,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=194.499) [notice the other counter-intuitive use of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=196.8088) [the greater than operator. That is just](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=199.334) [going to return all entities with this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=201.74275)[ancestor. So if we run this, we get the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=203.67625) [two entities which have the parent equal](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=206.25399999999996) [to key Member, yes. Let's try out a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=208.71866666666665) [similar query which has more clear syntax.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=211.81499999999997) [This time the query is explicitly going to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=214.205875) [check for all entities of kind Customer](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=217.10614285714288) [where the key has ancestor, and then comes](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=219.74314285714289) [the entity key for the ancestor that is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=223.23200000000003) [Member, no. So if we run this, we're going](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=226.80200000000002) [to get the one entity which has that as](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=228.99200000000005) [the parent. So far we've been using the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=232.05425000000005) [key keyword in the where clause. Now let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=234.6783333333333) [go ahead and actually select the key from](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=237.37687500000004) [all entities of kind Customers. Let's run](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=240.78671428571434) [this query and we get all entities of kind](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=243.9662857142858) [Customers, and the result has a couple of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=248.56112499999998) [properties. The entity ID, as well as the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=251.6125) [ancestor path because both of those are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=254.30711111111108)[constituents of the key. Let's now change](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=256.27042857142857) [back and let's try some other entity](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=258.382125) [queries based on single columns. Let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=261.08199999999994) [start with a query like SELECT Purchases](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=263.4888571428571) [FROM Customers. Here the Purchases](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=267.05160000000006) [property is going to be indexed, and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=269.58175) [that's why this query will succeed.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=272.1125) [Remember that in Datastore by default all](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=274.046) [properties are going to be indexed. So if](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=277.091) [we run this query, we get back the key for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=280.06280000000004) [each entity. That includes the name/ID, as](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=282.95700000000005) [well as the ancestor path, followed by the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=284.9206249999999) [one column which we had actually](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=287.4121428571429) [requested, which was the Purchases column.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=289.1654) [We can leave out a single column](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=291.403) [specification and just list out all of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=292.848) [entities of a particular kind, along with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=295.9493333333333) [the limit clause. So that's what this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=298.28520000000003) [query does. SELECT \* FROM Customers LIMIT](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=300.25999999999993) [2. The result will include all properties](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=303.05966666666666) [for just two entities of this kind. Let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=305.925) [keep going with another minor variation.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=308.4277142857143) [We are now going to have a WHERE clause in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=310.964) [which we have one inequality condition. So](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=313.3464285714286) [now we are going to select all entities of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=316.5947777777778) [kind Customers WHERE Purchases are greater](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=320.18433333333337) [than 3. This will work. The single](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=322.89916666666664) [inequality is acceptable. We get back two](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=325.8552) [entities which satisfy this condition.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=328.8345555555556) [Let's see if we can now try a query which](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=330.374) [has two inequality conditions, but both of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=332.712) [those are on the same property, which is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=335.8693333333334) [Purchases. And it turns out that GQL is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=337.879) [fine with this. We can run a query with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=340.92080000000004) [two inequality operations in the WHERE](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=344.1657499999999) [clause, provided they are on the same](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=345.8354000000001)[property. And that's because both of these](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=348.72357142857146) [will use the same underlying index.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=350.3650000000001) [However, if we now try a different version](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=352.887) [of this query where we have two inequality](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=355.74) [conditions on two different properties,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=358.337) [that's not going to work because this will](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=360.523) [require the creation of a composite index](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=363.427) [on these two properties. So in this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=365.87) [example, we are selecting Name greater](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=368.46700000000004) [than Cathy and Purchases greater than 3,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=370.16816666666665) [and GQL tells us that we cannot use](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=373.0186666666667) [inequality operators on different property names in the same query.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=4&mode=live&start=375.8182)

[Querying Multiple Namespaces in GQL](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live)

[GQL will only support queries where](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=2.149) [indexes can be used directly. To prove](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=5.37957142857143) [this, let's go ahead and create a new](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=7.844777777777778) [entity, this time in a different](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=10.060714285714285)[namespace, so that's not the default](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=12.189) [namespace. We've edited that to be called](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=14.055857142857139) [Revised\_schema. Notice, however, that the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=17.320714285714285) [kind is still set to Customers. This time](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=18.980428571428572) [let's also change the key identifier so](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=21.873857142857144) [that it is a custom attribute. Let's call](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=24.351625000000002) [this Custom name. And that custom name](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=27.365874999999996) [will have the value of alice@](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=29.81077777777778) [spikeysales.com for this particular](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=32.002833333333335) [entity. We won't specify a parent, but we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=34.58216666666666) [will add a number of other properties. So](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=37.28111111111112) [we'll click on the Add Property button and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=40.24325) [go ahead and type in all of the property](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=41.69433333333333) [names and values. We won't show the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=44.201) [process since it's fairly cumbersome, but](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=47.161500000000004) [at the end, well have a fully-fledged](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=48.8705) [entity. At this point, we can go ahead and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=51.67700000000001) [hit Create, and our first entity of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=54.829999999999984) [kind Customers, but under the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=57.588499999999996) [Revised\_schema namespace, has come into](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=59.8908) [existence. Let's keep going and add](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=62.5606) [another entity within this same kind. This](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=64.70957142857144) [is again Revised\_schema namespace kind](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=67.9632) [Customers. The key identifier is the going](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=70.88085714285714) [to be eliza@spikeysales. We fill in all of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=76.1495) [the property values and hit Create. We now](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=79.16877777777779) [have two entities in our Revised\_schema.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=81.80499999999998) [Let's now switch back to the query by GQL](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=85.244) [dialog and there let's run a simple query](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=88.1) [where we select key from namespace. Notice](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=91.155) [again that we are using two](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=94.607) [Datastore-specific keywords here, key and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=96.755) [namespace, both of which are both prefixed](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=99.54575) [and suffixed by a pair of underscores. So](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=102.36925) [these are special keywords in GQL. There's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=105.08342857142857) [one other interesting bit worth noting](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=107.83566666666667) [here. GQL has picked up that we now have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=109.47433333333333) [two namespaces going on in this project,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=112.7672857142857) [and it has automatically added an option](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=115.21499999999999) [box about for the namespace that this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=118.26285714285714) [query operates on. Let's go ahead and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=120.23225) [execute this query and its results are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=122.53400000000002) [quite interesting. We can see that there](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=124.75759999999998) [are various internal keys generated by](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=127.36387500000002) [Datastore. Some of these have property](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=130.34624999999997) [names. Some of these have completely](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=132.50199999999995) [system-generated names. Let's now switch](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=134.15) [back and run another query where they're](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=137.4475) [going to select all properties across all](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=139.793) [entities where the key has the kind](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=142.458)[Customers in its ancestor key. We can see](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=145.5285555555556) [that in this way we are able to query the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=147.64600000000004) [metadata for the entities in our database.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=149.987) [Finally, let's see what happens if we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=153.11700000000002) [disable indexing on a property. So let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=155.6715) [select one entity. Let's call that the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=158.8054) [entity Ben, and then let's edit the name](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=161.7266666666667) [property so that it's no longer indexed.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=164.34424999999996) [So we uncheck the checkbox which says](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=166.836) [index this property. Now if we save these](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=168.86075000000008) [changes, if we switch back to the GQL](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=172.065)[browser and attempt to run a query on this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=175.314) [entity, an error is going to result. So](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=177.158) [let's try a SELECT \* FROM Customers WHERE](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=180.256125) [Name = Ben. It seems like a pretty](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=182.5568888888889) [innocuous query, but it does not return](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=185.22) [the expected results. Datastore tells us](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=188.37262500000006) [that no entities match this query and it](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=190.82216666666667) [requests us to make sure that there are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=193.434) [either simple or composite indices to support it.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=5&mode=live&start=195.527)

[Using Python Client Libraries to Work with Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live)

[We've now familiarized ourselves with the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=2.074) [Datastore Web UI. Let's turn our attention](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=4.033) [to Python. In this demo, we will see how](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=6.629) [we can use the Python client libraries to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=9.024) [work with Datastore from within Datalab.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=11.913) [In case you haven't encountered it before,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=15.229) [Datalab is a hosted service which allows](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=17) [us to run Jupiter Notebooks on the Google](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=19.62) [Cloud platform. Let's go ahead and get](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=22.596) [started by activating Cloud Shell is a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=24.814) [terminal window which basically is a way](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=28.507) [for us to run commands on an ephemeral VM](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=30.264) [on the Google Cloud platform. So we click](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=33.455) [on the Activate Cloud Shell button in the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=35.840374999999995) [top right of the web console. We click on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=38.188666666666656) [it and a terminal window opens up. Let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=41.29540000000001) [click on the Open in new window tab. This](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=43.42455555555556) [is a way to expand it so that we can](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=45.90509090909091) [clearly see the commands that we are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=48.106) [running. The first command that we run](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=49.99862500000001) [there is datalab create, followed by the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=52.11325) [name of our Datalab server and the zone in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=54.39442857142858) [which we would like the server to be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=57.21524999999999) [hosted. This name spikey-datastore datalab](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=59.98699999999998) [is going to be the name of our GCE compute](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=62.508333333333326) [engine instance, which is going to host](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=66.80722222222225) [the Datalab server. The command runs](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=68.2332857142857) [through successfully and it opens up a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=69.9515)[port forwarding connection between our](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=72.21785714285713) [Cloud Shell VM and Datalab. We can now](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=74.85199999999999) [connect to Datalab by clicking on the web](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=77.32525) [preview button in the top right. We click](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=80.27566666666665) [there and change the port in keeping with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=82.625) [the instructions to 8081. Then we click on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=85.42833333333333) [the Change and Preview button and a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=88.7155)[browser window opens up with a connection](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=91.02987500000002) [to Datalab. This looks very much like](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=93.789) [Jupyter, and that's because it is Jupyter](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=95.9691666666667) [running on a GCE VM. We can navigate the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=97.97674999999997) [file system of this VM instance, so let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=101.2427777777778) [click on the notebooks folder there, and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=104.28900000000002) [then let's go ahead and open up a new](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=106.68242857142859)[Notebook by clicking on the button up top.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=108.92299999999997) [Let's give this notebook a descriptive](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=111.045) [name and we will call it](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=114.11871428571426) [WorkingWithDatastore. We rename the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=116.6526666666667)[notebook and we can now go ahead and add](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=117.77733333333332) [code windows. Let's start by specifying](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=120.83679999999998) [which version of Python we want to use.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=123.00799999999998) [Datalab has a kernel. That kernel runs](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=126.287) [Python 2 by default, but we can change it](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=129.07814285714284) [to Python 3 easily enough from the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=131.7494444444445) [drop-down on the top right. We can just](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=134.269375)[stick with the defaults for now. That's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=137.441) [fine. Let's go ahead and pip install the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=139.42114285714285) [google-cloud-datastore client library.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=142.84199999999998) [This is the first step. Notice how we need](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=144.39) [to preface the pip install command with an](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=146.62199999999996) [exclamation mark. That's standard Jupyter](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=149.30766666666668) [syntax. It turns out that this VM instance](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=151.84500000000003) [already has this client library up and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=154.432) [running, so we can just get started. Let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=156.9704285714285) [import the Datastore module from the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=158.66357142857143) [Google Cloud package, and let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=160.833)[instantiate our Datastore client. This](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=162.95049999999995) [client object is going to serve as an](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=166.3466666666667) [abstraction, and we can use it to make](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=168.336) [various calls to create entities, run](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=170.444)[queries, and so on. Let's go ahead and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=172.9014) [create our first entity from here within](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=176.001) [our Datalab Jupyter Notebook. We start by](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=178.69571428571433) [creating a kind and that kind is called](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=182.17366666666666) [Products. Notice how in order to do so we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=186.06985714285713) [have to invoke the datastore.Entity method](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=188.71850000000003) [and pass in the name of our kind, which is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=190.46766666666667)[Products. Once that's done, we get a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=195.2181428571429) [handle to the kind. This kind is going to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=197.23899999999992) [be created in the default namespace, and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=199.49400000000003) [it's going to have a numeric identifier.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=201.45071428571424) [That will be automatically generated.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=204.535) [Next, let's go ahead and actually create](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=206.541) [an entity of this kind. Notice how we have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=209.27) [to specify the names and the values of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=211.73888888888894) [different properties. The first of these](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=214.49166666666667) [is Category, which has value Beverages,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=216.14366666666666) [the Name Pepsi, and then the property Sold](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=218.42857142857144) [with a quantity of 1000. Finally, we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=221.29025000000001) [invoke the client.put method to actually](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=224.2885714285714) [write this entity into our database. Let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=227.1814285714286) [go ahead and execute this command by](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=230.08014285714282) [hitting Shift+Enter, and then let's switch](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=233.07959999999997) [back to the web console. We are now back](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=235.66088888888885) [in the Entities dashboard in Datastore,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=238.51900000000003) [and we can see that our kind drop-down has](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=240.14011111111108) [another kind in there. In addition to the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=243.30133333333336) [Customers kind we had previously created,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=245.83800000000005) [we now also have the Products kind. So we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=247.75771428571431) [go ahead and select the Products kind, and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=251.05150000000003) [we do indeed see the one entity we had](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=253.80777777777774) [just created. But wait, this is not what](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=256.793)[we had in mind. We can see that the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=259.3671999999999) [property names do indeed appear correctly,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=261.7265000000001) [so we have Category, Name, and Sole, but](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=263.39899999999994) [the property values seem to be all](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=266.5325714285715) [gobbled. And that's because Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=269.57016666666675) [stores string data as bytes. We've got to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=271.77699999999993) [change our code a little bit. We'll have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=274.31674999999996) [to delete this entity and then go ahead](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=276.80599999999987) [and change the entity definition so that we pass in unicode strings.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=6&mode=live&start=280.15499999999986)

[Creating Entities Using Python](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live)

[The code to delete an entity is simple](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=0) [enough. We need the Id, which we get from](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=4.32675) [the Datastore, entity browser, and then we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=6.5904444444444445) [pass this in to the client.key method](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=9.571) [followed by the name of our kind, as well](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=12.546) [as the Entity Id. This gives us a key. We](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=15.430333333333333) [then go ahead and delete this entity. We](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=18.271874999999998) [hit Shift + Enter to execute the command,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=20.783625) [Shift back to Datastore, and now we can](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=22.7548) [see that we still have the Products kind,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=25.851599999999998) [but there are now no longer any entities](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=27.63025) [associated with the kind. Our deletion](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=30.68333333333333) [operation was successful. Let's switch](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=33.178799999999995) [back to Datalab and reinsert our entity.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=35.50242857142857) [This time we will preface each of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=38.827999999999996) [property values with the string literal u.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=41.745714285714286) [This will cause Datastore to correctly](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=44.74671428571429) [encode this data as unicode data. So we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=48.03585714285715)[now go ahead and rerun this code, and when](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=51.49544444444444) [we switch back we see that our entity](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=53.77088888888889) [looks exactly as we want it to. The](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=55.41675) [category is indeed Beverages, the name is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=58.6944) [Pepsi, and the quantity sold is 1000.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=61.592299999999994) [Let's copy the Id of this entity and let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=65.513) [use it to update the value from Datalab.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=68.805) [So we are going to get hold of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=71.843) [updated\_key. This is based on the new](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=74.67890000000001) [insert which we just performed, and then](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=76.1093333333333) [we are going to change the property value](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=77.881) [of the field Sold, so that it is at 800](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=81.05842857142855) [rather than 1000. The rest of this code is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=85.11820000000004) [exactly the same as the initial insertion.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=87.72966666666665) [So we have the client key, we get the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=90.983) [entity, and then we update the entity. And](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=92.966) [now when we switch back to the entity](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=96.16588888888889) [browser, we can see that the quantity sold](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=97.781) [has changed to 800. Let's insert another](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=99.678) [entity of the kind Products. This one has](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=103.249) [the key coffee, and it has the same](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=106.72566666666667) [properties, Category, Name, and Sold.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=109.44500000000001) [Let's also go ahead and create another](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=111.61) [entity, this one for key fragrances. And](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=113.475) [finally, one last entity from the product](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=118.70514285714285) [category, Electronics. At this point, if](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=121.529) [we switch back to the entity browser, we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=123.53277777777775) [can see that we have three new entities](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=125.392125) [which we have inserted programmatically.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=127.87525) [So we have four entities in total in the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=129.994) [kind Products, all of which have exactly](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=132.714) [the same properties. Now let's go ahead](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=134.803) [and add yet another entity, but this time](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=137.56349999999995) [we will include a parent key. And that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=139.5125) [parent key is going to be on the entity](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=141.6465) [Gender Women, so this is an entity which](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=145.60428571428574) [we have not yet defined. But remember that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=147.99345454545448) [there is nothing preventing us from using](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=149.8395) [this as a parent for a new entity that we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=152.308) [are inserting. That new entity is called](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=156.11375000000007) [bags, and when we make the call to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=158.7983333333334) [client.key, we've got to specify the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=161.256625) [parent entity. Next, we'll do another](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=163.6095714285714) [different operation. We explicitly request](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=166.39499999999998) [Datastore to not index this bags entity on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=168.82500000000002) [the property Name. And finally, we also go](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=173.07524999999998) [ahead and define a new property, Color,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=176.47162499999996) [which was not present in any of the other](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=178.4541428571429) [entities of type Product. And in this way](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=181.3335) [we are associating this specific product](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=183.83400000000006) [with a gender, which is Women. Next, let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=186.24566666666666) [go ahead and do the same for another](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=189.93533333333335) [entity. This time let's associate it with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=191.71949999999998) [Gender Men. This is a shirt. It belongs to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=194.22424999999998) [the kind Products and it has a parent key](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=197.77933333333337) [of Gender Men. We go ahead and insert both](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=200.37049999999996) [of these entities using a single client](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=203.45049999999995) [called client.put\_multi. Notice how we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=206.659)[specify a list. That list has two](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=209.50214285714284) [elements. The first is the bags entity and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=213.242) [the second is the shirts entity. In](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=215.33466666666666) [Datastore, insert operations tend to be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=218.1742857142857)[rather slow, and so it adds to the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=220.306) [efficiency if we go ahead and batch them](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=222.895) [in this way. We hit Shift + Enter to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=224.9385555555555) [execute this command, and now if we switch](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=227.35577777777783) [back to the entity browser, we can see](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=229.11388888888888) [that both of these entities are indeed](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=231.1436666666666) [reflected. One of them has parent Gender Men and the other has parent Gender Women.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=7&mode=live&start=234.182)

[Running Queries Using Python](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live)

[Let's keep going. Let's now turn our](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=2.122) [attention from CRUD operations to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=4.201) [querying. Here we are going to execute our](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=6.756) [first query on Datastore from Datalab.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=9.174499999999997) [Notice that we've copied over the Id field](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=11.929) [from a couple of entities and we then](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=15.546) [created a keys array. Each element in this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=17.714) [keys array is of type client.key, and this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=20.821111111111115) [also includes the name of the kind, which](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=23.938999999999997) [is Products, followed by the actual Id,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=27.175666666666668) [which we are looking to seek. Once we have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=29.091124999999995) [constructed this key list, we can go ahead](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=32.25242857142857) [and pass it into a call to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=33.96280000000001) [client.get\_multi, and the result from this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=36.9408) [is a handle to the results called lookup.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=38.931) [We print out this lookup variable to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=42.03) [screen and we can see that it's a list of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=43.94362500000001) [two entities. Each element in the list has](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=47.686090909090886) [all of the properties associated with that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=49.98966666666666) [entity, as well as their values. So we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=51.965599999999995) [have the key, the category, the quantities](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=54.87628571428571) [sold, and the name. Next, let's run a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=57.385666666666665) [slightly more complex query. This one does](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=60.24950000000001) [not filter on the key; rather, it's an](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=62.521) [equality on a specific property. So we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=65.5445) [start by getting a handle to the query, we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=68.65488888888888) [specify the kind which is Products, and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=71.51257142857143) [then we add a filter. This is an equality](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=74.0342857142857) [filter, the property name is Category,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=76.87700000000002) [it's an equality condition, and we want](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=79.439) [the value to equal bags. We then can run](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=82.15762499999997) [this query by invoke query.fetch and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=85.27044444444444) [converting the results into a list. Let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=87.73266666666669) [go ahead and execute this. Notice first](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=91.05533333333332) [off the form of the result. This is an](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=93.34375) [entity object. It is defined by a key,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=97.03480000000002) [which is a combination of the ancestor](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=99.40199999999996) [that's Gender Women, the kind which is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=102.28099999999999) [Products, and then the Id. Next come all](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=105.65383333333331) [of the property values which include the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=107.94311111111115) [categories, which is set to Bags, the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=109.607) [color, which is Black, the Sold quantity,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=112.0536) [and the Name. And in this way we've got](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=114.93699999999998) [back our first query result on an equality](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=117.59466666666663) [condition. Let's go ahead and run another](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=120.2911666666667) [query. Once again, this is on the kind](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=122.79799999999999) [Products. This time we have no filter, so](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=126.04624999999999) [we want all entities of the kind products,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=127.34688888888888) [but we do want to order our results on the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=130.139) [property Sold. Let's go ahead and run](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=133.36475) [this, and as expected, we get back all](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=135.68) [entities of the kind Products. They are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=138.224) [sorted in the order of their quantities](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=141.57975) [sold. But to be a little more precise,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=143.58624999999998) [they're sorted in ascending order of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=146.1055)[quantities sold. If you'd like to sort in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=148.7625) [descending order, we've got to prefix the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=151.82124999999994) [name of the property with a minus sign. So](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=153.62850000000003) [we have a query.order field. There's a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=157.24566666666666) [single property on which we want to order](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=159.3275) [that's Sold, but the name Sold is prefixed](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=161.32344444444442) [by the minus sign there. So we run this,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=164.20533333333333) [and once again, we get all of the entities](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=167.03320000000002) [of this kind, but this time they are in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=169.21966666666665) [descending order of the quantities sold,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=171.80442857142856) [so the largest value comes first, and the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=173.4103333333333) [smallest value comes last. We've tried](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=176.15150000000003) [filter and sort operations. Let's now go](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=178.679) [ahead and try a projection. Here we are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=181.41387500000002) [going to request only two properties,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=183.424) [Category and Name. Now this seems like a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=185.234) [perfectly innocuous operation, but this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=188.77471428571423) [will not work. When we run this query, we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=190.63950000000003)[get an exception. In order for this to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=194.1606666666666) [execute successfully, we will need to go](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=196.28728571428564) [ahead and create a specific composite](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=198.25600000000003) [index. We will need to define this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=200.93200000000002) [composite index using a yaml configuration](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=203.15850000000006) [file, and the error message very kindly](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=205.93159999999997) [gives us the format of that configuration.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=208.18049999999997) [We'll get back to creating composite](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=210.587) [indices in just a bit. Next, let's move on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=212.579) [and run another query. This time we are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=216.13400000000001) [going to try and get all of the product](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=218.79100000000003) [entities which have a key greater than a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=221.61362499999998) [specific value. So we type in a key value](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=224.186) [and then a key filter asking for all keys](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=226.7345454545455) [greater than this one. When we execute](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=229.75328571428577) [this, we get back a couple of entities,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=232.00649999999996) [and this query is very quick to run](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=235.171) [because key value are going to be stored](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=237.18611111111107) [in sorted order in the internal index. Now](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=239.6188888888888) [we had seen previously that it's not](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=242.63825000000003) [possible to project two columns unless we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=244.544) [have a composite index on the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=247.292) [corresponding properties; however, it is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=248.59999999999994) [possible to add two equality filters on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=250.86257142857144) [two different properties. This will work](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=254.19828571428573) [fine even in the absence of a composite](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=256.30766666666665)[index. So here we have one filter on the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=258.66075) [property Sold, and we want that to be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=261.87037499999997) [equal to 800, and another on the Category,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=263.85659999999996) [and we want that to be Beverages. And this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=266.117875) [will work fine, even though we do not have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=268.7782222222222) [a composite index in place, it will return](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=270.80100000000004) [the one entity in our database which](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=274.05550000000005)[satisfies both these filters. Next, let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=276.63699999999994) [run a query which shows the use of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=279.21549999999996) [cursors. Now cursors in Datastore have the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=281.8084285714286) [same function as cursors in other database](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=284.20375) [technologies. They give us query results](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=286.55) [in paginated form. That is, we can get](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=289.26475000000005) [batches of query rows in the form of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=292.5476666666666) [pages. So here we initialize a cursor](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=295.34900000000005) [object to be None. That's fine, because](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=297.63660000000004) [this is going to be returned along with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=299.653625) [the query results. But the difference here](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=302.01149999999996) [is that when we make the call to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=303.75249999999994) [query.fetch, we pass in our cursor object,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=306.0065) [along with a limit; that is the number of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=309.0032857142857) [rows which we want per page. Here that's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=311.5047777777778) [equal to 3. This time the result of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=314.00414285714294) [query.fetch is going to be an iterator,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=316.80775000000006) [which we call query\_iter, and we can go](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=319.05412500000006) [ahead and get the first page of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=321.3962222222223) [results using the next command on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=323.80099999999993) [query\_iter.pages. We can then convert each](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=327.0966666666667) [page into a list. We also get the cursor](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=329.8437777777777) [token for the next page, and then we can](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=332.9057777777779) [print out the results that we have. We can](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=335.66188888888877) [see here that the first page consists of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=338.15333333333336) [exactly three entities. If we then move](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=341.00685714285726) [onto the next page, which we can do, by](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=343.11749999999995) [reinvoking the query.fetch command and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=346.23071428571427) [passing in the next page token, we will](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=348.6645000000001) [now get the second page of the results.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=352.0127777777777) [The query.fetch call is smart enough to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=354.883) [internally keep track of what we have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=357.528) [fetched so far, and it helps for us to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=359.974) [pass in the next page token so that it can](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=362.431) [pick up from where it left off when we get](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=364.84) [the next page. And now when we print the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=367.475) [second page, we get the next set of three](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=370.397) [entities. We've successfully used cursors with Datastore.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=8&mode=live&start=373.4309000000002)

[Implementing Transactions in Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live)

[Datastore supports transactions. A](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=2.263) [transaction is a set of Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=4.594142857142857) [operations on one or more entities which](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=6.635) [are guaranteed to be atomic. So, either](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=9.502) [all of those operations are going to be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=11.725857142857143) [applied, or none of them. This is actually](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=14.207000000000003) [an important bit of functionality, so](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=16.405428571428573) [let's explore it. Let's create a new](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=18.147199999999998) [notebook in our Datalab VM instance. Let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=20.506000000000004) [give it a descriptive name. Since this is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=22.948125) [a new notebook, let's just do a pip](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=26.20433333333333) [install of the Google Cloud Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=28.606777777777776) [library. To be very sure we have the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=30.568111111111104) [latest version, let's go ahead and import](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=32.91488888888888) [the modules and the packages that we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=35.23512499999999)[require, specifically the Datastore module](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=37.50579999999999) [from the Google Cloud package. And after](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=39.93266666666666) [that, we can go ahead and instantiate our](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=43.74325) [Client object. This is where it gets](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=46.0955) [different. Notice the with clause, so we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=48.89750000000001) [have a with client.transaction, followed](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=51.126750000000015) [by a set of operations. So we are going to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=53.653000000000006) [start by creating a client.key. This is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=56.87566666666669) [going to be for the kind Digital\_wallet.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=60.04322222222223) [Let's now go ahead and create an entity of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=62.662) [this kind. This is going to be the key](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=65.262)[Alice. And we'll specify two properties.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=69.23910000000004) [The first of these is called Name and it](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=71.115) [has the unicode literal Alice, the second](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=72.646) [is called Wallet, and it has the integer](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=75.5158888888889) [value 100. And finally, we can go ahead](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=77.58075) [and put this to our database. Because we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=81.2612857142857) [included all these operations within a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=84.572) [single transaction, they are going to be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=86.7462857142857) [executed in an all-or-nothing manner. So,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=89.16214285714284) [it will never be the case that we end up](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=91.651) [with a new kind called Digital\_wallet, but](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=93.69071428571428) [we do not populate it with the entity.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=96.72833333333332) [Let's go ahead and insert another entity](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=99.155) [into this kind. This time it's with the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=101.14) [key Eliza and the wallet balance](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=103.554) [initialized to 0. And then, if we switch](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=105.518) [back into the web console and check out](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=108.057) [the entity browser, we can see there is a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=110.73077777777779) [new kind, Digital\_wallet. If you filter on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=113.16811111111116) [that, we see both our entities for Alice](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=115.08355555555553) [who has a wallet balance of 100, and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=117.27525) [Eliza, who has a wallet balance of 0. This](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=120.27) [now is where it gets really interesting.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=123.22019999999999) [We will switch back to Datalab and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=125.946) [implement a transaction to transfer funds](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=127.391) [from one wallet to the other. So within](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=130.478) [this function called transfer\_funds, we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=133.3406) [have a with client.transaction clause. We](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=134.66119999999998) [initialize a couple of variables called](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=138.75916666666666) [from\_account and to\_account. These](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=140.51725) [represent the keys which have been passed](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=142.84885714285716) [into the function as arguments. And then](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=145.69983333333332) [we will decrement the wallet balance in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=148.89214285714283) [the from\_account and increment it in the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=151.11766666666668) [to\_account. And finally, we will use](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=153.66975000000002) [client.put\_multi in order to update both](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=157.0728333333334) [of these entities. In addition to the use](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=159.72024999999996) [of put\_multi and the transaction mode,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=162.52912500000005) [also pay attention to how we use the index](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=164.48699999999997) [operator, the square brackets, in order to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=167.72057142857136)[access the wallet property of the two](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=170.09071428571434) [entities. After this comes a fairly](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=173.56714285714284) [strange bit of syntax. We have here a for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=176.04266666666666) [loop with an else clause. In Python, for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=179.4315) [loops have an else clause which will](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=182.36374999999998) [contain code, which is going to execute](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=184.81071428571428) [after the loop completes normally. So if](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=187.17157142857144) [the loop can count as a break s tatement,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=189.75240000000002) [the contents of the else clause will not](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=192.03957142857143) [be executed. Here the else clause will](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=195.566) [only execute if our transaction has](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=197.65500000000003) [failed. In the body of the for loop, we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=200.019) [have a try, which includes an invocation](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=202.52081818181824) [of our transfer\_funds function. The](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=204.5563333333333) [arguments into this function are the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=207.66942857142857) [client, the from key, which is Alice, the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=209.52) [to key, which is Eliza, and the amount to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=212.18344444444446) [be transferred, which is 50. Right after](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=215.17483333333334) [this is a break statement, and this is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=217.9)[going to break out of the loop if the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=220.65700000000004) [execution was successful. Let's run this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=223.28179999999998) [code and shift back into the web console,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=225.763625) [and we can see that the transfer has gone](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=228.67899999999997) [through successfully. We used to have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=231.3456) [Alice with a balance of 100 and Eliza with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=233.07000000000002) [0; now both of them have the same balance](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=235.6734) [of 50 each. We've successfully used the transaction mode in Datastore.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=9&mode=live&start=238.92450000000002)

[Composite Indexing to Run Queries for Projecting Multiple Properties](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live)

[In this example, we will see how composite](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=2.621) [indices can be created. This will allow us](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=5.277) [to run queries that project multiple](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=7.5035) [properties. Earlier on, while working with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=10.124) [the Python datalab instance, we had](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=12.434142857142858) [encountered the situation where projecting](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=15.183666666666669) [two columns did not work. When we ran this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=17.896000000000004)[query, Datastore had thrown an exception](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=21.713857142857133) [telling us that we required a composite](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=23.789666666666662) [index on the kind products with the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=26.404500000000002) [properties Category and Name. We encounter](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=29.523666666666657) [the same issue if we try and run a GQL](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=31.741) [query, which does the same thing. So here](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=35.071888888888886) [we try to select Category, Name FROM](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=37.58128571428572)[Products. When we execute this we get GQL](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=39.70542857142858) [error. Datastore is telling us that we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=42.67712499999999) [need to supply a composite index on these](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=45.167) [two properties. This composite index is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=48.443333333333335) [also required for various other queries.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=51.040285714285716) [We also cannot do a SELECT DISTINCT on the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=53.822) [Name and Sold properties from the Products](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=56.66) [kind. We get the same error as before.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=59.81349999999998) [Let's change this. Let's create a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=62.631) [composite index. We'll do so from Cloud](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=64.429) [Shell, so let's activate Cloud Shell by](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=67.107) [clicking on the top right, and then expand](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=69.337) [to open the Cloud Shell window in a new](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=72.671) [tab. Once we are in Cloud Shell, we are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=74.89309999999998) [going to make use of the Cloud Shell code](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=76.65555555555558) [editor. We open up the code editor by](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=80.16855555555557) [clicking on the little pencil icon in the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=82.00188888888884) [top right. The code editor is a great way](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=84.77475000000003) [to navigate files in our home directory on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=87.67722222222227) [the Google Cloud platform, and to write up](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=89.85824999999997) [little code files. We have here a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=92.50885714285717) [directory called spikey.data. We've](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=95.44642857142856) [selected it. Let's now use the File menu](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=97.37760000000002) [up top in order to create a file inside](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=100.1504) [this directory. This file is going to be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=103.56700000000001) [called index.yaml. YAML is an acronym for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=106.93224999999997) [yet another mockup language, and we are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=109.69787499999998) [going to use this file to define the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=112.11322222222225) [composite index. YAML is becoming a very](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=115.04280000000001) [popular alternative to JSON. YAML, just](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=117.92328571428571) [like JSON, allows us to specify](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=120.29700000000001) [configuration information. The difference](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=123.24933333333334) [is that YAML's syntax is Pythonic, which](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=124.97785714285713) [means, for instance, that spaces and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=127.4496) [indents matter a lot. You could say that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=129.9818571428571) [JSON is inspired by and heavily used with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=133.00566666666668)[JavaScript. YAML is very heavily used with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=136.1635) [Python. In any case, here we have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=139.08328571428567) [top-level indexes element that's an array,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=141.61874999999992) [inside which are two user-defined indices.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=143.62899999999996) [Each component of the array needs to be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=147.121) [preceded a hyphen, and each of those](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=149.465) [elements represents one user-defined](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=152.274) [index. The first index is on kind](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=154.86519999999996) [Products, no ancestor is required, and it](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=158.12900000000005) [is specifically on two properties. The](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=160.3212857142857) [first is the Category property and the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=163.868625) [second is the Name property. Do notice](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=166.414) [that we are asking Datastore to sort the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=168.56275000000002) [Category data in ascending order. The](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=171.43071428571426) [second element is also a composite index](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=173.867) [on kind Products. This is on two](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=176.374) [properties, Name and Sold. And once again,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=179.57649999999998) [we would like Sold to be sorted in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=181.95999999999998) [descending order. Once we have defined a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=184.6695) [.yaml configuration file, we exit out of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=187.14057142857138) [the code editor and run this command. We](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=189.04411111111114) [are now making use of the gcloud](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=191.3574444444445) [command-line utility. The command is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=194.47549999999998) [gcloud datastore indexes create. We then](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=197.83557142857143) [have to specify the name of our .yaml](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=200.6583333333333) [configuration, which here is index.yaml.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=202.95466666666667)[Datastore parses the file and comes back](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=206.748) [and confirms with us that we do indeed](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=209.38) [want to continue. The target project is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=211.82622222222233) [spikey-datastore, and this .yaml](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=214.469) [configuration file is going to create](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=216.027) [various Datastore indices. Let's hit Yes,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=218.066) [and our composite indices are going to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=221.69100000000003) [come into existence. If you now switch](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=224.123) [back into the Datastore web console and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=226.54299999999998) [click on the Indexes tab over on the left,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=228.88525) [we can see that both of those indexes now](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=231.83379999999997) [appear. Let's now rerun our query, so we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=235.05550000000002) [switch back to the Entities tab, navigate](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=237.57287499999995) [into the query by GQL console, and type](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=240.32514285714285) [out the same query which had previously](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=243.4085) [resulted in an error. So we are running a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=245.69660000000002) [projection operation on two properties,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=249.06874999999997) [Category and Name from the kind Products.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=250.79014285714285) [When we run this query this time, we are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=253.44500000000002) [met with success. Our composite index has](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=256.39) [worked and we no longer experience an](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=259.2590000000001) [error. If we now try a different pair of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=262.117) [properties which do not have a composite](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=264.537) [index, such as, say, Category and Sold,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=266.327) [we'll experience the same problem once](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=269.584) [again. That's because we created composite](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=271.7671428571427) [indices on two different pairs of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=274.3010000000001) [attributes, but Category, Sold was not one](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=276.76583333333326) [of them. As we learned during the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=279.44674999999995)[theoretical portions of this course,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=281.35916666666674) [Datastore is always going to ensure that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=283.097) [queries result in constant time](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=286.109) [independent of the size of the data set.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=288.864)[And an important way of doing this is by](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=290.359) [requiring the users to define composite](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=292.753) [indices which match the queries that are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=295.268) [going to be commonly executed. Composite](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=297.416) [indices take up space and therefore incur](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=300.2018333333333) [billing, so let's switch back to Cloud](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=302.6003333333333) [Shell and clean up our indices. We'll make](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=305.3046666666667) [use of the command gcloud datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=307.9005714285714) [indexes cleanup, followed by the same](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=310.0135) [.yaml configuration file which we had used](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=312.38357142857143) [while defining the index. Datastore parses](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=315.0428) [this command and comes back and asks us](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=317.62333333333333) [whether we are sure we want to continue.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=319.8326666666667) [We hit Yes, and at this point, our composite indices have been deleted.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=10&mode=live&start=321.8111)

[Summary](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=11&mode=live)

[That gets us to the end of this module, so](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=11&mode=live&start=1.421) [let's summarize the ground we covered. We](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=11&mode=live&start=3.6750000000000003) [began with a look at Datastore's data](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=11&mode=live&start=5.99075) [model, which involves kinds, entities, and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=11&mode=live&start=8.047) [properties. We saw how kinds are analogous](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=11&mode=live&start=10.86057142857143) [to tables, entities are analogous to rows](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=11&mode=live&start=13.426666666666668) [within tables, and properties are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=11&mode=live&start=16.428)[comparable to individual columns in an](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=11&mode=live&start=18.148) [RDBMS. We moved on executing queries, as](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=11&mode=live&start=22.005142857142854) [well as transactions using three different](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=11&mode=live&start=24.741249999999997) [mechanisms, the web console, the GQL query](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=11&mode=live&start=27.382) [language, and Python client libraries. And](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=11&mode=live&start=30.632) [we wrapped up the module by learning how](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=11&mode=live&start=33.4375) [composite indices determine which queries](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=11&mode=live&start=35.5214) [and are not allowed, and we learned how to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=11&mode=live&start=38.368125) [create and destroy composite indices on more than one column.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=036b5c9c-12d7-4801-b5a4-010bcb221b74&clip=11&mode=live&start=41.36942857142857)

[Administering and Managing Cloud Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live)

[Module Overview](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live)

[Hello, and welcome to this module on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=0.922) [Administering and Managing Cloud](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=4.097) [Datastore. This module begins with a look](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=6.3473999999999995) [at the admin console within Cloud](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=8.807500000000001) [Datastore. We'll see how we can view](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=11.292800000000002) [Datastore statistics and also export from](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=13.562000000000001) [within this console. Parts of the console](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=16.5755) [are going to be deprecated in February](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=18.453428571428564) [2019 and the new recommended way of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=21.985428571428567) [backing up your Datastore data is using](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=24.19975000000001) [the export into Google Cloud storage](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=26.848285714285712)[buckets. That export is going to happen](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=29.325200000000002) [using a proprietary binary format. That](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=31.46074999999999) [format can be imported into BigQuery.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=34.42785714285714) [Thankfully, BigQuery and Datastore both](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=36.737) [understood this, and so we can make use of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=38.873) [Datastore backups for analytical](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=41.834) [processing in BigQuery. Such backups can](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=44.10679999999999) [be automated using App Engine cron jobs,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=46.9975) [and we will understand such an App Engine](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=49.673) [deployment in some detail. And we'll round](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=51.663) [off the module by understanding how new](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=54.65342857142858) [newly created Dataflow templates can be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=57.15080000000001) [used to bulk delete Datastore entities. We](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=59.48142857142856) [have an exciting ride full of demos, so let's plunge right in.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=0&mode=live&start=63.237874999999995)

[View Datastore Statistics Using the Web Console](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live)

[Let's move a little bit from operating](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=2.087) [Datastore to administering Datastore. So](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=4.522) [in this demo, we will check out a way to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=7.213299999999999) [view Datastore statistics and use the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=9.907857142857143) [Datastore admin console. Let's pick up the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=11.641) [action from the web console. We are in the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=14.707400000000003) [Entities tab. Let's now change that by](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=17.853333333333335) [clicking on the Dashboard tab over on the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=19.959875) [left. This opens up a view in which we get](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=22.639499999999995) [a summary of the Datastore database on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=24.5627) [this project. We can see the number of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=27.526500000000006) [entities, the number of built-in indices,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=30.261285714285712) [composite indices, and the total size of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=32.057) [our data. We can also view this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=35.026) [information cut up my namespace, as well](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=37.543) [as by kind. Here we can see that we have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=40.02800000000002) [most of our entities and data in the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=42.75450000000001) [default namespace, and we can also filter](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=45.96850000000001) [this view by the namespace or the kind up](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=48.102999999999994) [top. Here in the drop-down, we have the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=50.522875) [information only for the default](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=52.789) [namespace. We can further drill into our](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=55.443999999999996) [data and restrict it to only customers.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=57.736749999999994) [That's one of the three kinds that we have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=59.898) [in this database. This functionality](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=62.102) [becomes important, particularly in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=64.96900000000001) [production environments with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=67.10499999999999) [multi-tenancy; that is, data from many](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=68.809) [different customers which reside in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=71.113) [different physical partitions. And if we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=73.904) [scroll down below, we can see the data](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=76.18) [broken up by the different properties.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=77.96514285714285) [This is a pretty powerful metadata](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=81.116) [querying functionality because we can](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=83.48599999999998) [drill down and identify exactly which](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=85.4724285714286) [documents and which properties within](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=87.71249999999999) [those documents are occupying the more](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=89.70219999999999) [space. Let's turn our attention from the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=92.50300000000001) [Dashboard tab to the Admin tab over on the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=94.63557142857147) [left. When we click on this, we'll first](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=97.58155555555551) [need to enable the Datastore admin. As the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=99.29711111111111) [message there tells us, this is a handy](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=103.26155555555556) [way to work with entities in bulk,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=105.51350000000001) [including operations such as backing up,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=108.744)[restoring, copying, and deleting entities.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=111.1) [So let's enable the Datastore admin and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=113.458) [then let's go ahead and open it. This](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=115.643) [admin console is quite different than](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=118.193) [anything else on the Google platform in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=120.599) [its look and feel. It gives us ways to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=122.13025) [back up entities and delete entities, but](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=124.69779999999999) [as there is a bit of a question mark over](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=127.22428571428571) [the future roadmap for Datastore, this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=129.7424000000001) [admin console also tells us that starting](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=131.91600000000005) [from sometime in February 2019, the backup](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=133.81428571428577) [and restore functionality in this console](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=137.1374285714286) [may not work anymore and we'll need to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=139.72199999999995) [switch to Cloud Datastore exports. We'll](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=141.96074999999996) [get to exactly that in a little bit, but](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=144.1655) [before that, let's just switch back to the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=147.36625000000004) [main admin console and disable writes.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=149.62725) [This is an important bit of functionality.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=152.571) [If we disable writes, we will not be able](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=155.093) [to perform any write or update operations](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=157.682) [on entities in this database at all. So we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=160.345) [will not be able to add, update, or delete](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=162.99066666666667) [entities, and this is going to happen](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=165.50824999999998) [across the entire Datastore instance in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=167.859) [this project. Now if after having disabled](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=170.76057142857144) [writes, if we click on the Entities tab,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=173.42642857142857) [select an entity there, and go ahead and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=175.30666666666667) [try to delete it, we will find that the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=178.68699999999995) [Delete button has been grayed out. A](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=180.80962499999998)[message in the tool tip there is that we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=182.54699999999997) [need to enable writes for this Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=185.35444444444443) [instance to be able to perform this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=187.63699999999997) [operation. Now that's going to get in the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=190.44266666666664) [way of some of the future operations in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=192.32880000000003) [this example, so let's navigate back to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=194.33842857142852) [the Admin tab and turn that setting off.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=196.48333333333338) [So we are going to go ahead and re-enable](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=198.562) [writes. And having done that, we'll](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=201.6391000000001) [quickly go back and explore the exporting functionality from Datastore.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=1&mode=live&start=202.92957142857136)

[Exporting Entities to Cloud Storage Buckets](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live)

[Let's now turn to a demo which shows how](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=1.998) [we can export entities from Datastore into](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=4.166) [Cloud Storage buckets. Let's start by](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=7.119) [navigating into the Storage browser](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=10.02942857142857) [section of the Google Cloud platform.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=11.995714285714286) [There we find that there are already a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=14.262) [couple of buckets in existence. These are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=16.483) [a pair of multi-regional buckets which](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=19.326000000000004) [have been created as soon as we enable the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=21.435750000000002) [Datastore API. Let's now go ahead and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=23.917) [create a new bucket for this backup](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=26.34) [experiment. Let's call it](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=28.965999999999998) [spikey-datastore-backups. We are fine to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=31.282750000000004) [go with the other defaults, so let's go](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=32.82322222222223) [ahead and hit Create. We verify very](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=35.00828571428572) [quickly that this spikey-datastore-backups](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=37.17100000000001) [bucket does exist. Then let's switch back](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=38.799749999999996) [via the navigation menu into Datastore and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=42.38814285714285) [click on the Entities tab. There we can](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=44.686142857142855) [see that we have several entities of a few](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=47.45962499999999) [different kinds. Let's go ahead and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=50.31900000000001) [explore how to export this. For that,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=52.14433333333333) [let's open up Cloud Shell. So we click on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=54.19685714285714) [the Activate Cloud Shell button up top,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=56.58449999999999) [and then expand that window so that it](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=58.499625) [opens in a new tab. Now let's go ahead and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=60.748999999999995) [run a gcloud command. This is gcloud alpha](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=63.902333333333324) [datastore export, followed by the output](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=68.31566666666669) [URL, which here is our cloud storage](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=71.00399999999999) [bucket, gs://spikey-datastore-backups, and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=73.20275000000001) [then optionally we can specify the kinds](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=76.80642857142858) [which we are interested in. If we omit](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=78.77216666666666) [this, it's going to do a full backup of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=80.99710000000002) [all kinds in the database. All of the data](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=83.82128571428571) [for entities of kinds Customers is going](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=87.19949999999997) [to be written to this cloud storage](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=88.94075) [location in a proprietary binary format](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=90.912) [known as cloud storage Datastore backup.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=94.06933333333333) [We kick off the command and we now see](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=96.97428571428571) [that the state is set to processing. This](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=100.54890909090906) [export is going to happen in the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=102.91975000000001) [background, and we'll have to monitor its](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=104.829) [progress via other operational commands.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=106.753) [Note that the output of the export can](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=109.663) [only be used after it's complete. If you](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=112.204) [try and use it before the completion, then](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=114.75850000000001) [it might leave behind partial data in our](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=117.22633333333334) [Google Cloud storage bucket. So we've got](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=120.686) [to use this command with care. Once it's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=122.78733333333332) [complete, let's switch back into the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=125.13314285714284) [storage browser and explore the contents](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=127.136) [of the cloud storage bucket. This is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=128.97066666666666) [spikey-datastore-backups. When we click](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=132.40466666666669) [into it, we find that there is a folder](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=134.00500000000002) [created for the timestamp when we ran the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=136.65887500000002) [command, and within this we find a fairly](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=139.30666666666664) [complex hierarchy of subfolders. At the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=141.98633333333336) [top level is one called all\_namespaces](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=145.20242857142856) [culminating in individual folders for each](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=146.89175) [kind. Here we have just one kind, that's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=150.6035) [Customers, and when we click into it,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=153.00757142857142) [we'll find data for all namespaces.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=155.20600000000002) [Remember that this data has been written](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=157.18) [out in a proprietary binary format and so](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=159.62) [there's not much sense in our trying to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=161.791) [actually open these files here. We'll get](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=164.269) [to that in BigQuery in a moment. As](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=165.9818888888889) [discussed a moment ago, we should be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=168.152375) [careful and only use this data once the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=170.143) [operation has completed. And how can we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=172.259) [verify that? Well, by running the command](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=175.01366666666672) [onscreen now. Gcloud datastore operations](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=177.69985714285716)[list. This displays information about all](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=181.00275000000005) [Datastore admin operations and their](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=184.381) [status. We can see that the most recent](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=186.01849999999996) [operation was our EXPORT\_ENTITIES one,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=188.55974999999998) [which has completed successfully. The](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=191.057) [state of the operation is set to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=193.56266666666667) [SUCCESSFUL. If we scroll down, we can also](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=195.90533333333332) [see information about previous admin](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=198.03462499999995) [operations, such as our CREATE\_INDEX](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=199.647) [command. This command had been executed a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=202.28533333333337) [couple of days before the export](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=204.5687499999999) [operation. It's also possible for us to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=207.01559999999995) [filter the output of this command. Let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=209.10399999999998) [do so and filter on the type of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=211.9103) [EXPORT\_ENTITIES. This command will now](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=215.5607) [only show all of the pending or completed](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=217.29299999999995) [EXPORT\_ENTITIES operations. And, in fact,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=220.8344) [each operation has a unique identifier](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=223.0695)[which we can copy. So let's copy that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=225.103) [identifier and use it to drill down into](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=228.1216666666667) [the status of this one operation. The](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=230.64800000000002) [command we run this time is gcloud](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=233.144875) [datastore operations describe, followed by](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=235.111) [the identifier that we just obtained. And](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=239.37075) [this is going to give us the same](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=241.86855555555556) [information, only for one particular](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=243.545) [operation. Next, let's run yet another](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=246.6875) [export operation, but this time let's do](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=248.98933333333332) [it only for the kinds Digital\_Wallet. Once](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=251.37374999999997) [again, we get a message telling us that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=254.625625) [this operation is processing, and then](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=256.65000000000003) [shortly after we can switch to the storage](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=259.48577777777774) [browser and examine the data. We find that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=261.842) [we have data there only for the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=264.30899999999997) [kind\_Digital\_Wallet and the output files](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=266.3774) [have appeared there as well. Now, you](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=268.3985) [might have noticed that we've not actually](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=270.94225) [clicked or opened these output files.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=272.8904285714286) [These individual files are in a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=275.107) [proprietary binary format, and so it's not](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=277.15128571428573) [going to be possible for us to read them](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=278.714) [or open them right here. And you might be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=280.939) [wondering how we are going to do anything](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=283.92828571428583) [useful with them. The answer will become](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=286.1141000000001)[apparent in a moment when we import all of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=287.99299999999994) [these files into BigQuery directly into a table in a data set.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=2&mode=live&start=290.73787500000014)

[Importing Data into Big Query for Analytical Processing](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live)

[We ended the previous example having](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=2.232) [exported entity data from Datastore into](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=4.409) [Google Cloud storage. Here we will pick up](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=6.468) [the action and import that data into](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=9.742777777777775) [BigQuery and see how convenient it is to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=11.699142857142858) [use BigQuery's UI in order to work with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=14.2595) [that data. Let's start by looking up](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=17.040999999999997) [BigQuery in the navigation menu. It](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=19.058625000000006) [appears under Big Data. There we will find](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=21.184285714285718) [over on the left the name of the current](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=24.286000000000005) [project, which is spikey-datastore. Let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=27.081999999999994)[click on the Create Dataset button over on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=29.39685714285714) [the bottom right. This brings up a dialog](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=32.046) [where we specify the dataset name, which](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=34.056125) [is spikey\_datastore\_imports. Now remember](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=37.69233333333332) [that a data set in BigQuery is a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=39.842) [container, kind of like a database in a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=42.45755555555556) [relational database. We now have to go](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=45.296) [ahead and actually populate this data set](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=47.630374999999994) [with one or more tables. So let's select](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=50.04744444444446) [this data set and click on the Create](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=52.979666666666674) [Table button, once again on the bottom](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=55.180749999999996) [right. Let's go ahead and name this table](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=57.028625000000005) [customer\_data\_table, and then the most](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=60.7038) [important part of this process, which is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=63.241)[specifying the table source. Initially the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=65.60033333333334) [default is set to empty table. Let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=68.09275) [change that to Google Cloud Storage. Next,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=70.48585714285714) [we need to point it to the bucket location](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=73.74277777777777) [for which we click on the browse window](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=76.45887499999999) [and navigate into our](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=78.6852) [spikey-datastore-backups bucket into the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=80.034) [individual timestamp down into the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=83.563) [all\_namespaces folder and there into a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=86.185) [folder for each of the kinds until we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=89.989) [finally get the all\_namespaces export](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=92.859) [file. The other files there, which have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=95.70066666666665) [the prefixes output 0 through 7 are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=98.38014285714286) [staging files which we should not import.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=101.24428571428572) [Then, once we've selected this data, we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=104.456) [have to specify the file format. By](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=106.76842857142857) [default this is set to Avro, which is a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=108.67914285714286) [binary JSON file format. But we need to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=111.87114285714287) [change that to Cloud Datastore Backup.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=114.61599999999999)[This is going to pick up the proprietary](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=116.28875) [binary file format used by the Datastore](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=119.15957142857143) [export functionality. So let's select this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=122.54850000000002) [as our option and now we are actually](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=125.17722222222221) [ready to move ahead. We can go over the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=127.74528571428573) [defaults for the project name, the data](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=130.42733333333328) [set name, and the table type. No need to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=132.26133333333334) [change anything there. Let's go ahead and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=134.919) [create this table, and the next thing we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=137.36314285714292) [know, the data is going to be imported](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=139.30311111111115) [into this table inside our data set, and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=141.60400000000004) [this is likely to be a far more intuitive](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=144.26239999999999) [way of working with this data. Let's hide](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=147.11066666666665) [the editor tab on the top right and then](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=150.12111111111113) [let's explore the schema. We can see that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=153.40133333333333) [there are a whole bunch of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=155.24839999999995) [user-defined properties, which show up as](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=156.66549999999998) [columns in this table. These are the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=159.2484) [properties such as Purchases, Feedback,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=161.41942857142857) [Gender, Date, Average\_spending, and Name.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=163.26075) [Down below these, we can see that there](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=165.79199999999997) [are a large number of Datastore internal](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=168.41299999999998) [properties. Pay special attention to the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=170.9454) [key, which is of type record, and within](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=173.68949999999998) [that it has subfields for the namespace](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=176.76825) [app, path, and so on. The kind is one of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=178.89433333333332) [these fields within the key, and so every](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=182.42488888888894) [row in our BigQuery table is going to know](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=184.85688888888888) [its own kind. We can explore this data in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=188.32400000000004) [the preview tab, and here we can see each](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=190.97225) [of the individual rows. For instance, we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=192.7835555555555) [have only a few rows which have valid](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=195.83262500000004) [values in the feedback column, and so we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=198.29842857142862) [can see that BigQuery has done a good job](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=201.26344444444442) [of intercommunicating with Datastore and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=204.2461428571429) [setting all of the other values to be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=205.71985714285714) [null. Let's click on the Details tab and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=207.88887499999998) [we can see information such as the table](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=210.327625) [ID, the number of rows, and the total](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=212.60975000000002) [table size. Here it's just 966 B. Maybe](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=215.10520000000002) [the best part is that we can now use](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=219.61339999999998) [BigQuery's query editor. Let's click on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=221.768) [the Show Editor tab over on the top right,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=224.46999999999997) [and we can now type in a query in plain](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=227.0897) [old standard SQL without having to be deal](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=230.1547142857143) [with any of the quirks of GQL. So we run a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=233.1613636363636) [query where we select all rows where the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=235.85979999999998) [gender is equal to female. Remember that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=237.88185714285717) [the gender was specified as a part of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=240.39914285714283) [ancestor path for only some of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=242.91933333333338) [entities we had in Datastore, and not all](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=245.52971428571428) [of them were female; some were male and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=248.48171428571428) [some were female. When we run this query,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=250.78000000000003) [we find that we get back a column of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=253.05049999999997) [Booleans, which are false for all the rows](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=256.0685) [where the ancestor did not include gender](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=258.9111111111112) [female, and it's true for exactly those](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=261.1308571428571) [where the gender was indeed female. Once](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=264.30425) [we understand how the columns in BigQuery](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=267.29214285714284) [are mapped to the individual properties in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=269.885) [Datastore, it's quite possible that we'll](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=272.16633333333334) [find this way of working with the entities, just much more convenient.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=3&mode=live&start=273.73057142857147)

[Implementing Code to Export Datastore Entities](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live)

[We have now seen the long and complicated](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=1.914) [way to configure a Datastore export using](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=4.325) [gcloud, but it turns out that the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=6.884) [recommended way is to do this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=8.562) [programmatically using App Engine's cron](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=10.43) [scheduling feature. Let's get started. We](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=12.816) [are on the Cloud Shell prompt. The first](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=15.637499999999998) [thing that we need to do is to run a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=17.641999999999996) [gcloud command to make sure that the App](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=19.894999999999996) [Engine default service account is granted](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=22.44757142857143) [the cloud Datastore importExportAdmin](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=25.097) [role. That's quite a mouthful, so let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=27.7905) [break it down. Every GCP project has two](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=30.604) [default service accounts, one each for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=33.15342857142858)[compute engine applications and the other](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=35.63533333333332) [for App Engine applications. Here we are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=38.015) [going to write an App Engine app, which is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=40.062999999999995) [going to need to interface with Datastore,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=41.74275) [so we need to make sure it has the right](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=43.28225) [role. That role is the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=46.276799999999994) [datastore.importExportAdmin role. We run](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=47.804) [this command and it goes through](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=51.09844444444444) [successfully. At the end, our App Engine](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=52.71377777777775) [service account does indeed have the role](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=54.746249999999996) [that we want. This role was all about the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=56.96275)[Datastore service and the App Engine](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=59.91142857142857) [service account. The next thing we need to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=61.55214285714286) [do is to ensure that our App Engine](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=63.76779999999998) [service account has access to the bucket](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=66.31099999999999) [which we are going to use for our exports.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=68.47255555555553) [And for this operation we are going to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=72.137) [make use of the gsutil command-line](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=73.69699999999995) [utility, along with the iam command. Here](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=76.69783333333332) [we specifically want to give our service](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=79.41742857142857) [account the objectCreator role for the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=81.7775) [bucket spikey-datastore-backups. So this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=85.86633333333333) [is another important preparatory step for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=88.983) [our App Engine cron job to succeed. We are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=90.965) [now ready to code up our actual App Engine](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=94.01066666666668)[application. This is going to have three](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=96.83533333333332) [files. If you've use App Engine before,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=99.10385714285712) [you will be aware that the simplest App](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=100.562) [Engine jobs have just one .yaml and one](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=103.12) [code file. Here we have a third file,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=106.416) [which is going to define the cron job that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=108.539) [we wish to run. Let's switch to the code](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=111.352) [browser by clicking on the little pencil](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=113.494) [in the top right. This opens up a view](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=115.04100000000003) [where we can navigate the file system and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=117.72422222222218) [create files or folders. The most](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=120.34462500000002)[important file in our App Engine](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=122.63857142857145) [application is going to be the Python.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=124.44949999999997) [That's the app file. This is called](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=126.61757142857141) [cloud\_datastore\_admin.py. Let's understand](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=130.30474999999998) [this line by line. Our class is called](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=131.87366666666668) [Export and it inherits from](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=134.7365) [webapp2.RequestHandler, which means that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=137.1105) [it has a bunch of functionality required](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=139.046) [for dealing with HTTP request and sending](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=141.2834) [back meaningful responses. Let's focus on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=144.76328571428576) [the method which responds to HTTP GET](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=147.13714285714286) [requests, and the start of this method we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=149.49224999999998) [get an access token. This is something](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=152.42142857142858) [which we get from the app\_identity API.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=154.63037500000002) [This is a standard API available within](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=157.09099999999998) [App Engine to allow applications to figure](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=160.71433333333334) [out their own application ID. This is an](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=163.46050000000002) [oath 2.0 token which is going to allow the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=166.55875000000003)[API to act on behalf of our application.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=169.41640000000007) [We need to specify the requested API](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=172.928) [scope, and we can see that that is the URL](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=175.76474999999996) [googleapis.com /auth/datastore. So](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=178.48) [effectively we are requesting an access](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=182.13457142857143) [token for the Datastore access scope. We](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=184.856) [will need this when we make a REST API](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=187.4985) [call to the export functionality of the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=189.24) [Datastore API. Now let's go ahead and set](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=191.969) [up all of the parameters which are going](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=194.95) [to be included in that RESTful API call](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=196.5606666666667) [starting with the output\_url. This needs](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=199.057) [to be a valid Google Cloud storage URL. We](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=202.18675) [are exporting with the timestamp embedded](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=205.4722857142857)[in there. Another bit worth noticing here](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=207.791) [is that we extract the output URL prefix](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=210.0925) [from the incoming HTTP request. This is a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=213.71799999999996) [way for us to pass input parameters into](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=217.5016666666667) [this App Engine app. Within our RESTful](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=219.67533333333336) [API call, we also are going to include](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=222.262875) [entity\_filters, and those are then going](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=225.538) [to be passed into the HTTP request. All of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=227.3975555555556) [this is done in the form of dictionaries.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=230.14899999999994) [Notice in the entity\_filter how both the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=233.244) [kinds and the namespaces IDs are extracted](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=235.609) [from the incoming HTTP request. We will](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=238.94) [pass in values to all of these while](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=241.57233333333332) [invoking this application. Next come the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=243.37475) [HTTP headers. The important bit here is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=246.24560000000002) [the manner in which we pass in our](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=248.58412500000006) [access\_token, which we had obtained up](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=251.32650000000004) [above. Then we finally construct the URL](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=253.54083333333332)[and make our HTTP RESTful API call. We are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=256.4367142857143) [invoking datastore.googleapis .com](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=260.64700000000005) [/v1/projects, followed by our app\_id,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=264.30066666666664) [followed by the export method. As an](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=267.5522857142858) [aside, the gcloud command-line utility,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=270.7070000000001) [which we used for exports previously in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=273.063) [this course, was also relying on a similar](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=275.106) [RESTful API call under the hood. The](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=278.098) [actual call itself comes next embedded](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=280.793) [within a try except block. We can shut the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=282.713) [URL payload, the method, which is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=286.6289999999999)[urlfetch.POST, and then the headers. We](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=289.10471428571424) [write out some logging information, and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=292.58366666666666) [that basically is it. That gets us to the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=294.8616) [end of the get handler. Down below it is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=297.0350000000001) [the instantiation of our app. Notice that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=300.0753333333333) [in the URL map we except the incoming URL](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=303.26588888888887) [cloud-datastore-export. So that's how](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=308.013) [we'll actually have to invoke this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=310.01675000000006) [handler. Hold that thought, because we'll](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=311.9076) [need exactly that URL in a moment when we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=314.33824999999996) [configure our app.yaml file. So let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=317.3972857142857) [switch out of this code editor and open up a new file with the app.yaml.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=4&mode=live&start=319.4778888888889)

[Running an App Engine Cron Job to Export Entities](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live)

[Let's create a new file. It's called](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=1.844) [app.yaml. And within the body of this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=4.817) [file, we specify some of the information](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=6.820857142857142) [like the runtime, whether it's thread-safe](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=9.31675) [and so on, and then most importantly, in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=10.864666666666665) [the handler section, if the incoming URL](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=13.926) [is /cloud-datastore-export, we invoke the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=17.648999999999997) [script cloud\_datastore\_admin.app. And we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=22.2666) [do so with the admin login. Let's go ahead](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=24.342000000000002) [and create a file for that app and paste](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=26.922333333333338) [in the implementation from our local](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=29.785428571428575) [directory. This is the same code which we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=32.57666666666667) [just walked through line-by-line. Next,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=34.97388888888887) [we've got to configure the cron.yaml file.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=37.712250000000004) [This is an additional file which we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=40.381) [require in order to specify the cron job.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=42.709375) [Nothing too complex here. The only](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=45.216) [important bit is the URL. This is the URL](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=47.749428571428574) [which is going to be invoked by the job.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=50.50722222222223) [There is also the target, which is the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=53.28799999999999) [cloud-datastore- admin.py file, and the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=56.076) [schedule. We would like this job to be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=58.874333333333325) [executed every 24 hours. Let's switch now](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=61.313888888888904) [from the code editor back to Cloud Shell.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=63.643499999999996) [Let's cd into our application directory](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=66.207) [and here we will run gcloud app deploy.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=68.69185714285717) [This command is going to actually go ahead](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=72.223) [and push our App Engine application, so](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=74.374) [we've got to include all of the relevant](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=77.1203)[files. So we need to include both the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=79.29870000000001) [app.yaml and the cron.yaml. They in turn](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=81.66711111111113) [will have a reference into the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=84.04162500000001) [cloud-datastore- admin.py file. We now let](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=87.19349999999999) [the deployment run through. It has](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=90.29742857142858) [information about the target URL. It](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=92.60428571428571) [prompts us whether we really want to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=95.211875) [update this. We say yes. And then the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=96.835) [configuration has been pushed through.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=99.940125) [Three files are uploaded into cloud](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=101.912) [storage from where they will be picked up](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=103.80542857142859) [for App Engine and then deployed. At the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=105.67675000000001) [very end, you get two helpful commands.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=109.04811111111111) [The first of these tells us how we can](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=111.306) [check out the logs of our application. The](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=112.957) [second tells us how we can run that](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=116.129) [application from a web browser. But here](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=118.065) [we actually don't want to do either of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=120.44375000000001) [these. We are going to switch into the web](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=122.35225) [console and examine the cron jobs](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=125.27650000000001) [scheduler. So in the navigation menu, we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=127.09442857142857) [find App Engine under Compute, and then we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=130.36916666666667)[click on cron jobs, and that takes us to a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=132.97714285714284) [dashboard where we can see our cron job](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=135.66466666666662) [listed nicely. In fact, there is also a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=138.20485714285715) [button over on the extreme right which](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=140.38319999999996) [allows us to run that cron job right now.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=142.116375) [Let's click on that, wait for our job to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=144.77100000000002) [run through, and then let's go ahead and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=147.82928571428565) [view the logs. This is a great way of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=150.28899999999993) [telling what exactly happened. We can see](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=152.53259999999997) [that there don't seem to be any errors or](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=154.05369999999996) [warnings in there. Everything seems to be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=156.3272) [fine. Let's open up the Storage browser](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=158.96499999999997) [and check on the output bucket,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=160.81574999999998) [spikey-datastore-backups. We click](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=164.31680000000003) [through, and there is a date there for the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=165.63344444444448) [current timestamp. We click on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=168.3205) [default\_namespace, and down below we can](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=170.66075) [see that our backup has gone through](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=172.5448888888889) [successfully. Scheduling Datastore entity](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=175.059) [exports using the App Engine cron](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=177.2224) [scheduler is the recommended way of doing this.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=5&mode=live&start=179.72457142857144)

[Using Dataflow Templates to Bulk Delete Entities](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live)

[In this example, we will see powerful new](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=2.272) [functionality which has been added into](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=4.925) [Google Dataflow. Google Dataflow now has](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=6.307) [templates which work with a variety of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=9.389) [different GCP services, including Spanner,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=11.694) [Datastore, and so on. In this example,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=14.059) [we'll see how Datastore templates can be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=17.213571428571427)[used from Dataflow in order to bulk delete](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=19.847142857142856) [entities. Let's start by enabling the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=23.183600000000002) [Dataflow API. For this, we have to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=25.719571428571424) [navigate to APIs and Services in the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=27.910666666666668) [navigation menu and click on Dashboard.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=30.006857142857143) [That takes us into the API library, we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=32.192499999999995) [click there, and we are presented with a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=35.31171428571429) [search icon where we type in Dataflow,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=37.82187499999999) [find the Dataflow API, and enable it. If](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=40.29033333333333) [you are not familiar with Dataflow, this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=43.257000000000005) [is a Google service which allows us to run](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=45.31985714285714) [jobs in the form of directed acyclic](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=47.84649999999999) [graphs. Truth be told, until quite](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=50.641333333333336) [recently, Dataflow had only limited](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=52.89249999999999) [adoption, but that's changed now and in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=55.45339999999999) [big part because of the addition of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=57.60525000000001) [Dataflow templates. So let's try it out.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=60.53071428571427) [Let's find Dataflow in the Products and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=62.397) [Services menu. Click on the Try Dataflow](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=64.435)[button. We will be presented with an](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=67.67250000000004) [option for a Dataflow tutorial for a word](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=69.8936666666667) [count example. But let's dispense with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=72.79299999999998) [that and let's move on and click on the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=74.94442857142855) [button over up top to create a job from a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=77.4193333333333) [template. The main advantage of doing this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=80.68612499999999) [is that we don't have to write any code](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=82.49200000000002) [either in Python or in Java. We are](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=84.81750000000002) [presented with a set of predefined](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=87.87425000000005) [templates. There's a pretty long list in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=90.751) [there. Of this, one of them has to do with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=93.05828571428573)[Datastore. So let's go ahead and pick Bulk](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=95.58729999999996) [Delete Entities in Cloud Datastore. Moving](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=98.07412499999997) [on, we will be prompted for a job name.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=101.1566) [Let's call it delete-products. The](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=103.547) [Dataflow template field is already](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=105.93842857142857) [pre-populated. Then we've got to specify](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=108.57057142857141) [the GQL query. This is the query which is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=111.05137499999998) [going to select all of the entities which](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=114.07466666666669) [are going to be deleted. Here we go with](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=116.29350000000002) [the GQL query SELECT \* FROM Products LIMIT](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=118.67219999999999) [500. The LIMIT clause is going to ensure](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=121.2662857142857) [that no more than 500 entities are deleted](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=124.78112500000002) [by this job. The template allows us to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=127.70900000000002) [separate the project containing the query](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=130.7021428571429) [from the project where the deleted data](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=132.7543333333333) [has to reside, and that's where we specify](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=135.16600000000005) [the project ID twice. Finally, we specify](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=137.87942857142855) [a temporary location. This is going to be](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=140.52228571428577)[used by the Dataflow job. We use our](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=143.012) [gs://spikey-datastore-backups with a new](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=147.60425) [folder /tmp. We are now ready to run our](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=150.1486) [jobs, so let's click on that button, and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=153.327) [switch over to the Job Explorer. This is a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=154.87342857142858) [nice graphical view. We won't spend a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=158.34699999999998) [whole lot of time talking about what](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=160.17666666666662) [exactly these different nodes mean, but](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=161.901) [just so you know, we can click on each of](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=164.07700000000003) [them and get information in the pane on](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=166.65266666666665) [the right. You can also see that Dataflow](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=168.72822222222226) [is an auto-scaling technology. It](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=170.832) [automatically assigns compute resources.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=173.6082) [This we can see if we scroll down, we can](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=176.377) [see the number of worker nodes. It varies](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=179.09925) [over time. The job has run through](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=181.845) [successfully, and if we now navigate into](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=184.0606666666667) [Datastore and click on the Entities tab,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=186.40774999999996) [we should expect to find that all entities](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=189.33125000000004) [of type Products have been deleted. Let's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=191.97787499999998) [query by kind, and indeed that's the case.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=194.50685714285711) [We only have entities of kind Customers.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=197.393) [All of the Products entities have](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=200.781) [disappeared. We have successfully used our](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=202.93842857142857) [Dataflow job in order to bulk delete our Datastore entities.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=6&mode=live&start=205.3515714285714)

[Summary](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live)

[With that Dataflow demo, we've come to the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=1.563) [end of this module and the end of this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=3.228) [course. Let's summarize everything that we](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=5.823600000000002) [learned in this module. We began by](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=8.027000000000001) [viewing Datastore statistics and using the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=11.163142857142859) [Datastore admin console. We saw that parts](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=13.558) [of that are going to be deprecated in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=16.4706)[2019. We then moved on to studying the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=18.67875) [export and backup of Datastore entities](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=22.060142857142857) [from Google Cloud storage. We then learned](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=24.678) [how to import that data into BigQuery.](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=27.63575) [Because it's a proprietary file format](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=29.965) [that's used for the backups, BigQuery is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=32.29985714285714) [the most convenient way to input this data](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=34.666000000000004) [and use it to run queries. The emphasis in](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=37.53266666666667) [this module is on administering Datastore,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=40.66557142857143) [and to that end, we saw how easy it is to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=42.786) [schedule exports using App Engine cron](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=46.24566666666668) [jobs. We went through the code of our App](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=49.09540000000001) [Engine cron job almost line-by-line. We](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=51.68733333333332) [then explored another and much newer way](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=54.524499999999996)[of interacting with Datastore. This one](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=57.23) [relied on Dataflow templates. We saw how](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=59.98) [we can bulk delete Datastore entities](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=62.486000000000004) [using a Dataflow template without writing](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=64.16483333333333) [any code at all. Before we part ways, here](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=66.6776) [is a quick call to action. Do remember to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=69.74477777777778) [delete all of the resources which you](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=72.5795) [provision during this course. We made use](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=74.71533333333333) [of a VM instance while using Datalab. We](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=77.50959999999999) [created various cloud storage buckets, a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=80.795) [BigQuery dataset and tables within it, and](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=83.26457142857143) [finally, of course, we created entities](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=85.82471428571428) [and kinds within Datastore. All of these](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=88.061) [are chargeable resources, so be sure to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=90.8655) [delete them. And here are some courses for](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=93.66399999999999) [further study. First let's talk about a](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=96.35975000000002) [couple of relevant courses about the](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=98.02000000000001) [Google Cloud platform. The first is](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=100.02900000000001)[Creating and Administering Google Cloud](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=102.306) [SQL Instances, and the second is titled](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=104.09785714285714) [Architecting Data Warehousing Solutions](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=107.091) [Using Google BigQuery. Both of these](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=108.80675000000001) [courses are a part of Pluralsight's](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=111.38862499999999) [excellent catalog of cloud computing](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=112.99680000000001) [courses. This catalog is not restricted to](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=115.66466666666668) [the GCP. There are also excellent courses](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=118.28099999999999) [on other cloud platforms. For instance,](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=120.732) [Building Your First Amazon Redshift Data](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=123.37933333333334) [Warehouse, and Azure SQL Data Warehouse:](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=125.89942857142857) [First Look. I hope you enjoyed this](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=129.085) [course, and I thank you for your time and for watching. Goodbye!](https://app.pluralsight.com/player?course=google-cloud-platform-datastore-nosql-architecting-schemaless-scalable-databases&author=vitthal-srinivasan&name=80c72761-8c92-49a1-a285-af213d054a97&clip=7&mode=live&start=131.54900000000004)