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Plot the results and take a screenshot for your lab notebook. 8

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Use sort with appropriate flags to perform a numeric sort on the key field containing the count for each word in descending order. Pipe the output into head to show the top 3 words in King Lear and the number of times they appear 10
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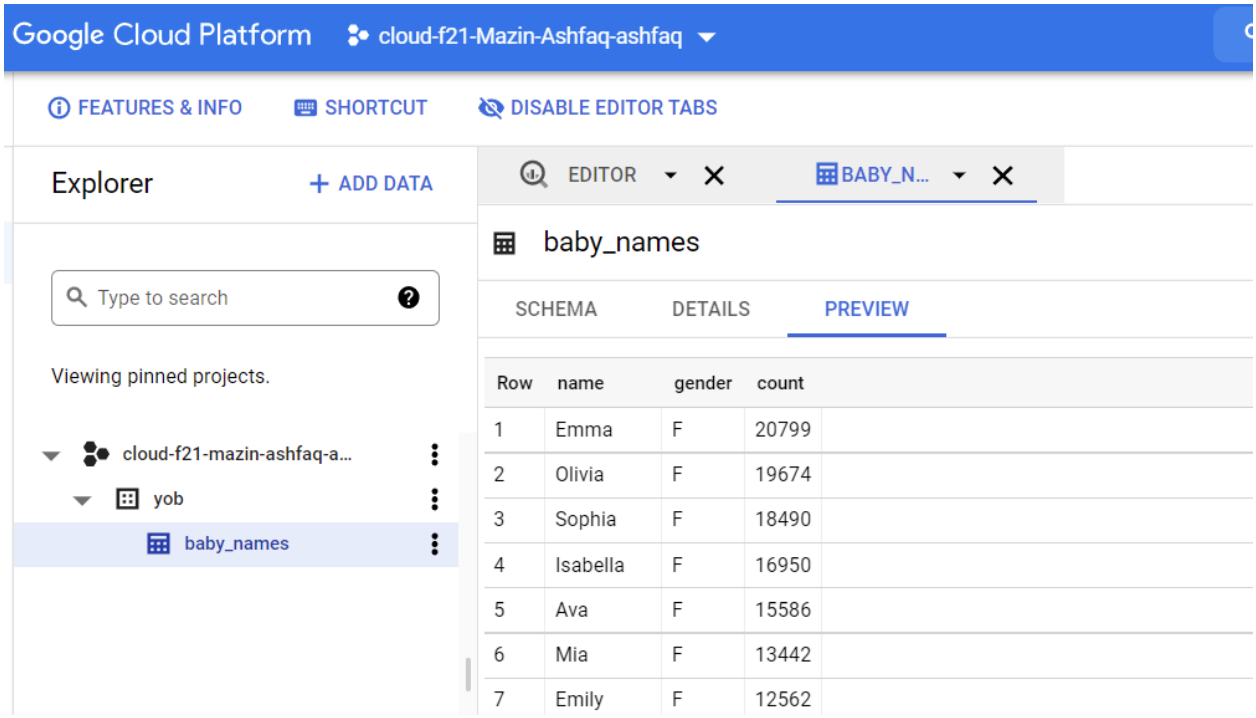
Examine the output directory in Cloud Storage. How many files has the final write stage in the pipeline created? 10

09.2g: BigQuery, JupyterLab

3. Create dataset

- Take a screenshot of the table's details that includes the number of rows in the table.



4. Query data

- Screenshot your results and include it in your lab notebook

```
1   SELECT name, count
2   FROM `cloud-f21-mazin-ashfaq-ashfaq.yob.baby_names`
3   WHERE gender='F'
```

Query results SAVE RESULTS EXPLORE DATA

Query complete (0.2 sec elapsed, 618.8 KB processed)

Job information | Results | JSON | Execution details

Row	name	count
1	Emma	20799
2	Olivia	19674
3	Sophia	18490
4	Isabella	16950
5	Ava	15586
6	Mia	13442
7	Emily	12562
8	Abigail	11985
9	Madison	10247
10	Charlotte	10048

- Screenshot your results and include it in your lab notebook

```
Waiting on bqjob_r59c6f045a163cb08_0000017d6f81feca_1 ... (0s) Current status: DONE
+---------+-------+
|  name   | count |
+---------+-------+
| Aari    |     5 |
| Aaliyah |     5 |
| Aadian  |     5 |
| Aaroh   |     5 |
| Aarit   |     5 |
| Aadiv   |     5 |
| Aadhi   |     5 |
| Aarohan |     5 |
| Aariyan |     5 |
| Aamer   |     5 |
+---------+-------+
ashfaq@cloudshell:~ (cloud-f21-mazin-ashfaq-ashfaq)$
```

- Screenshot your results and include it in your lab notebook

```
cloud-f21-mazin-ashfaq-ashfaq> SELECT name, count FROM [cloud-f21-mazin-ashfaq-ashfaq.yob.baby_names] WHERE gender='M' ORDER BY count DESC LIMIT 10
Waiting on bqjob_r67946b882f07446d_0000017d6f83f355_1 ... (0s) Current status: DONE
+-----------+-------+
|   name    | count |
+-----------+-------+
| Noah      | 19144 |
| Liam      | 18342 |
| Mason     | 17092 |
| Jacob     | 16712 |
| William   | 16687 |
| Ethan     | 15619 |
| Michael   | 15323 |
| Alexander | 15293 |
| James     | 14301 |
| Daniel    | 13829 |
+-----------+-------+
cloud-f21-mazin-ashfaq-ashfaq>
```

- Screenshot your results and include it in your lab notebook

```
Waiting on bqjob_r4c773a0b04a4ec88_0000017d6f85f62a_1 ... (0s) Current status: DONE
+--------+-------+
| name   | count |
+--------+-------+
| Mazin  |    32 |
+--------+-------+
cloud-f21-mazin-ashfaq-ashfaq>
```

6. BigQuery query

- How many twins were born during this time?

  11,779,637

Query complete (0.6 sec elapsed, 3.1 GB processed)

Job information | Results | JSON | Execution details

Row	plurality	num_babies	avg_wt
1	1	11757058	7.345780731912613
2	4	1407	2.851986586921067
3	3	20933	3.7097715771323494
4	5	239	2.6967018620810164

PERSONAL HISTORY | PROJECT HISTORY | SAVED QUERIES

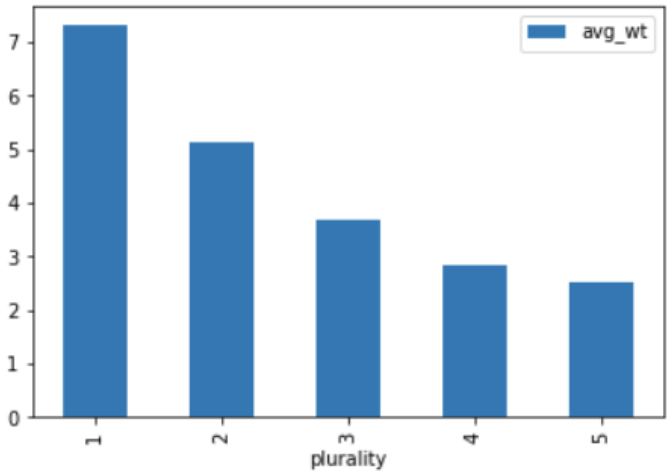
```
arted.
 set to cloud-f21-mazin-ashfaq-ashfaq.
```

9. Run queries

- Show the plots generated for the two most important features for your lab notebook

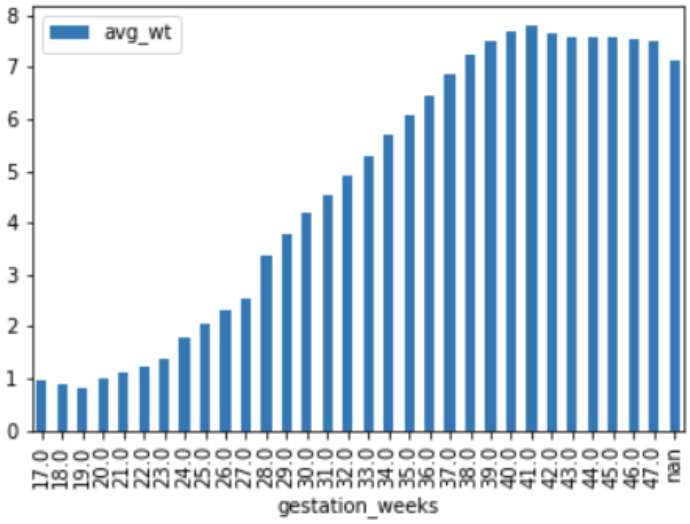
[7]:
```
df = get_distinct_values('plurality')
df.plot(x='plurality', y='avg_wt', kind='bar')
```

[7]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x7f8f00045a10>
```



[9]:
```
df = get_distinct_values('gestation_weeks')
df.plot(x='gestation_weeks', y='avg_wt', kind='bar')
```

[9]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x7f8efb716f90>
```



10. BigQuery, Notebooks Lab #3 (COVID-19 Mobility)

- What day saw the largest spike in trips to grocery and pharmacy stores?

  3/12

- On the day the stay-at-home order took effect (3/23/2020), what was the total impact on workplace trips?

  -49%

- Which three airports were impacted the most in April 2020 (the month when lockdowns became widespread)?

- Run the query again using the month of August 2020. Which three airports were impacted the most?

11. BigQuery, Notebooks Lab #4 (COVID-19 NYT)

- What table and columns identify the place name, the starting date, and the number of excess deaths from COVID-19?
- What table and columns identify the date, county, and deaths from COVID-19?
- What table and columns identify the date, state, and confirmed cases of COVID-19?
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- Show a screenshot of the plot and the code used to generate it for your lab notebook
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- Take a screenshot for your lab notebook of the Top 5 counties and the states they are located in.

13. Write queries

- Plot the results and take a screenshot for your lab notebook.
- Plot the results and take a screenshot for your lab notebook.

1. Dataproc Lab #1 (π)

6. Run computation

- How long did the job take to execute?

  Less than a second

- Examine output.txt and show the estimate of π calculated.

  Pi is roughly 3.1414761514147616

8. Run computation again

For your lab notebook:

- How long did the job take to execute? How much faster did it take?

  Looks like I messed up the first run timer, but this time it took about 51 seconds.

- Examine output2.txt and show the estimate of π calculated.

  Pi is roughly 3.141441591414416

12. Beam code

- Where is the input taken from by default?
- Where does the output go by default?
- Examine both the `getPackages()` function and the `splitPackageName()` function. What operation does the '`PackageUse()`' transform implement?
- Look up Beam's `CombinePerKey`. What operation does the `TotalUse` operation implement?
- Which operations correspond to a "Map"?
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13. Run pipeline locally

- Take a screenshot of its contents
- Explain what the data in this output file corresponds to based on your understanding of the program.

14. Dataflow Lab #2 (Word count)

- What are the names of the stages in the pipeline?
- Describe what each stage does.

15. Run code locally

- Use `wc` with an appropriate flag to determine the number of unique words in King Lear.
- Use sort with appropriate flags to perform a *numeric* sort on the *key field* containing the count for each word in *descending* order. Pipe the output into `head` to show the top 3 words in King Lear and the number of times they appear
- Use the previous method to show the top 3 words in King Lear, case-insensitive, and the number of times they appear.

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- The part of the job graph that has taken the longest time to complete.
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