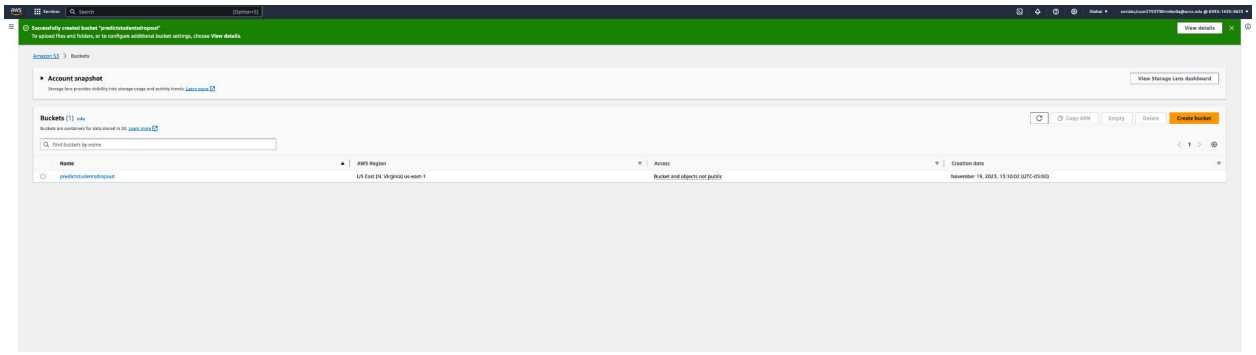
Project Deliverable 2

S3 Data Storage:

Create an S3 bucket to store the dataset(s)
Upload data to the S3 Bucket



Amazon S3 > Buckets > predictstudentsdropout > Upload

Upload Info

Add the files and folders you want to upload to S3. To upload a file larger than 160GB, use the AWS CLI, AWS SDK or Amazon S3 REST API. Learn more

Drag and drop files and folders you want to upload here, or choose **Add files** or **Add folder**.

Files and folders (1 Total, 520.7 KB) Remove Add files Add folder

All files and folders in this table will be uploaded.

Find by name 1

Name	Folder	Type	Size
Predict student's dro...	-	text/csv	520.7 KB

Destination

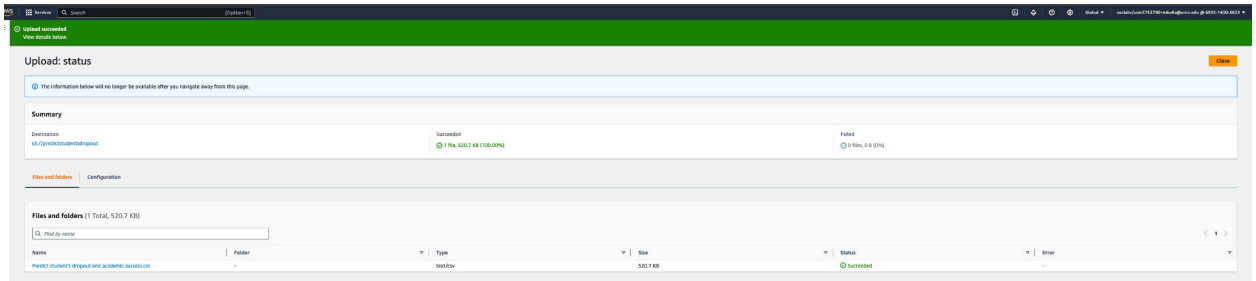
Destination
s3://predictstudentsdropout

▶ **Destination details**
Bucket settings that impact new objects stored in the specified destination.

▶ **Permissions**
Grant public access and access to other AWS accounts.

▶ **Properties**
Specify storage class, encryption settings, tags, and more.

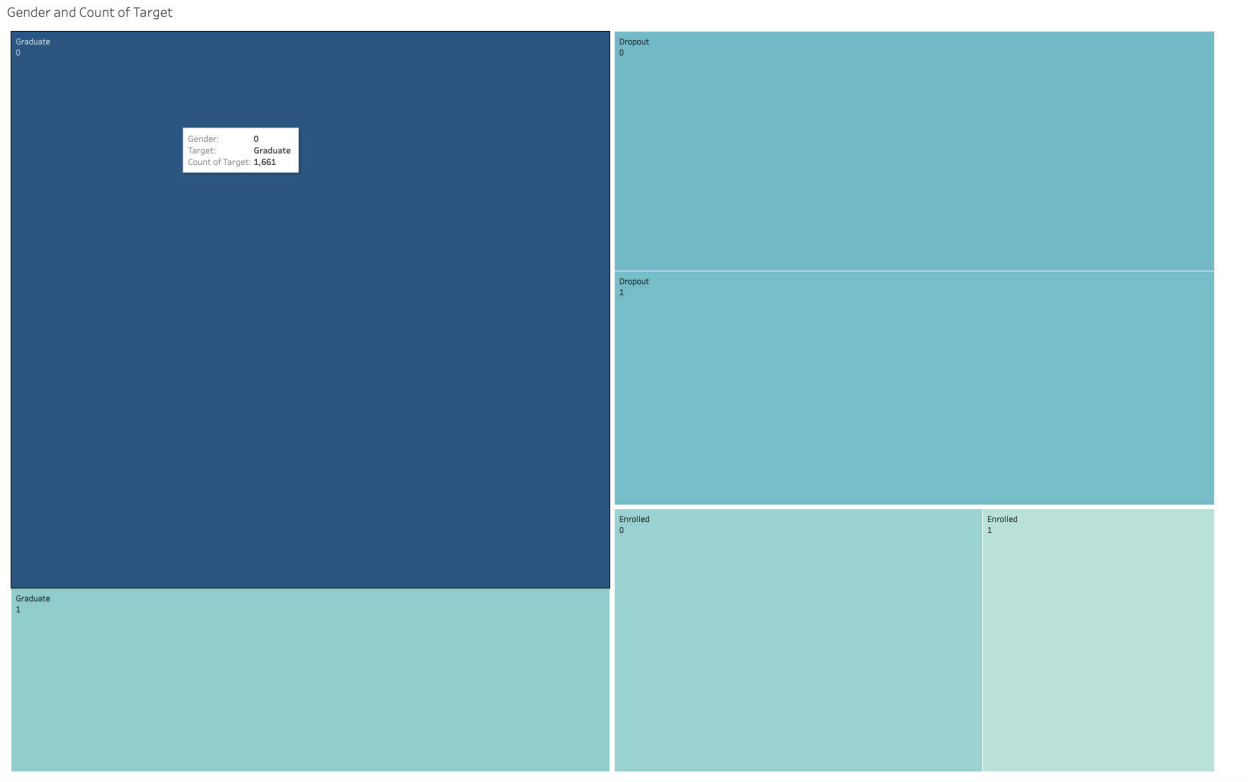
Cancel Upload



Data Exploration for Insight and Pre-processing

Use Amazon Athena to query the transformed data.
Use SQL queries for meaningful insights from the dataset for data exploration
Create visualizations using Amazon QuickSight.

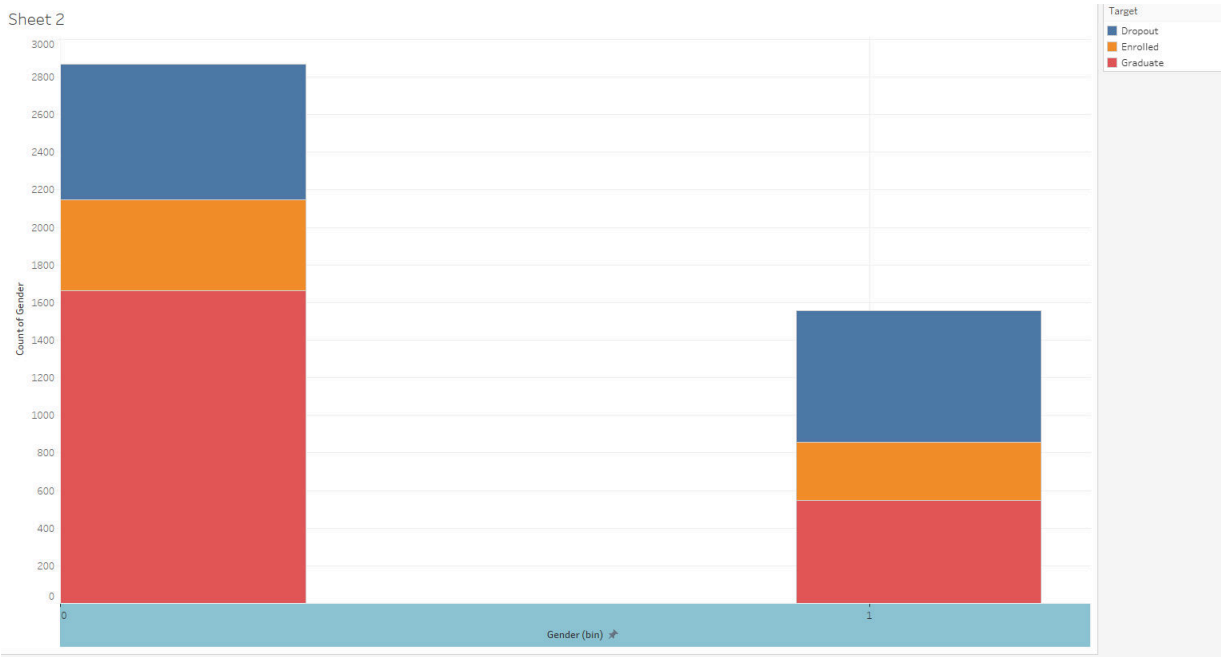
The descriptions to the insights are mentioned below the insights:



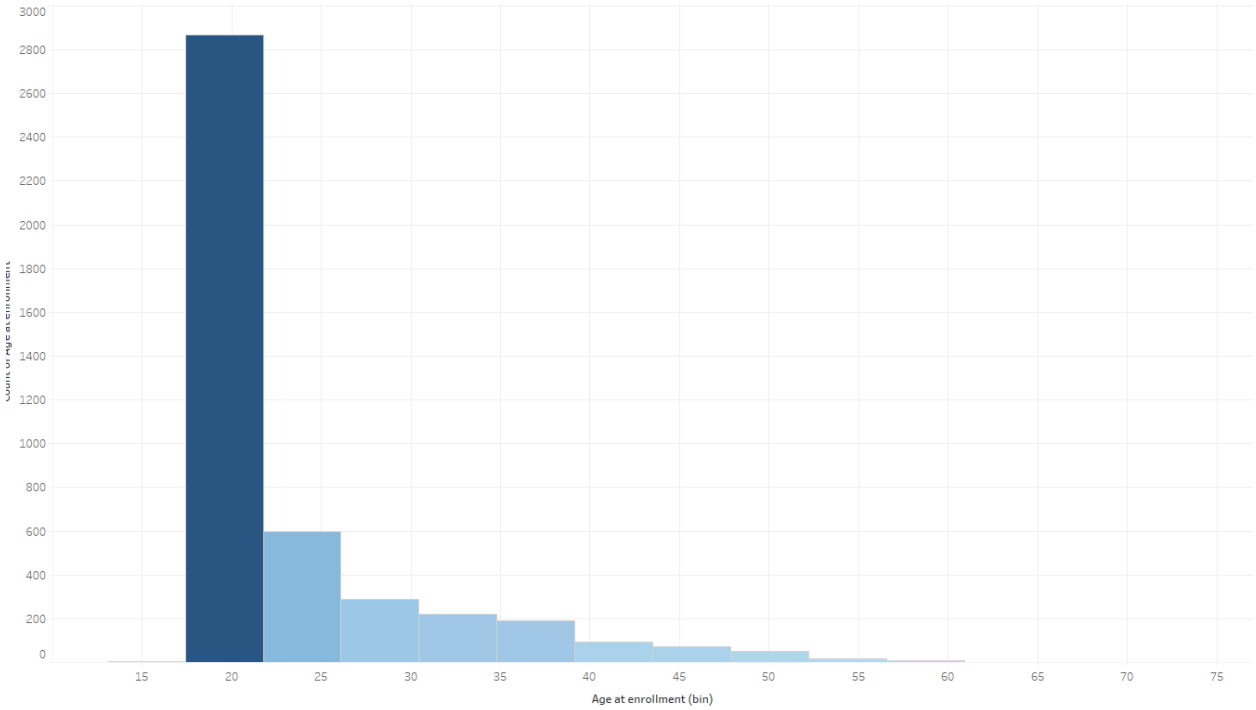
Gender and Count of Target

Gender: 1- Male, 0- Female

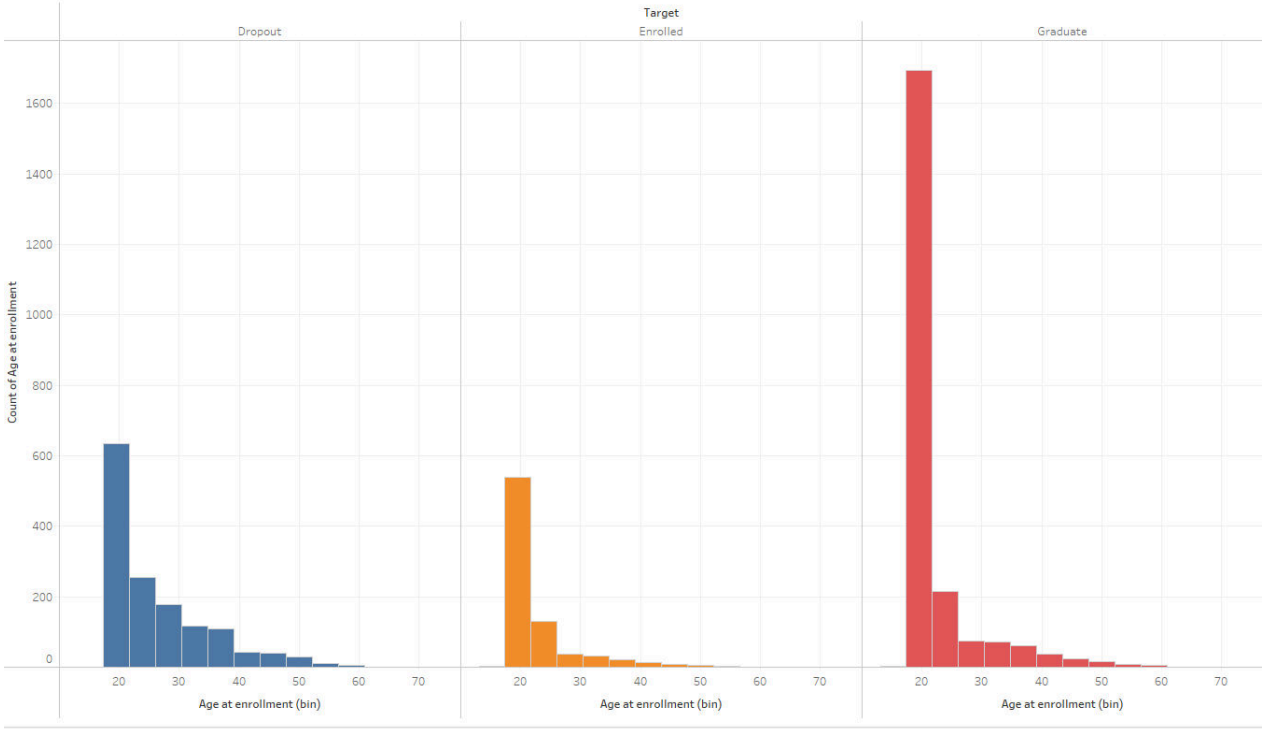
Target	1- Male (Count of target)	0- Female(Count of target)
Dropout	701	720
Enrolled	307	487
Graduate	548	1661



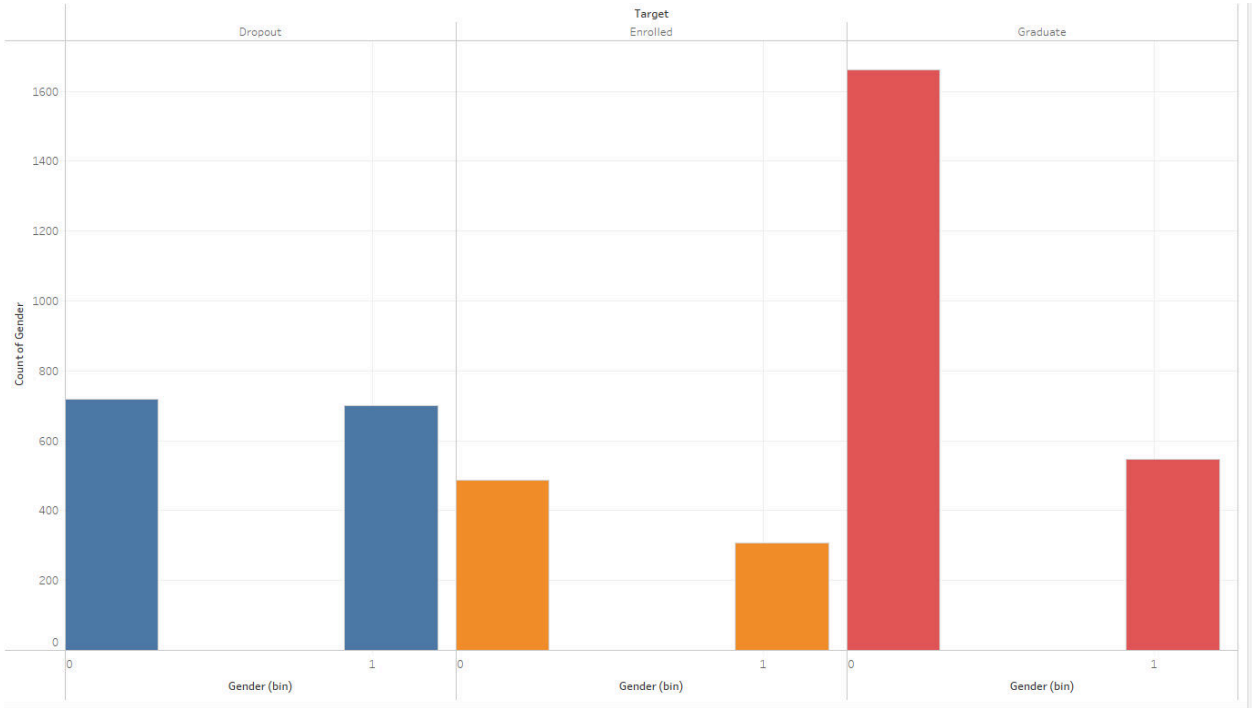
Distribution of graduate,dropout and enrolled students in each gender.



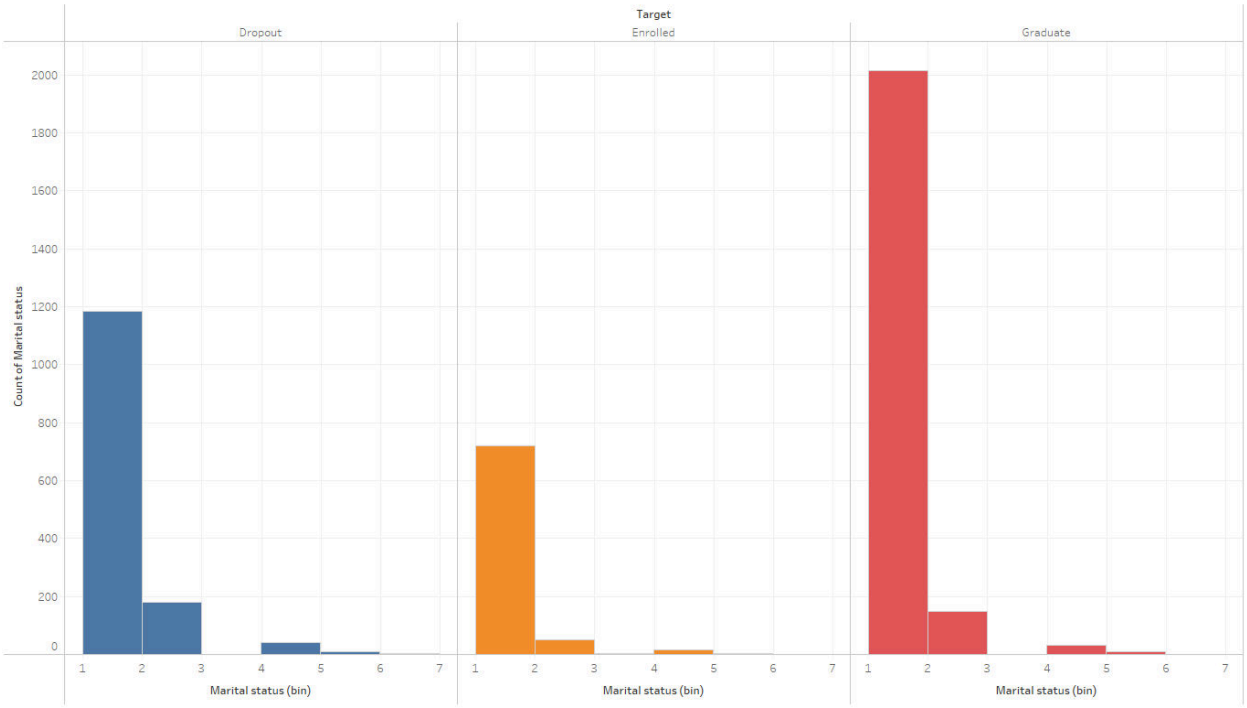
Age of enrollment of students in the dataset



Distribution of age of students enrolled with respect to dropout, enrolled and graduate value.



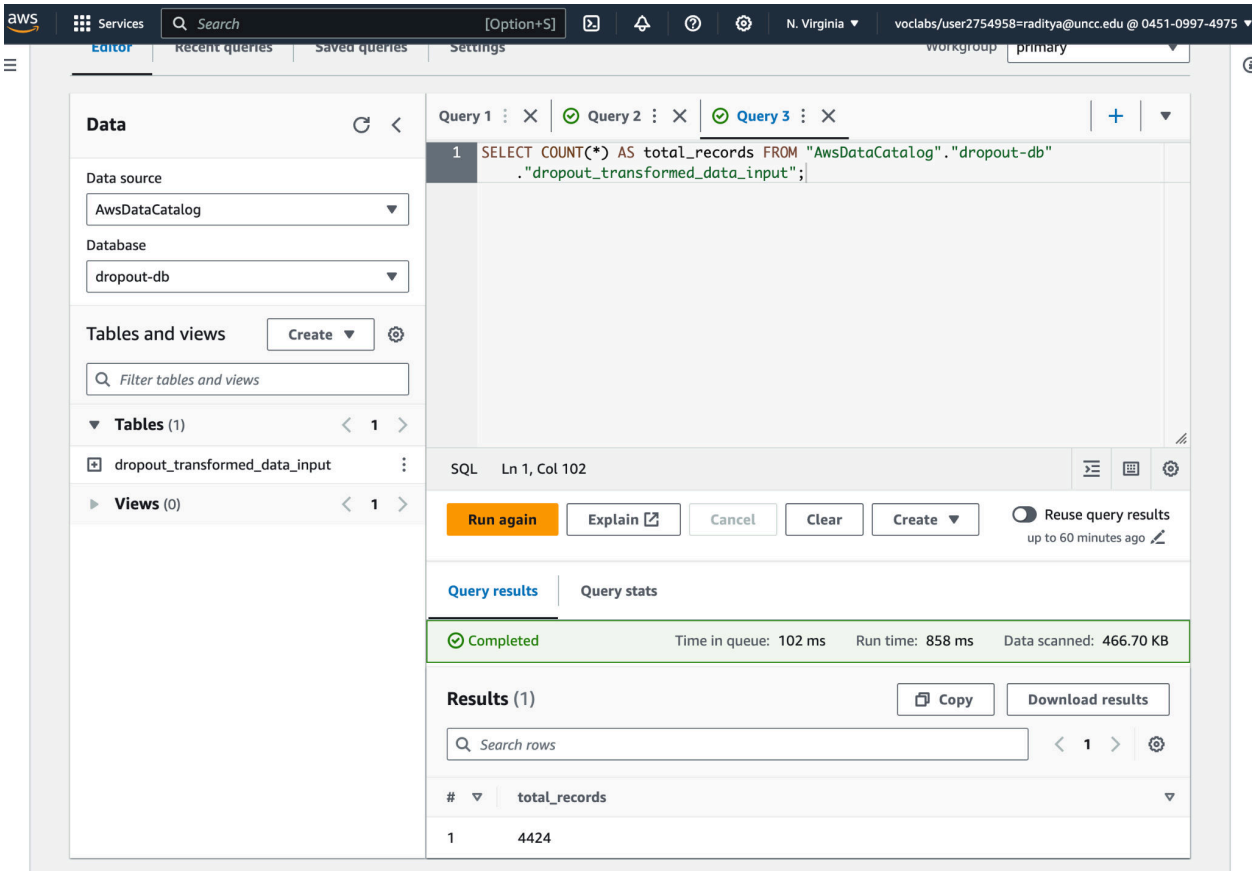
Distribution of male and female students with respect to their target value (Dropout, pass, fail)



Distribution of students with respect to their marital status and their target value(Dropout, pass, fail)

Running Queries using Amazon Athena

Total records:



Dropout as per gender:

Query 3 | Query 4 | Query 5

```
SELECT
    "Gender",
    "Target",
    COUNT(*) AS number_of_records
FROM
    "AwsDataCatalog"."dropout-db"."dropout_transformed_data_input"
GROUP BY
    "Gender",
    "Target"
ORDER BY
    "Gender",
    "Target";
```

Results (6)

Copy | Download results

Search rows

1

#	Gender	Target	number_of_records
1	0	Dropout	720
2	0	Enrolled	487
3	0	Graduate	1661
4	1	Dropout	701
5	1	Enrolled	307
6	1	Graduate	548

Dropout as per Marital Status:

Query 3 | Query 4 | Query 5

```
SELECT
    "Marital status",
    "Target",
    COUNT(*) AS number_of_records
FROM
    "AwsDataCatalog"."dropout-db"."dropout_transformed_data_input"
GROUP BY
    "Marital status",
    "Target"
ORDER BY
    "Marital status",
    "Target";
```

#	Marital status	Target	number_of_records
1	1	Dropout	1184
2	1	Enrolled	720
3	1	Graduate	2015
4	2	Dropout	179
5	2	Enrolled	52
6	2	Graduate	148
7	3	Dropout	1
8	3	Enrolled	2
9	3	Graduate	1
10	4	Dropout	42
11	4	Enrolled	16
12	4	Graduate	33
13	5	Dropout	11
14	5	Enrolled	3
15	5	Graduate	11
16	6	Dropout	4
17	6	Enrolled	1
18	6	Graduate	1

Dropout according to Mother's occupation:

Query 3 | Query 4 | Query 5

```
SELECT
    "mother's occupation",
    "Target",
    COUNT(*) AS number_of_records
FROM
    "AwsDataCatalog"."dropout-db"."dropout_transformed_data_input"
GROUP BY
    "mother's occupation",
    "Target"
ORDER BY
    "mother's occupation",
    "Target";
```

mother's occupation	Target	number_of_records
0	Dropout	99
0	Enrolled	1
0	Graduate	44
1	Dropout	39
1	Enrolled	15
1	Graduate	48
2	Dropout	102
2	Enrolled	78
2	Graduate	138
3	Dropout	95
3	Enrolled	79
3	Graduate	177
4	Dropout	248
4	Enrolled	147
4	Graduate	422
5	Dropout	156

5	Enrolled	94
5	Graduate	280
6	Dropout	26
6	Enrolled	14
6	Graduate	51
7	Dropout	80
7	Enrolled	48
7	Graduate	144
8	Dropout	15
8	Enrolled	7
8	Graduate	14
9	Dropout	490
9	Enrolled	264
9	Graduate	823
10	Dropout	1
10	Enrolled	2
10	Graduate	1
90	Dropout	51
90	Graduate	19
99	Dropout	13
99	Enrolled	2
99	Graduate	2
122	Enrolled	2
123	Dropout	2
123	Enrolled	2
123	Graduate	3
125	Graduate	1
131	Enrolled	1
132	Enrolled	2
132	Graduate	1
134	Dropout	1

134	Enrolled	2
134	Graduate	1
141	Enrolled	4
141	Graduate	4
143	Enrolled	2
143	Graduate	1
144	Enrolled	2
144	Graduate	4
151	Enrolled	1
151	Graduate	2
152	Enrolled	1
152	Graduate	1
153	Graduate	2
171	Graduate	1
173	Enrolled	1
175	Dropout	1
175	Enrolled	2
175	Graduate	2
191	Enrolled	11
191	Graduate	15
192	Enrolled	3
192	Graduate	2
193	Dropout	1
193	Graduate	3
194	Dropout	1
194	Enrolled	7
194	Graduate	3

Dropout as per Age of enrollment:

```
SELECT
    "Age at enrollment",
    "Target",
    COUNT(*) AS number_of_records
FROM
    "AwsDataCatalog"."dropout-db"."dropout_transformed_data_input"
GROUP BY
    "Age at enrollment",
    "Target"
ORDER BY
    "Age at enrollment",
    "Target";
```

Age at enrollment	Target	number_of_records
17	Enrolled	2
17	Graduate	3
18	Dropout	202
18	Enrolled	172
18	Graduate	662
19	Dropout	207
19	Enrolled	157
19	Graduate	547
20	Dropout	133
20	Enrolled	140
20	Graduate	326
21	Dropout	93
21	Enrolled	70
21	Graduate	159
22	Dropout	58
22	Enrolled	37
22	Graduate	79
23	Dropout	41
23	Enrolled	24

23	Graduate	43
24	Dropout	56
24	Enrolled	30
24	Graduate	45
25	Dropout	47
25	Enrolled	21
25	Graduate	25
26	Dropout	52
26	Enrolled	19
26	Graduate	23
27	Dropout	55
27	Enrolled	12
27	Graduate	24
28	Dropout	47
28	Enrolled	15
28	Graduate	21
29	Dropout	45
29	Enrolled	5
29	Graduate	16
30	Dropout	30
30	Enrolled	6
30	Graduate	13
31	Dropout	36
31	Enrolled	7
31	Graduate	12
32	Dropout	33
32	Enrolled	5
32	Graduate	23
33	Dropout	20
33	Enrolled	8
33	Graduate	17

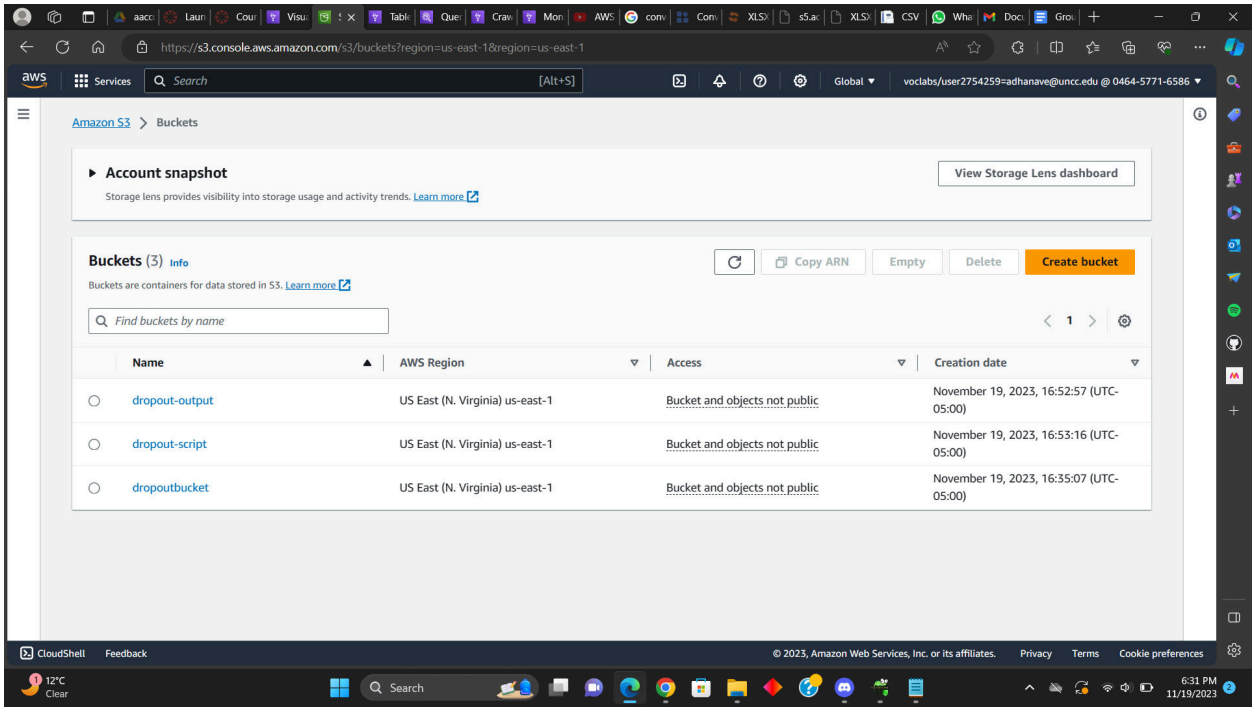
34	Dropout	29
34	Enrolled	12
34	Graduate	19
35	Dropout	29
35	Enrolled	5
35	Graduate	15
36	Dropout	21
36	Enrolled	3
36	Graduate	11
37	Dropout	23
37	Enrolled	5
37	Graduate	14
38	Dropout	19
38	Enrolled	4
38	Graduate	6
39	Dropout	18
39	Enrolled	5
39	Graduate	15
40	Dropout	13
40	Enrolled	4
40	Graduate	6
41	Dropout	11
41	Enrolled	5
41	Graduate	15
42	Dropout	7
42	Enrolled	2
42	Graduate	4
43	Dropout	11
43	Enrolled	3
43	Graduate	11
44	Dropout	10
44	Enrolled	2

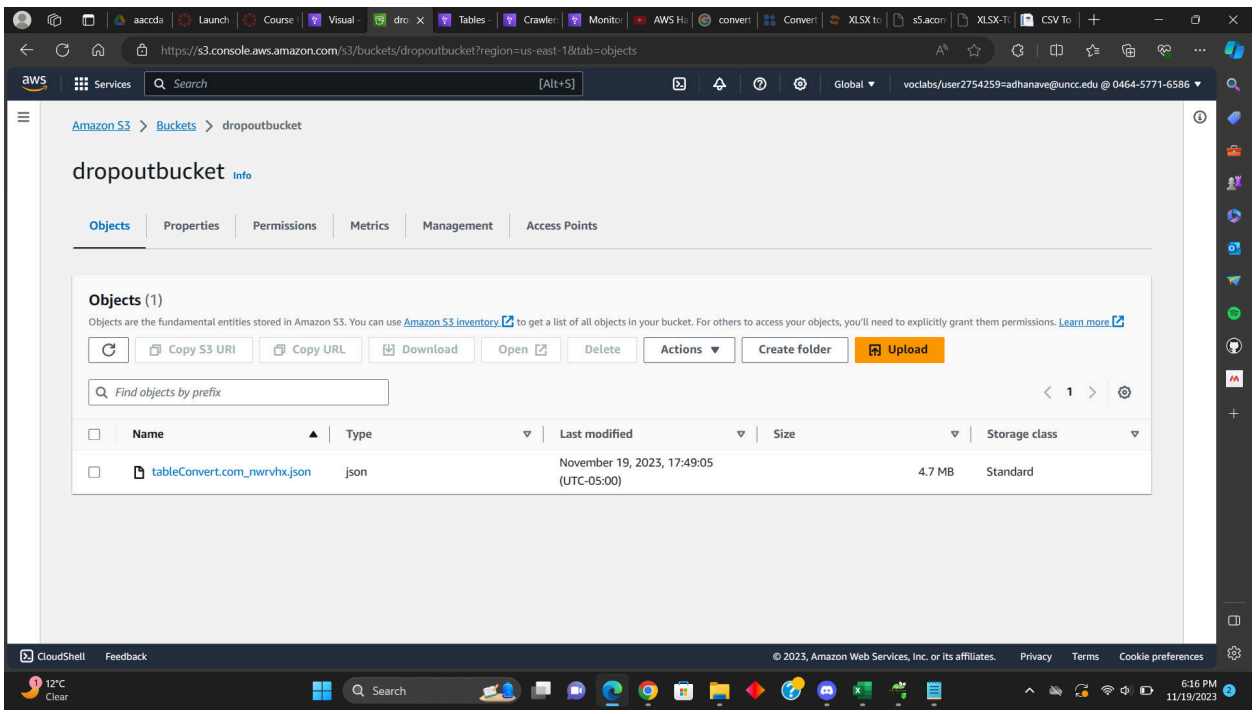
44	Graduate	9
45	Dropout	13
45	Enrolled	4
45	Graduate	5
46	Dropout	6
46	Graduate	6
47	Dropout	11
47	Enrolled	2
47	Graduate	5
48	Dropout	7
48	Enrolled	3
48	Graduate	1
49	Dropout	7
49	Enrolled	1
49	Graduate	5
50	Dropout	9
50	Enrolled	2
50	Graduate	5
51	Dropout	5
51	Graduate	2
52	Graduate	4
53	Dropout	3
53	Enrolled	1
53	Graduate	3
54	Dropout	4
54	Enrolled	1
54	Graduate	2
55	Dropout	3
55	Graduate	2
57	Dropout	1

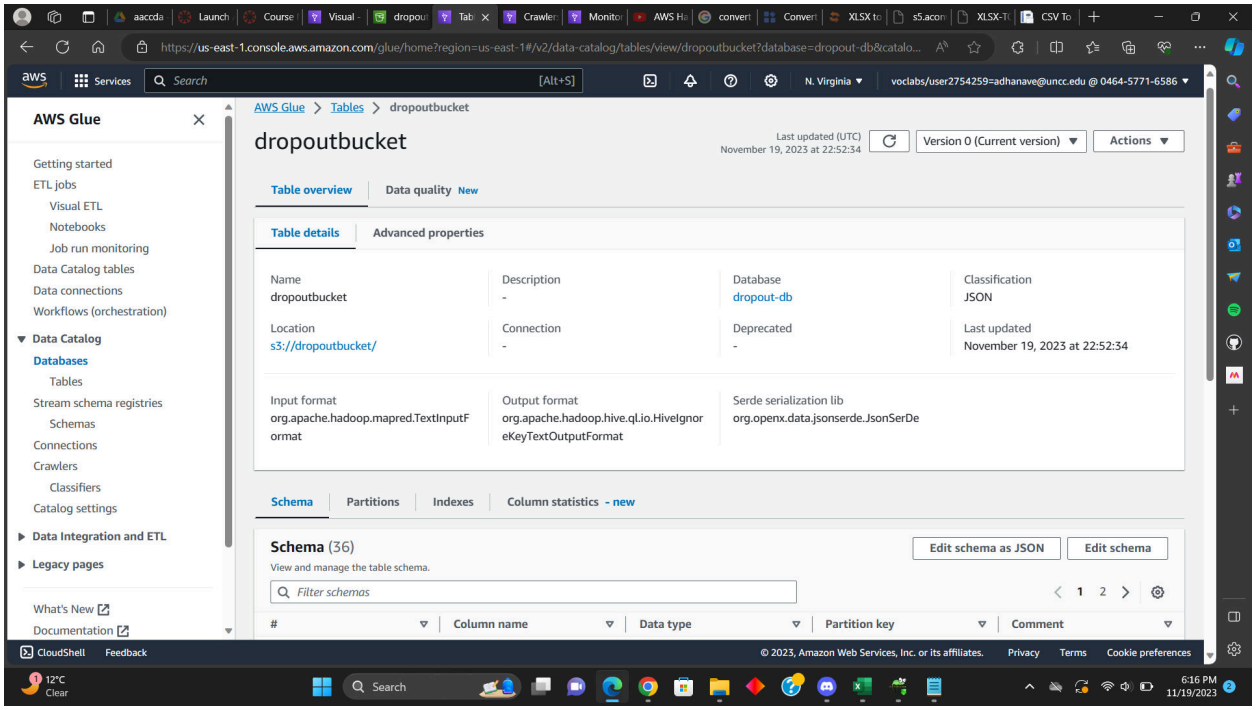
57	Graduate	1
58	Dropout	2
58	Graduate	1
59	Dropout	2
59	Graduate	1
60	Graduate	2
61	Dropout	1
62	Graduate	1
70	Dropout	1

AWS Glue ETL Job:

Create an ETL job using AWS Glue to transform the dataset(s) in S3
Perform basic data transformations (e.g., filtering, aggregation, type conversions)



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AWS Glue > Tables > dropoutbucket
dropoutbucket
Last updated (UTC)
November 19, 2023 at 22:52:34
Version 0 (Current version)
Actions
Table overview
Data quality New
Table details
Advanced properties
Name
dropoutbucket
Description
-
Database
dropout-db
Classification
JSON
Location
s3://dropoutbucket/
Connection
-
Deprecated
-
Last updated
November 19, 2023 at 22:52:34
Input format
org.apache.hadoop.mapred.TextInputFormat
Output format
org.apache.hadoop.hive.ql.io.HiveIgnoreKeyTextOutputFormat
Serde serialization lib
org.openx.data.jsonserde.JsonSerDe
Schema
Partitions
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Column statistics - new
Schema (36)
View and manage the table schema.
Edit schema as JSON
Edit schema
Filter schemas
#
Column name
Data type
Partition key
Comment
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Feedback
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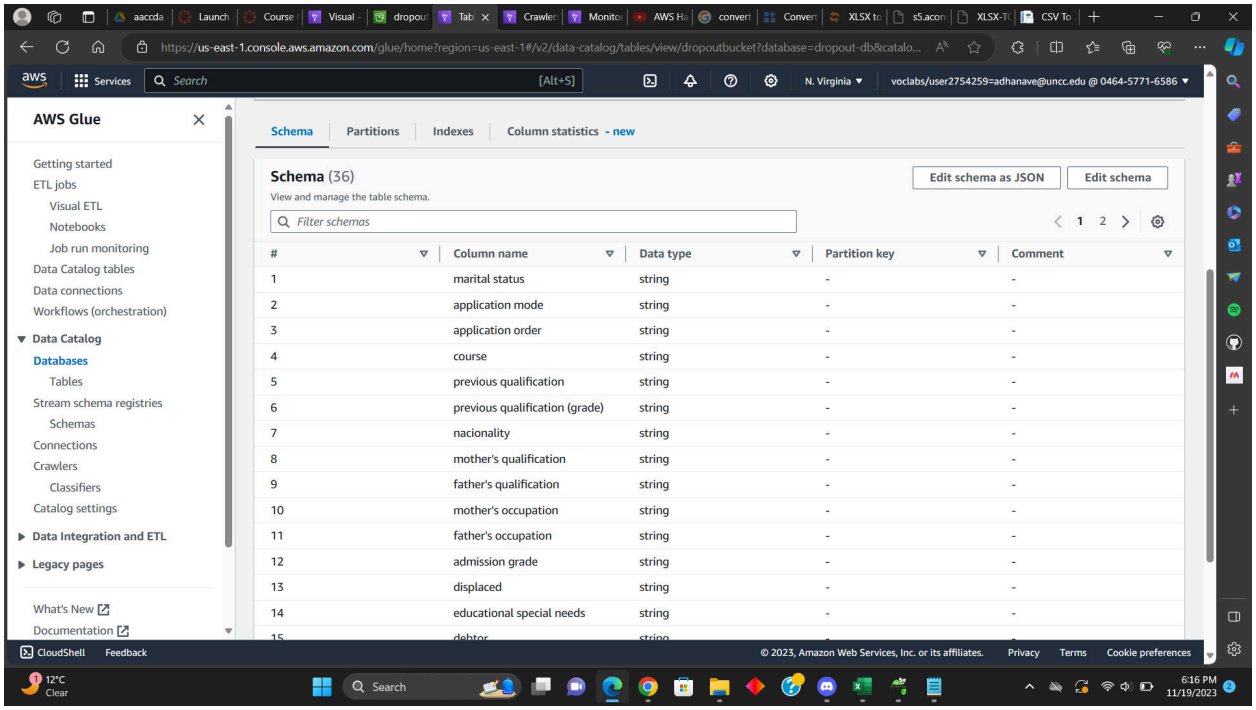
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Schema (36)
View and manage the table schema.
Edit schema as JSON
Edit schema
Filter schemas
| Column name | Data type | Partition key | Comment
1 | marital status | string | - | -
2 | application mode | string | - | -
3 | application order | string | - | -
4 | course | string | - | -
5 | previous qualification | string | - | -
6 | previous qualification (grade) | string | - | -
7 | nacionality | string | - | -
8 | mother's qualification | string | - | -
9 | father's qualification | string | - | -
10 | mother's occupation | string | - | -
11 | father's occupation | string | - | -
12 | admission grade | string | - | -
13 | displaced | string | - | -
14 | educational special needs | string | - | -
CloudShell
Feedback
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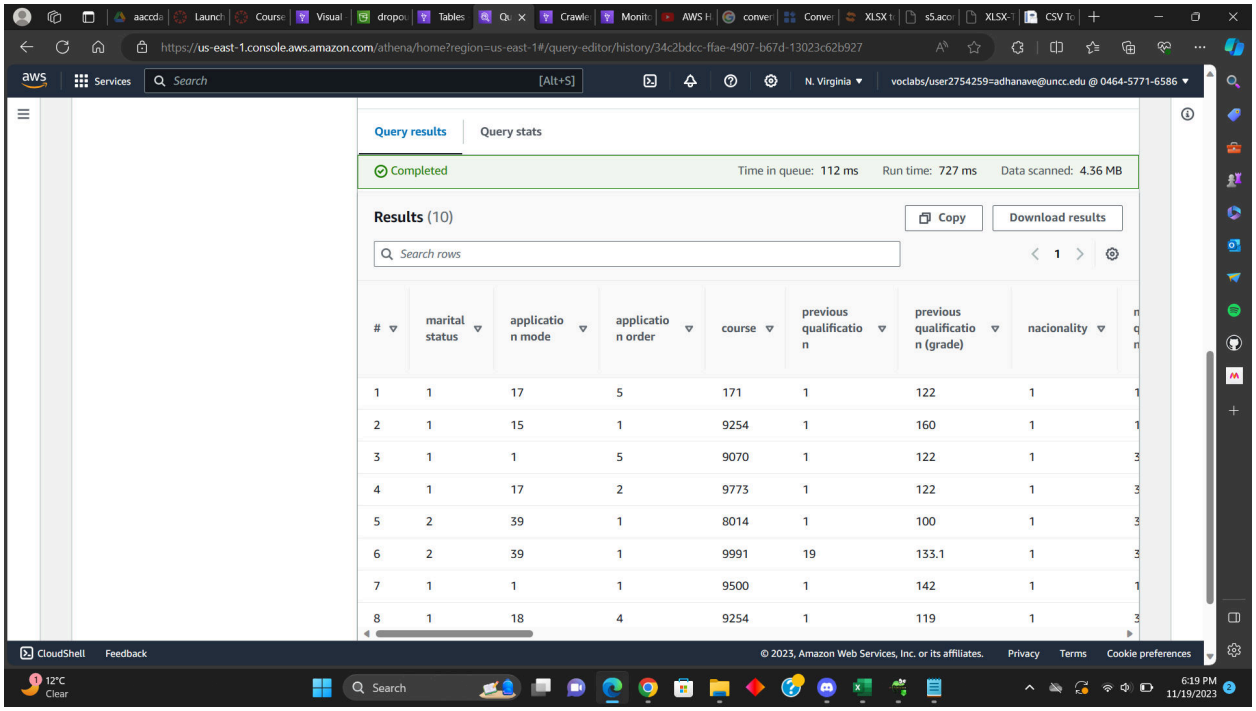
Query results
Query stats
Completed
Time in queue: 112 ms
Run time: 727 ms
Data scanned: 4.36 MB
Results (10)
Copy
Download results
Search rows
| marital status | application mode | application order | course | previous qualification | previous qualification (grade) | nacionality
1 | 1 | 17 | 5 | 171 | 1 | 122 | 1
2 | 1 | 15 | 1 | 9254 | 1 | 160 | 1
3 | 1 | 1 | 5 | 9070 | 1 | 122 | 1
4 | 1 | 17 | 2 | 9773 | 1 | 122 | 1
5 | 2 | 39 | 1 | 8014 | 1 | 100 | 1
6 | 2 | 39 | 1 | 9991 | 19 | 133.1 | 1
7 | 1 | 1 | 1 | 9500 | 1 | 142 | 1
8 | 1 | 18 | 4 | 9254 | 1 | 119 | 1
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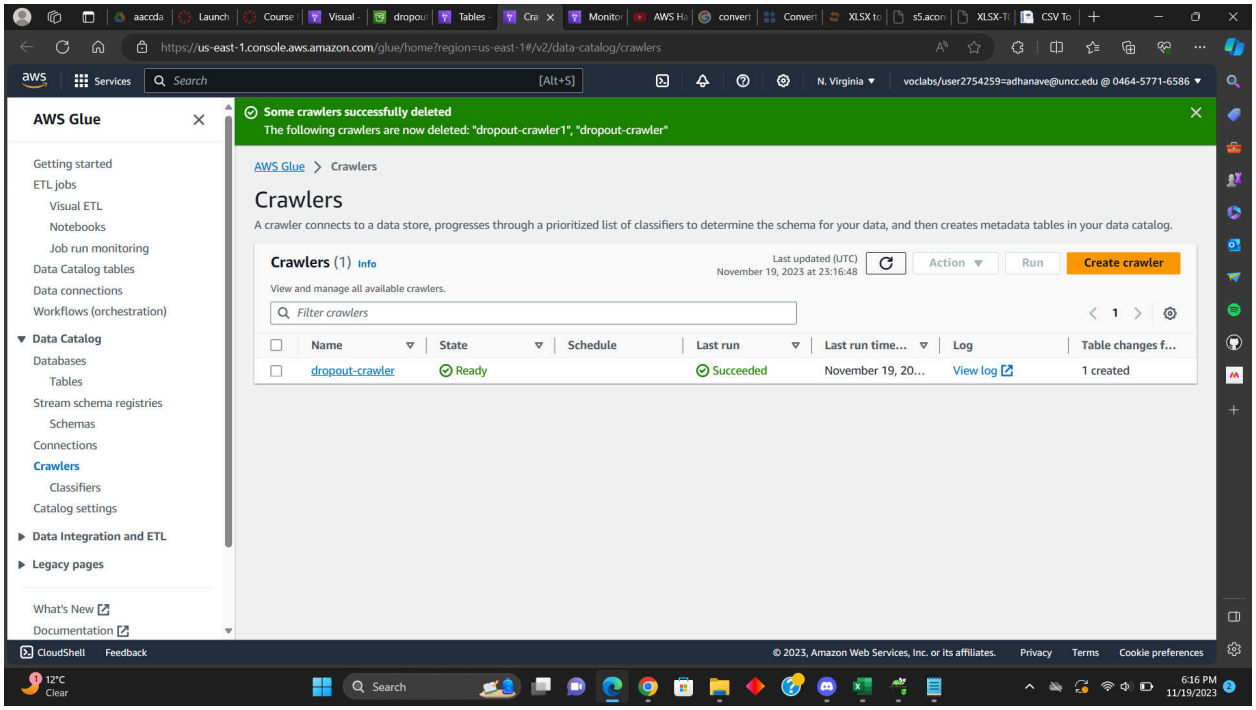
Some crawlers successfully deleted
The following crawlers are now deleted: "dropout-crawler1", "dropout-crawler"
AWS Glue > Crawlers
Crawlers
A crawler connects to a data store, progresses through a prioritized list of classifiers to determine the schema for your data, and then creates metadata tables in your data catalog.
Crawlers (1) Info
Last updated (UTC) November 19, 2023 at 23:16:48
Action
Run
Create crawler
View and manage all available crawlers.
Filter crawlers
Name
State
Schedule
Last run
Last run time...
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dropout-crawler
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Succeeded
November 19, 20...
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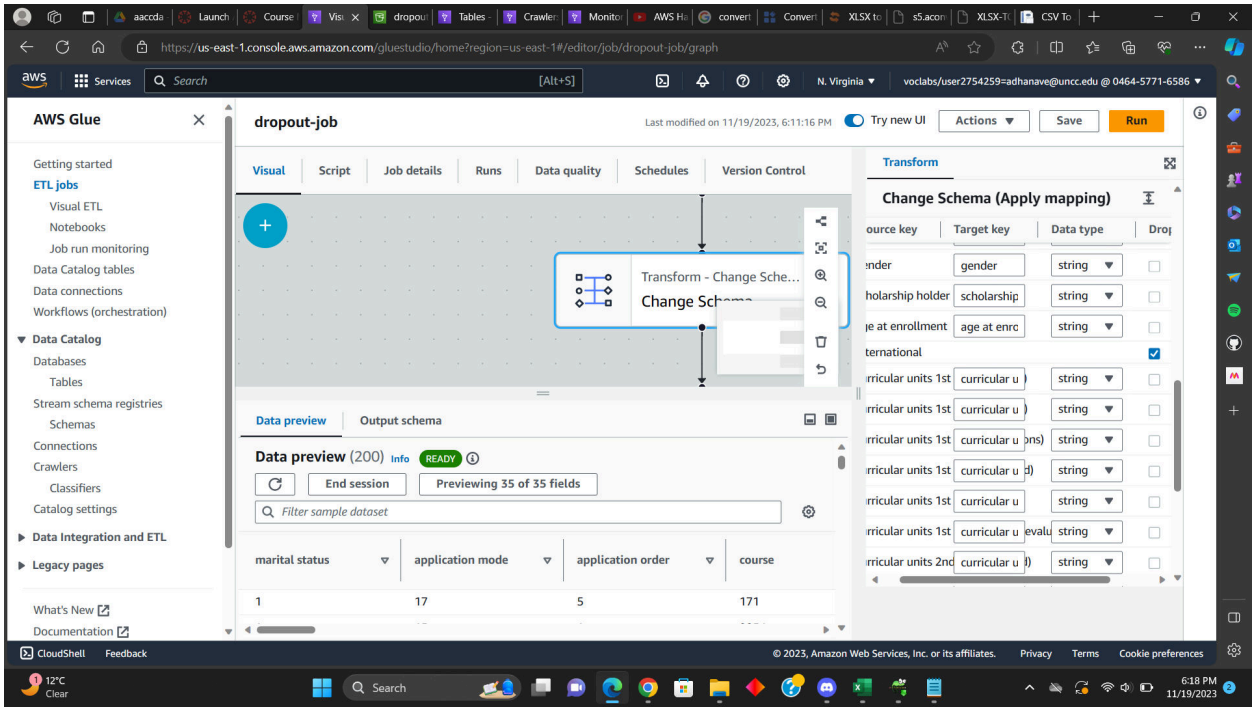
dropout-job
Last modified on 11/19/2023, 6:11:16 PM
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string
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Data preview (200) Info
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End session
Previewing 35 of 35 fields
Filter sample dataset
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5
171
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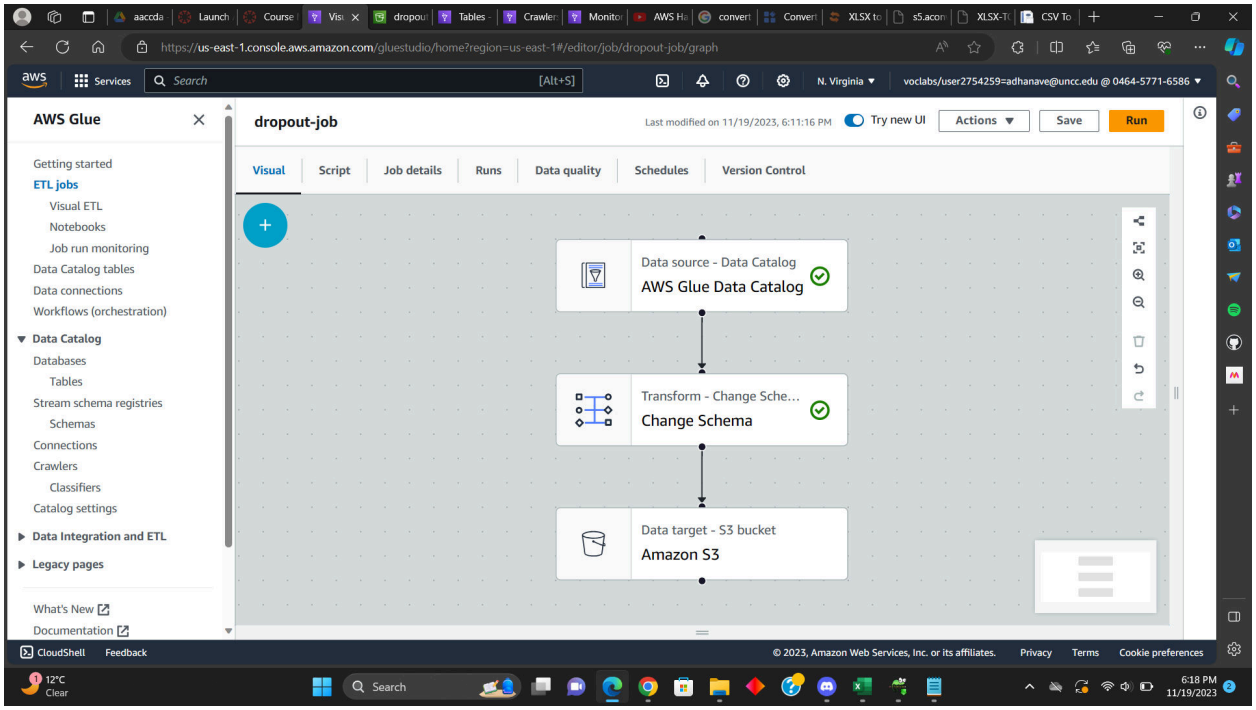
https://us-east-1.console.aws.amazon.com/gluestudio/home?region=us-east-1#/editor/job/dropout-job/graph
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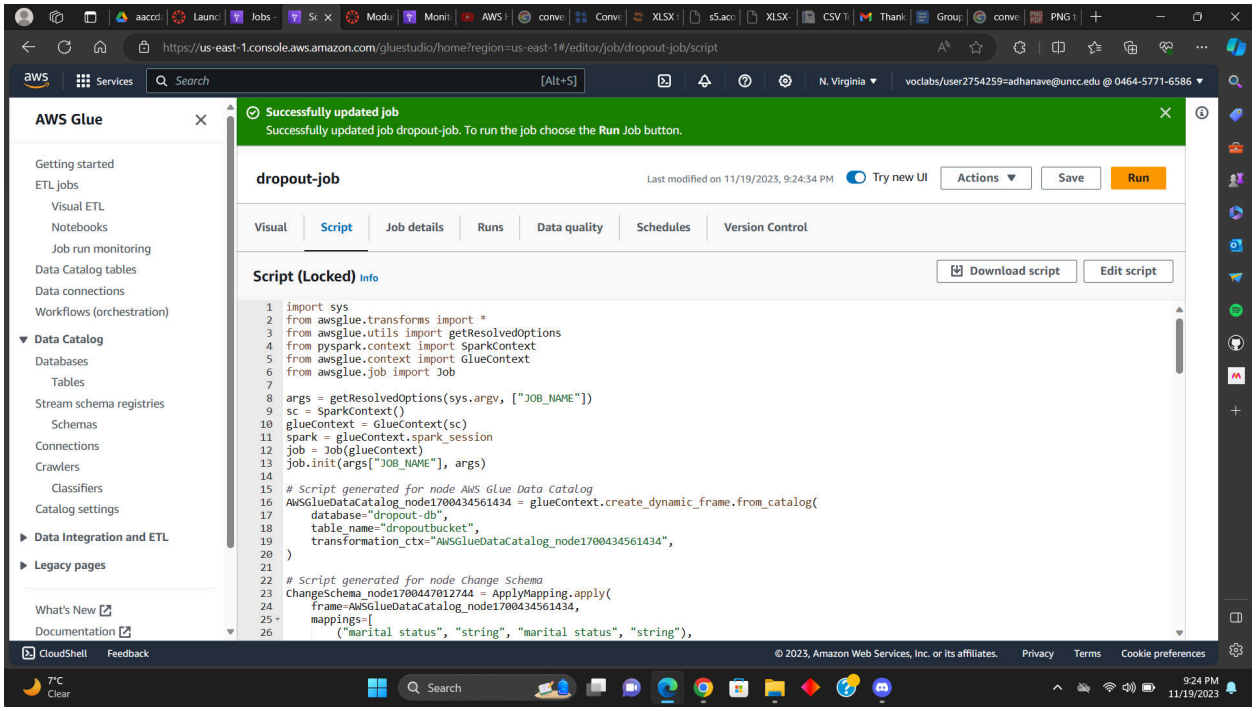
https://us-east-1.console.aws.amazon.com/gluestudio/home?region=us-east-1#/editor/job/dropout-job/script
Successfully updated job
Successfully updated job dropout-job. To run the job choose the Run Job button.
dropout-job
Last modified on 11/19/2023, 9:24:34 PM
Try new UI
Actions
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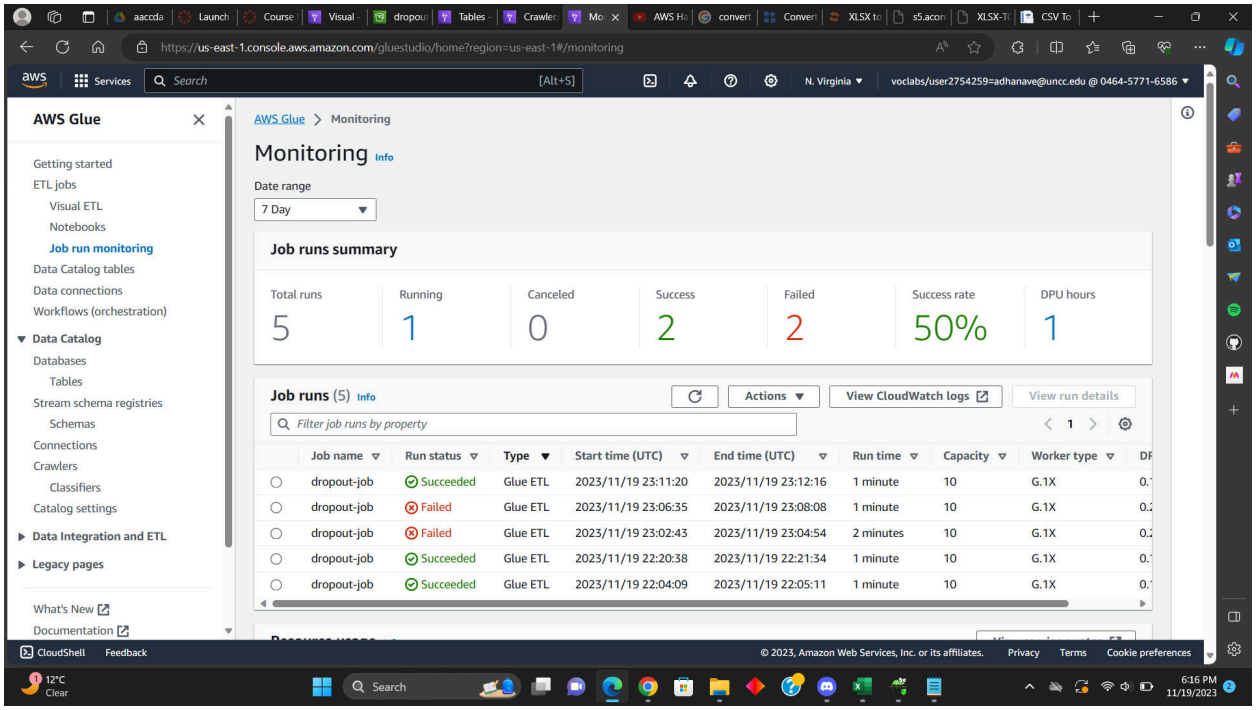
Script (Locked) Info
Download script
Edit script
import sys
from awsglue.transforms import *
from awsglue.utils import getResolvedOptions
from pyspark.context import SparkContext
from awsglue.context import GlueContext
from awsglue.job import Job
args = getResolvedOptions(sys.argv, ["JOB_NAME"])
sc = SparkContext()
glueContext = GlueContext(sc)
spark = glueContext.spark_session
job = Job(glueContext)
job.init(args["JOB_NAME"], args)
# Script generated for node AWS Glue Data Catalog
AWSGlueDataCatalog_node1700434561434 = glueContext.create_dynamic_frame.from_catalog(
database="dropout-db",
table_name="dropoutbucket",
transformation_ctx="AWSGlueDataCatalog_node1700434561434",
)
# Script generated for node Change Schema
ChangeSchema_node1700447012744 = ApplyMapping.apply(
frame=AWSGlueDataCatalog_node1700434561434,
mappings=[
("marital status", "string", "marital status", "string"),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What's New
Documentation
AWS Glue > Monitoring
Monitoring Info
Date range
7 Day
Job runs summary
Total runs 5
Running 1
Canceled 0
Success 2
Failed 2
Success rate 50%
DPU hours 1
Job runs (5) Info
Actions
View CloudWatch logs
View run details
Filter job runs by property
Job name | Run status | Type | Start time (UTC) | End time (UTC) | Run time | Capacity | Worker type
dropout-job | Succeeded | Glue ETL | 2023/11/19 23:11:20 | 2023/11/19 23:12:16 | 1 minute | 10 | G.1X
dropout-job | Failed | Glue ETL | 2023/11/19 23:06:35 | 2023/11/19 23:08:08 | 1 minute | 10 | G.1X
dropout-job | Failed | Glue ETL | 2023/11/19 23:02:43 | 2023/11/19 23:04:54 | 2 minutes | 10 | G.1X
dropout-job | Succeeded | Glue ETL | 2023/11/19 22:20:38 | 2023/11/19 22:21:34 | 1 minute | 10 | G.1X
dropout-job | Succeeded | Glue ETL | 2023/11/19 22:04:09 | 2023/11/19 22:05:11 | 1 minute | 10 | G.1X
CloudShell
Feedback
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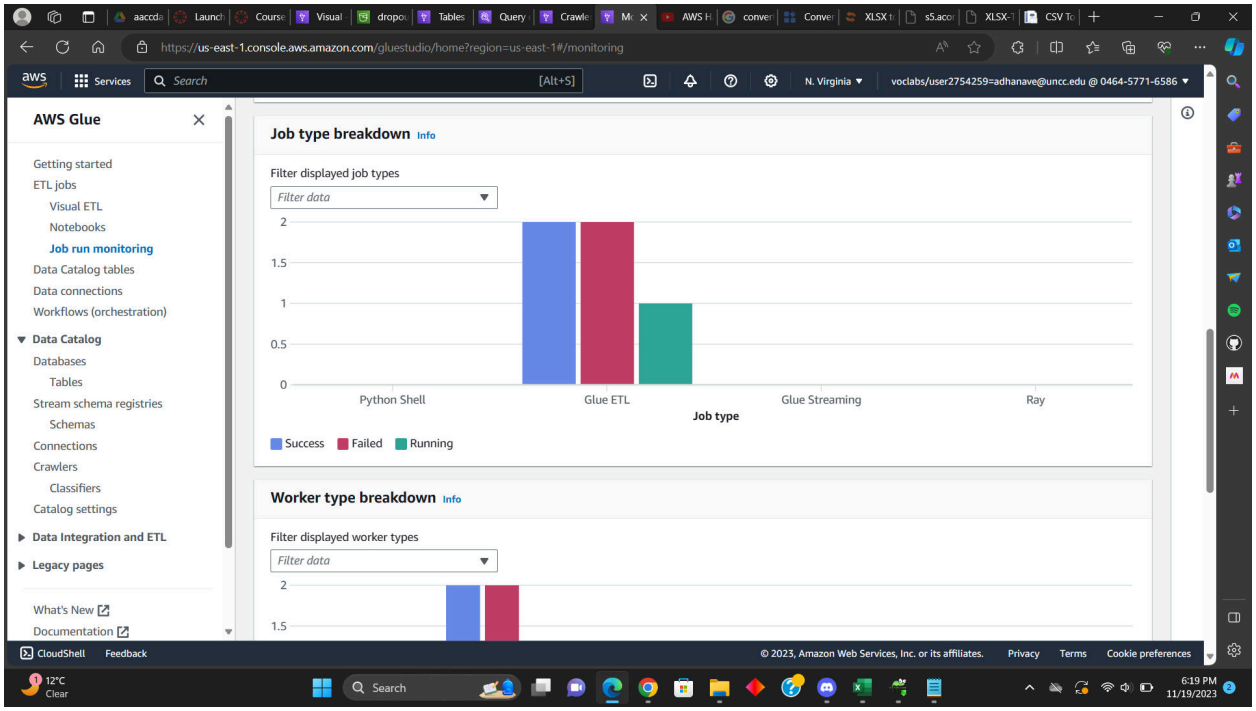
AWS Glue
Job run monitoring
Job type breakdown Info
Filter displayed job types
Filter data
2
1.5
1
0.5
0
Python Shell
Glue ETL
Glue Streaming
Ray
Job type
Success
Failed
Running
Worker type breakdown Info
Filter displayed worker types
Filter data
CloudShell
Feedback
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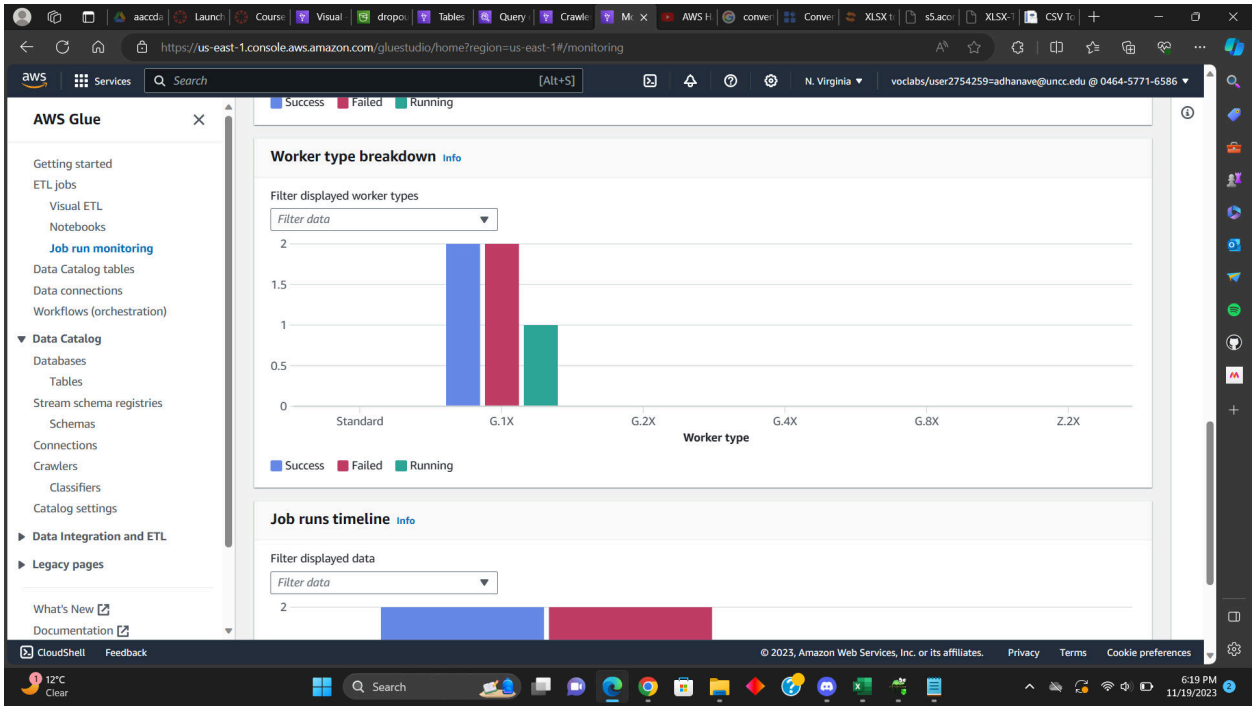
AWS Glue
Getting started
ETL jobs
Visual ETL
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Job run monitoring
Data Catalog tables
Data connections
Workflows (orchestration)
Data Catalog
Databases
Tables
Stream schema registries
Schemas
Connections
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Success Failed Running
Worker type breakdown Info
Filter displayed worker types
Filter data
2
1.5
1
0.5
0
Standard
G.1X
G.2X
G.4X
G.8X
Z.2X
Worker type
Success Failed Running
Job runs timeline Info
Filter displayed data
Filter data
2
CloudShell
Feedback
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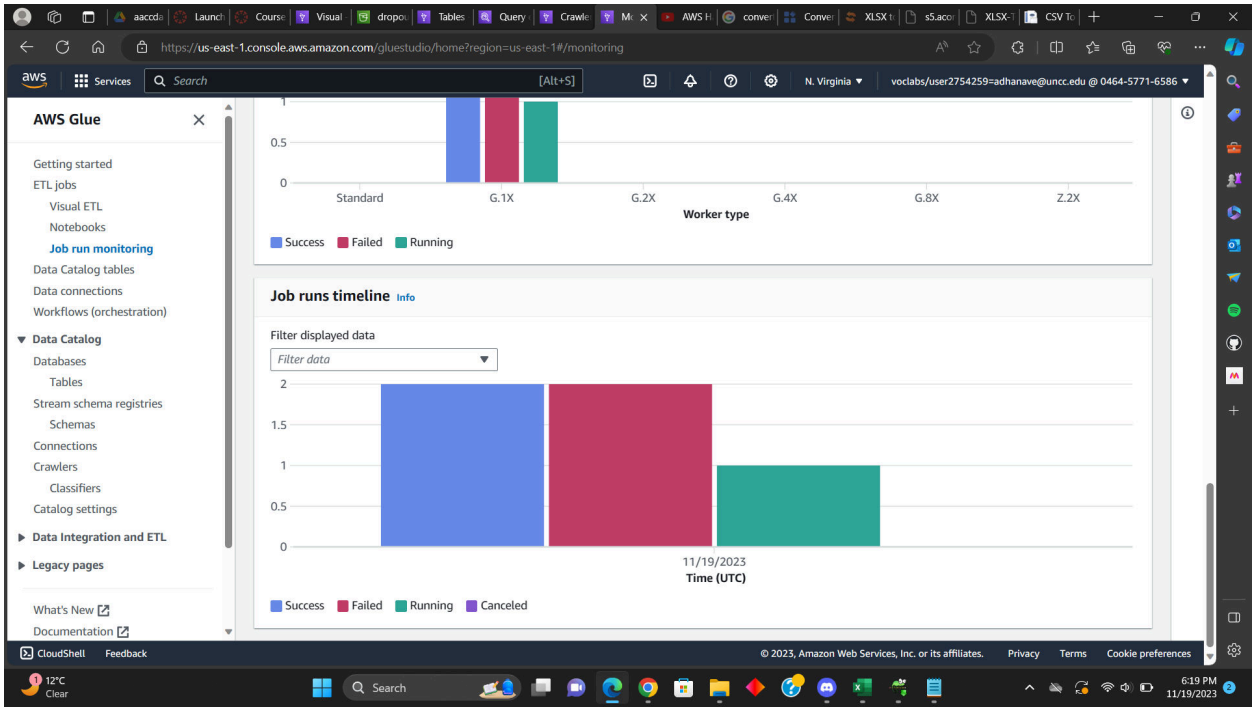
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1
0.5
0
Standard
G.1X
G.2X
G.4X
G.8X
Z.2X
Worker type
Success Failed Running
Job runs timeline Info
Filter displayed data
Filter data
2
1.5
1
0.5
0
11/19/2023
Time (UTC)
Success Failed Running Canceled
CloudShell
Feedback
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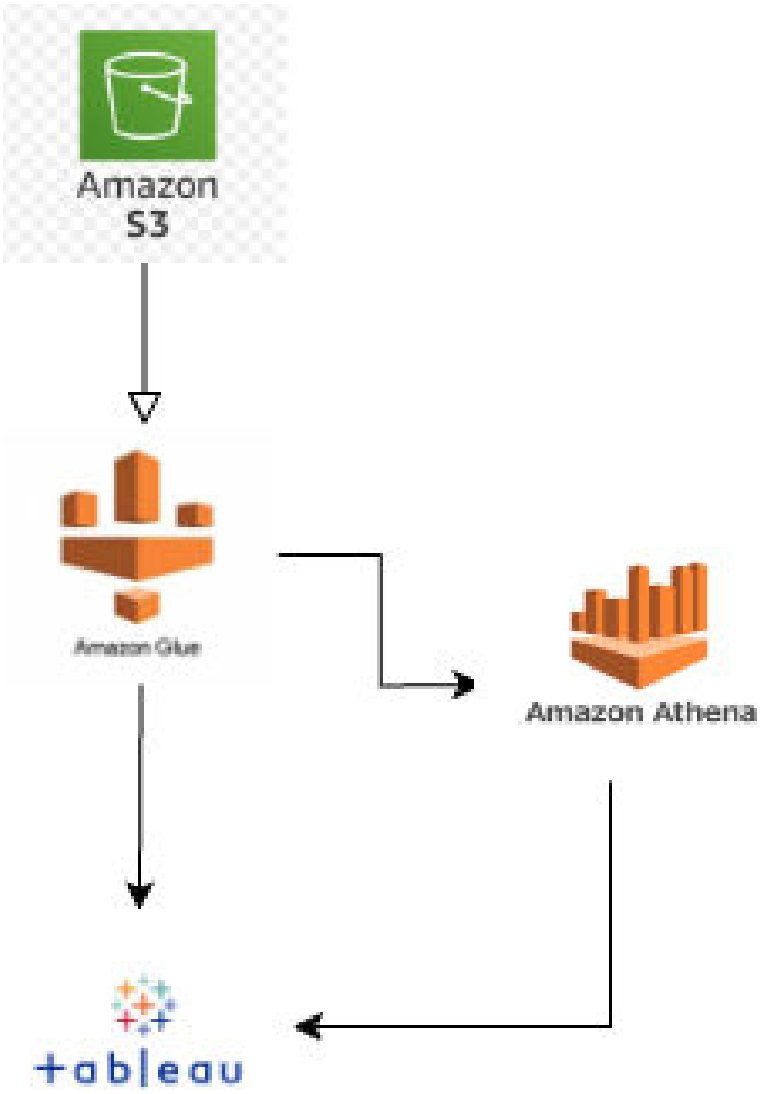
AWS Pipeline/Solution Chart (Important)



Phase 2 Deliverable:
Project Repository on GitHub (Updated Table of Contents)

Deliverable 2 Document accessible in Github (include screenshots)
After Completion please share the github repository link

Submitted by Group 14:
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