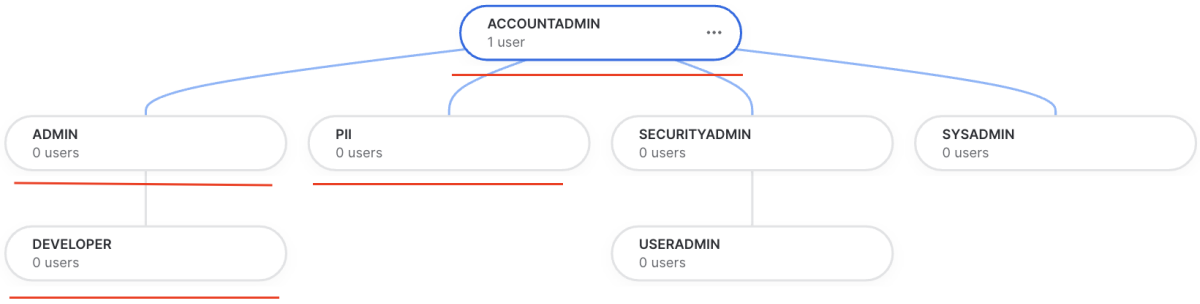
Snowflake Assignment

Step 1 - Using role AccountAdmin create roles and create parent using those roles

```
use role accountadmin;
create role Admin;
grant role Admin to role accountadmin;
create role Developer;
grant role Developer to role Admin;
create role PII;
grant role PII to role accountadmin;
```

Visual Representation



Step 2 - create virtual warehouse

```
create or replace warehouse assignment_wh
with warehouse_size = medium
auto_suspend = 120
auto_resume = true;
```

```
grant create database on account to role Admin;
grant usage on warehouse assignment_wh to role Admin;
```

```
grant create integration on account to role admin;
```

Step 3: - Switch to Admin Role

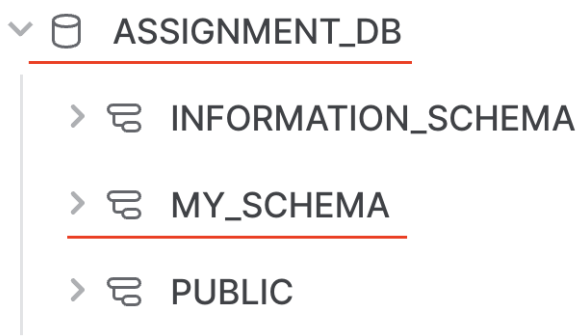
```
use role Admin;
```

Step 4:- Create database assignment_db

```
create or replace database assignment_db;
```

Step 5:- Create schema my_schema

```
create schema my_schema;
```



Step 6:- Create table for loading data from csv

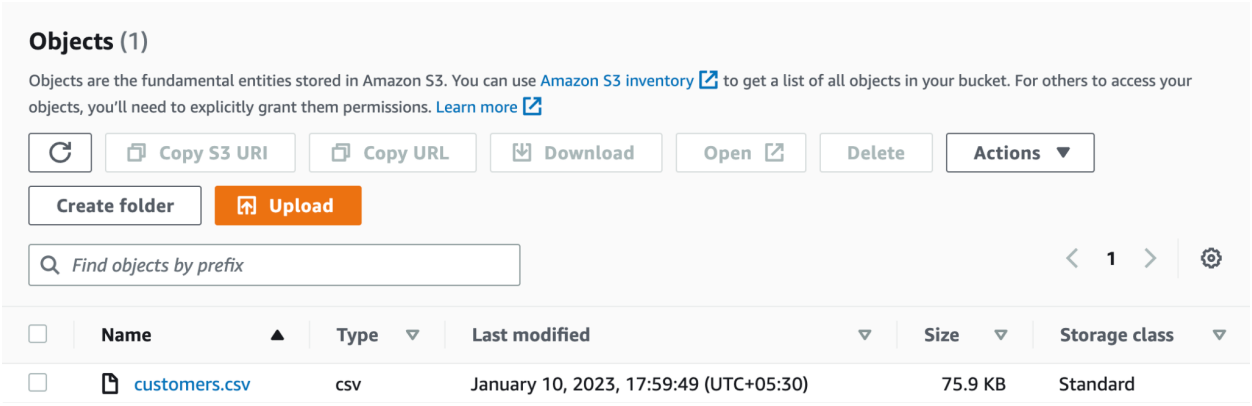
```
create or replace table
assignment_db.my_schema.int_stg_customer (
    elt_ts timestamp,
    elt_by varchar,
    file_name varchar,
    FirstName string,
    LastName string,
    Company string,
    Address string,
    City string,
    County string,
    State string,
    ZIP numeric,
    Phone string,
    Fax string,
    Email string,
    Web string
);
```

```
create or replace table
assignment_db.my_schema.ext_stg_customer (
    elt_ts timestamp,
    elt_by varchar,
    file_name varchar,
    FirstName string,
    LastName string,
    Company string,
    Address string,
    City string,
    County string,
    State string,
    ZIP numeric,
    Phone string,
    Fax string,
    Email string,
    Web string
);
```

Step 7:- Create file format for csv file

```
create file format assignment_db.my_schema.csv_format
type = csv field_optionally_enclosed_by='"' field_delimiter = ','
SKIP_HEADER = 1
null_if = ('NULL', 'null') empty_field_as_null =true;
```

Step 8:- Load data into external stage



Step 9:- Load data into internal stage

```
sanjeevsnow#(no warehouse)@ASSIGNMENT_DB.MY_SCHEMA>put file:///Users/sanjeev/Desktop/snowflake/rawdata/customers.csv
                                                   @assignment_db.my_schema.%int_stg_customer;
+--------------+-----------------+-------------+-------------+--------------------+--------------------+----------+--
-------+
| source       | target          | source_size | target_size | source_compression | target_compression | status   | m
essage |
|--------------+-----------------+-------------+-------------+--------------------+--------------------+----------+--
-------|
| customers.csv | customers.csv.gz |       77681 |       32992 | NONE               | GZIP               | UPLOADED |
       |
+--------------+-----------------+-------------+-------------+--------------------+--------------------+----------+--
-------+
1 Row(s) produced. Time Elapsed: 3.088s
```

Step 10:- Load data from external stage

1. Create integration object

```
create storage integration s3_int
    type = external_stage
    storage_provider = s3
    enabled = true
    storage_aws_role_arn = 'arn:aws:iam::132847602727:role/snowflake-role'
    storage_allowed_locations = ('s3://snowbuket2s/rawdata/');
```

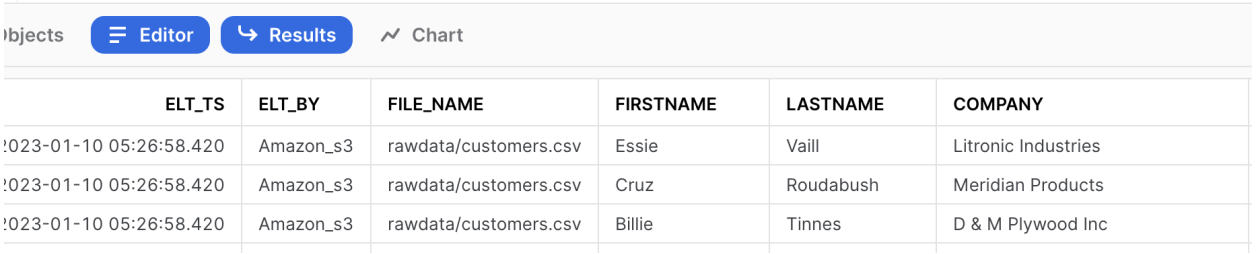
2. Create external stage

```
create stage assignment_db.my_schema.ext_stg_customer
    storage_integration = s3_int
    url = 's3://snowbuket2s/rawdata/'
    file_format = assignment_db.my_schema.csv_format;
```

3. Load data into table from external stage

```
use warehouse assignment_wh;
copy into assignment_db.my_schema.ext_stg_customer
from (select current_timestamp(),'Amazon_s3',metadata$filename, t.$1, t.$2,
      t.$3, t.$4, t.$5, t.$6, t.$7, t.$8, t.$9, t.$10, t.$11, t.$12
      from @assignment_db.my_schema.ext_stg_customer t)
on_error = 'continue';
```

```
select * from assignment_db.my_schema.ext_stg_customer;
```



ELT_TS	ELT_BY	FILE_NAME	FIRSTNAME	LASTNAME	COMPANY
2023-01-10 05:26:58.420	Amazon_s3	rawdata/customers.csv	Essie	Vaill	Litronic Industries
2023-01-10 05:26:58.420	Amazon_s3	rawdata/customers.csv	Cruz	Roudabush	Meridian Products
2023-01-10 05:26:58.420	Amazon_s3	rawdata/customers.csv	Billie	Tinnes	D & M Plywood Inc

Step 11:- Load data from internal stage

```
copy into assignment_db.my_schema.int_stg_customer
from (select current_timestamp(),'local',metadata$filename file_name,
      t.$1, t.$2, t.$3, t.$4, t.$5, t.$6, t.$7, t.$8, t.$9, t.$10, t.$11, t.$12
      from @assignment_db.my_schema.%int_stg_customer t)
file_format = assignment_db.my_schema.csv_format
on_error = 'skip_file';
```

```
select * from int_stg_customer limit 100;
```

Objects | Editor | Results | Chart

ELT_TS	ELT_BY	FILE_NAME	FIRSTNAME	LASTNAME
2023-01-10 05:34:38.924	local	@INT_STG_CUSTOMER/customers.csv.gz	Essie	Vaill
2023-01-10 05:34:38.924	local	@INT_STG_CUSTOMER/customers.csv.gz	Cruz	Roudabush

Step 12:- Convert data to variant type

```
create or replace table variant_dataset (
    data variant
);

insert into variant_dataset
    (select to_variant(object_construct(*)) as data from ext_stg_customer limit 100);

select * from variant_dataset;
```

	DATA
1	{ "ADDRESS": "14225 Hancock Dr", "CITY": "Anchorage", "COMPANY": "Litronic Industries", "COUNTY": "Anchorage", "ELT_BY": "Amazon_s3", "ELT_TS": "2023-01-10 05:26:58.420", "EMA
2	{ "ADDRESS": "2202 S Central Ave", "CITY": "Phoenix", "COMPANY": "Meridian Products", "COUNTY": "Maricopa", "ELT_BY": "Amazon_s3", "ELT_TS": "2023-01-10 05:26:58.420", "EMAIL"
3	{ "ADDRESS": "28 W 27th St", "CITY": "New York", "COMPANY": "D & M Plywood Inc", "COUNTY": "New York", "ELT_BY": "Amazon_s3", "ELT_TS": "2023-01-10 05:26:58.420", "EMAIL": "bi
4	{ "ADDRESS": "286 State St", "CITY": "Perth Amboy", "COMPANY": "Metropolitan Elevator Co", "COUNTY": "Middlesex", "ELT_BY": "Amazon_s3", "ELT_TS": "2023-01-10 05:26:58.420", "E
5	{ "ADDRESS": "3131 N Nimitz Hwy #-105", "CITY": "Honolulu", "COMPANY": "Technology Services", "COUNTY": "Honolulu", "ELT_BY": "Amazon_s3", "ELT_TS": "2023-01-10 05:26:58.420"
6	{ "ADDRESS": "22661 S Frontage Rd", "CITY": "Channahon", "COMPANY": "Century 21 Keewaydin Prop", "COUNTY": "Will", "ELT_BY": "Amazon_s3", "ELT_TS": "2023-01-10 05:26:58.420",
7	{ "ADDRESS": "9617 N Metro Pky W", "CITY": "Phoenix", "COMPANY": "Kim Peacock Beringhause", "COUNTY": "Maricopa", "ELT_BY": "Amazon_s3", "ELT_TS": "2023-01-10 05:26:58.420",
8	{ "ADDRESS": "7475 Hamilton Blvd", "CITY": "Trexlertown", "COMPANY": "Sea Port Record One Stop Inc", "COUNTY": "Lehigh", "ELT_BY": "Amazon_s3", "ELT_TS": "2023-01-10 05:26:58.42
9	{ "ADDRESS": "815 S Glendora Ave", "CITY": "West Covina", "COMPANY": "Kpff Consulting Engineers", "COUNTY": "Los Angeles", "ELT_BY": "Amazon_s3", "ELT_TS": "2023-01-10 05:26:58.

Step 13:- Upload parquet file into stage location

```
sanjeevsnow#(no warehouse)@ASSIGNMENT_DB.MY_SCHEMA>put file:///Users/sanjeev/Desktop/userdata1.parquet
                                                   @my_parquet_stg
                                                   ;
+------------------+------------------+-------------+-------------+--------------------+--------------------+--------
--+---------+
| source           | target           | source_size | target_size | source_compression | target_compression | status
  | message |
|------------------+------------------+-------------+-------------+--------------------+--------------------+--------
--+---------|
| userdata1.parquet | userdata1.parquet |      113629 |      113632 | PARQUET            | PARQUET            | UPLOADE
D |         |
+------------------+------------------+-------------+-------------+--------------------+--------------------+--------
--+---------+
1 Row(s) produced. Time Elapsed: 4.397s
```

```
142  select * from table(
143  infer_schema(location => '@my_parquet_stg', file_format => 'parquet_format'));
```

Objects | Editor | Results | Chart

	COLUMN_NAME	TYPE	NULLABLE	EXPRESSION	FILENAMES	ORDER_ID
1	registration_dttm	TIMESTAMP_NTZ	TRUE	$1:registration_dttm::TIMESTAMP_NTZ	userdata1.parquet	0
2	id	NUMBER(38, 0)	TRUE	$1:id::NUMBER(38, 0)	userdata1.parquet	1
3	first_name	TEXT	TRUE	$1:first_name::TEXT	userdata1.parquet	2
4	last_name	TEXT	TRUE	$1:last_name::TEXT	userdata1.parquet	3
5	email	TEXT	TRUE	$1:email::TEXT	userdata1.parquet	4
6	gender	TEXT	TRUE	$1:gender::TEXT	userdata1.parquet	5
7	ip_address	TEXT	TRUE	$1:ip_address::TEXT	userdata1.parquet	6
8	cc	TEXT	TRUE	$1:cc::TEXT	userdata1.parquet	7

Step 14:- Run queries on stage

```
145  select
146  $1:"id"::int id,
147  $1:"first_name"::string first_name,
148  $1:"last_name"::string last_name,
149  $1:"gender"::string gender,
150  $1:"email"::string email
151  from @assignment_db.my_schema.my_parquet_stg
152  (file_format => 'parquet_format');
```

Objects | Editor | Results | Chart

	ID	FIRST_NAME	LAST_NAME	GENDER	EMAIL
1	1	Amanda	Jordan	Female	ajordan0@com.com
2	2	Albert	Freeman	Male	afreeman1@is.gd
3	3	Evelyn	Morgan	Female	emorgan2@altervista.org
4	4	Denise	Riley	Female	driley3@gmpg.org
5	5	Carlos	Burns		cburns4@miitbeian.gov.cn
6	6	Kathryn	White	Female	kwhite5@google.com
7	7	Samuel	Holmes	Male	sholmes6@foxnews.com
8	8	Harry	Howell	Male	hhowell7@eepurl.com
9	9	Jose	Foster	Male	jfoster8@yelp.com

Step 15:- Create Masking Policy for developer role

```
create masking policy assignment_db.my_schema.dev_mask as (val string) returns string ->
  case
    when current_role() in ('DEVELOPER') then '--------'
    else val
  end;
```

Step 16:- Grant Permission to developer role

```
GRANT SELECT ON TABLE assignment_db.my_schema.ext_stg_customer TO ROLE DEVELOPER;
GRANT USAGE ON WAREHOUSE ASSIGNMENT_WH TO ROLE DEVELOPER;
GRANT USAGE ON DATABASE ASSIGNMENT_DB TO ROLE DEVELOPER;
GRANT USAGE ON SCHEMA my_schema TO ROLE Developer;
```

Step 17:- Masking columns

```
alter table if exists assignment_db.my_schema.ext_stg_customer modify column email set masking policy
assignment_db.my_schema.dev_mask;

alter table if exists assignment_db.my_schema.ext_stg_customer modify column phone set masking policy
assignment_db.my_schema.dev_mask;

alter table if exists assignment_db.my_schema.ext_stg_customer modify column web set masking policy
assignment_db.my_schema.dev_mask;
```

Step 18:- Query table using developer role

```
select * from assignment_db.my_schema.ext_stg_customer;
```

jects | Editor | Results | Chart

	STATE	ZIP	PHONE	FAX	EMAIL	WEB
	AK	99515	--------	907-345-1215	--------	--------
	AZ	85004	--------	602-252-4009	--------	--------
	NY	10001	--------	212-889-5764	--------	--------
	NJ	8861	--------	732-442-5218	--------	--------
	HI	96819	--------	808-836-6008	--------	--------

Step 19:- Query data using PII role

```
GRANT SELECT ON TABLE assignment_db.my_schema.ext_stg_customer TO ROLE PII;
GRANT USAGE ON WAREHOUSE ASSIGNMENT_WH TO ROLE PII;
GRANT USAGE ON DATABASE ASSIGNMENT_DB TO ROLE PII;
GRANT USAGE ON SCHEMA my_schema TO ROLE PII;
use role PII;
```

```
select * from assignment_db.my_schema.ext_stg_customer;
```

Objects | Editor | Results | Chart

	STATE	ZIP	PHONE	FAX	EMAIL	WEB
	AK	99515	907-345-0962	907-345-1215	essie@vaill.com	http://www.essievaill.com
	AZ	85004	602-252-4827	602-252-4009	cruz@roudabush.com	http://www.cruzroudabush.com
	NY	10001	212-889-5775	212-889-5764	billie@tinnes.com	http://www.billietinnes.com
	NJ	8861	732-442-0638	732-442-5218	zackary@mockus.com	http://www.zackarymockus.com
	HI	96819	808-836-8966	808-836-6008	rosemarie@fifield.com	http://www.rosemariefifield.com
	IL	60410	815-467-0487	815-467-1244	bernard@laboy.com	http://www.bernardlaboy.com