

TECNOLOGICO NACIONAL DE MEXICO CAMPUS CULIACAN

INGENIERIA EN SISTEMAS COMPUTACIONALES



MATERIA

ADMINISTRACION DE BASE DE DATOS

INTEGRANTES

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MAESTRO

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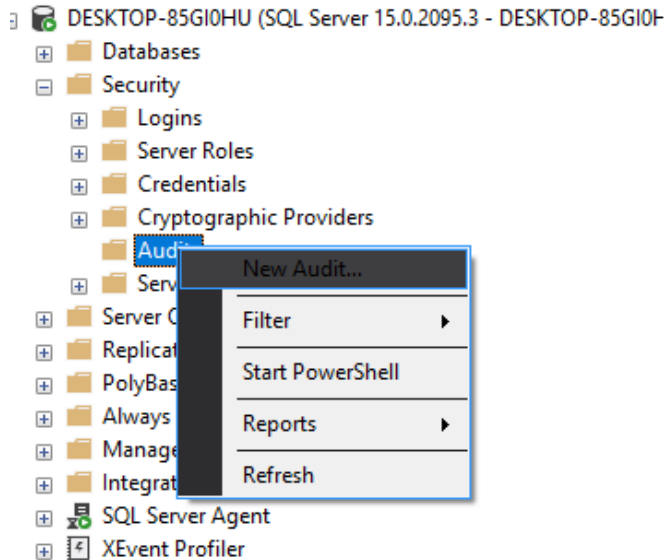
FECHA

7-DICIEMBRE-2022

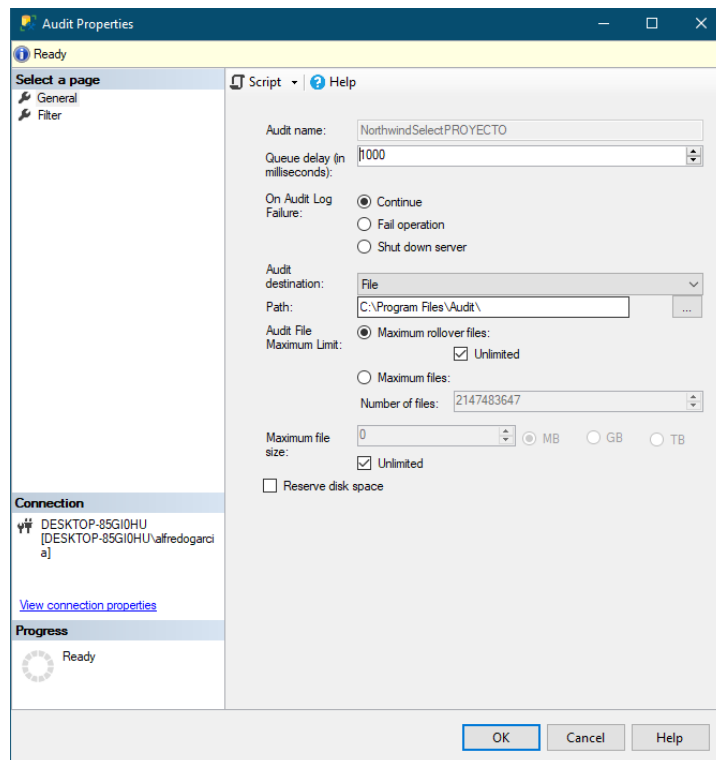
PROYECTO AUDITORÍAS

1.- PROPONER UN MÉTODO DE AUDITAR EL COMANDO SELECT SOBRE TODAS LA TABLAS DE LA BASE DE DATOS NORTHWIND. REALIZAR 5 CONSULTAS Y EXPONGA EL MÉTODO DE REVISIÓN DE LA AUDITORIA.

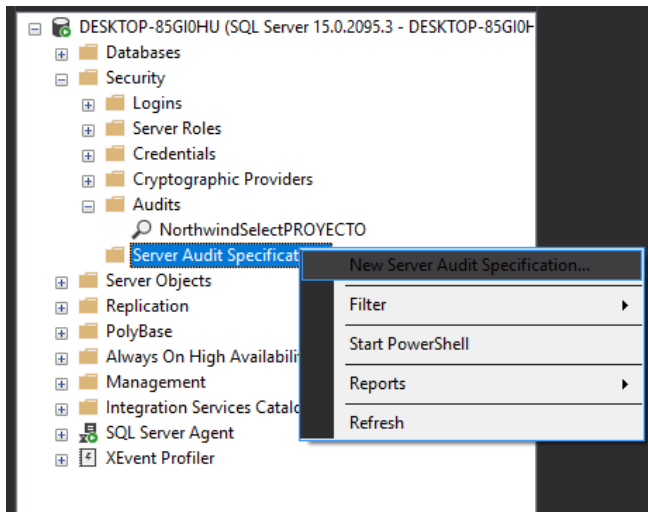
Click derecho y New Audit



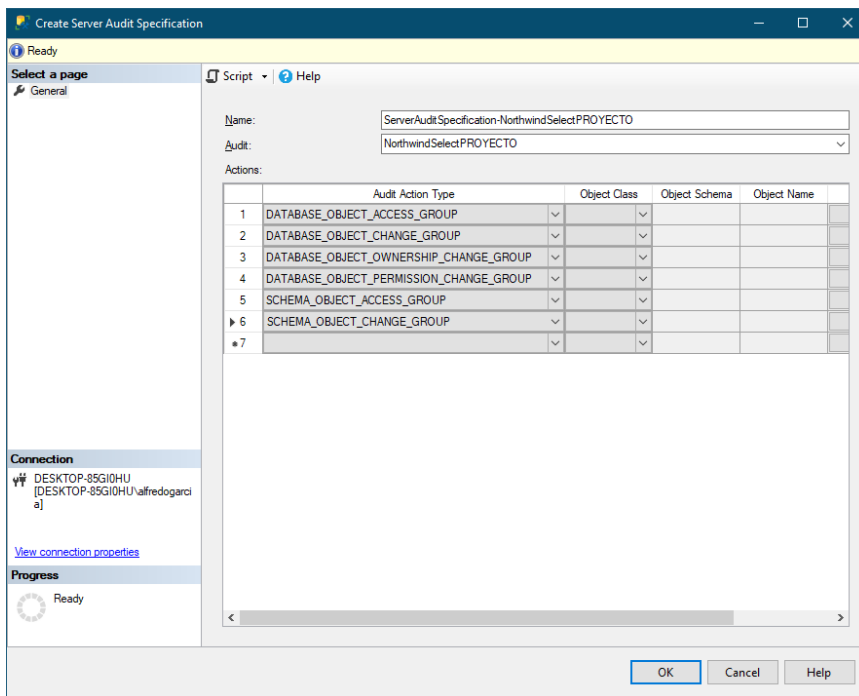
Le damos nombre y la ruta de la carpeta Audit. Ok



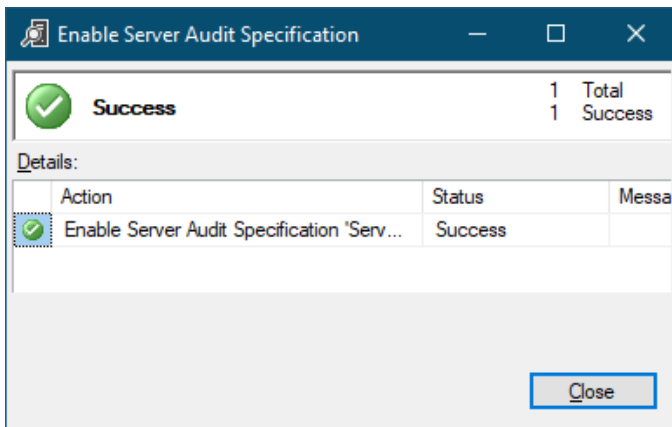
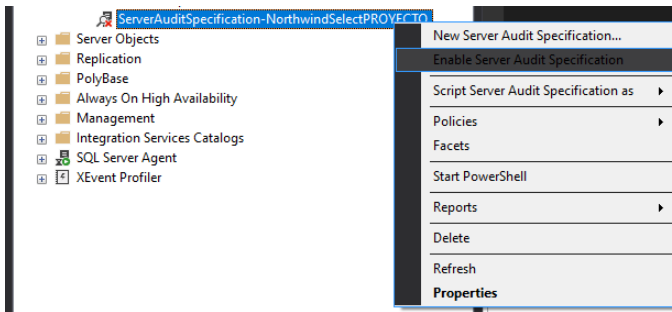
Click derecho en Server Audit Specifications y elegimos New



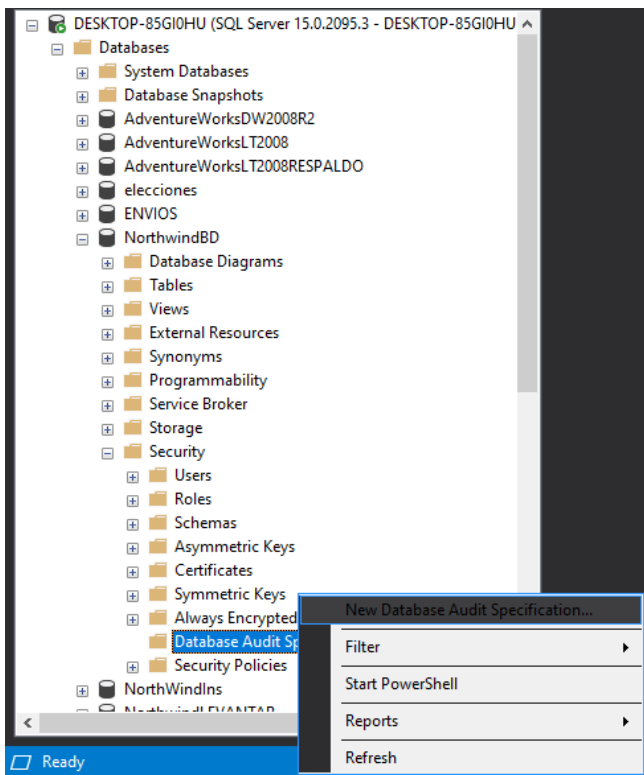
Le damos un nombre, elegimos la NorthwindSelectPROYECTO y la alta de acciones. Ok



Habilitamos la especificación

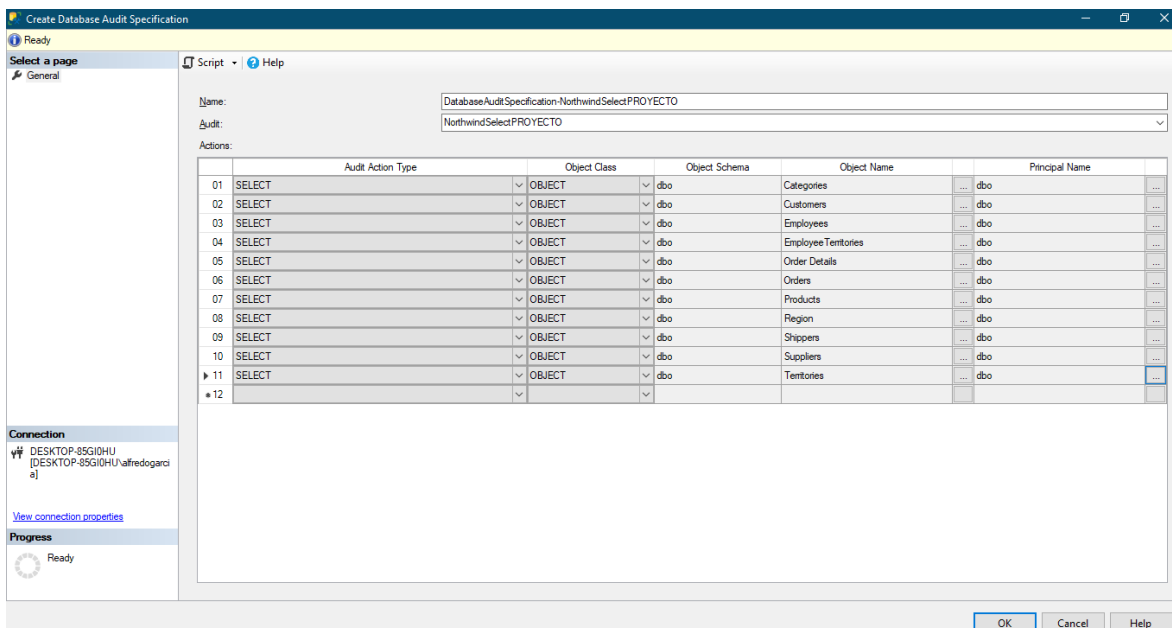


Vamos a la base de datos que ocupamos o sea la Northwind y llegamos hasta Database Audit Specifications, damos New

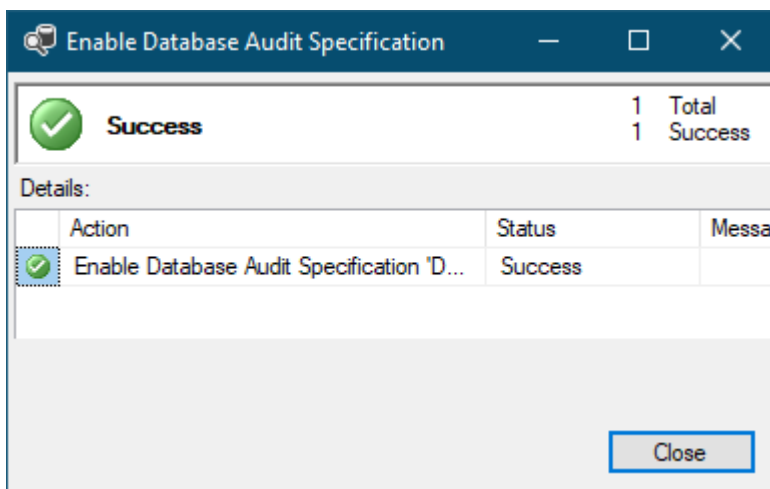
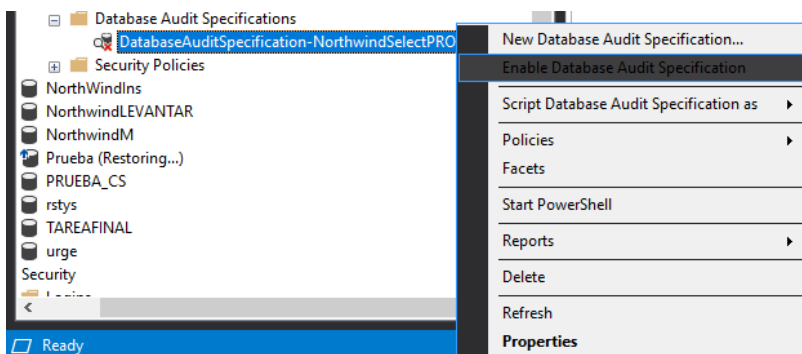


Lo dejamos así:

Ok



Habilitamos la especificación



```
select * from categories
select * from customers
select * from employees
select * from employeeterritories
select * from [order details]
select * from orders
select * from products
select * from region
select * from shippers
select * from suppliers
select * from territories
```

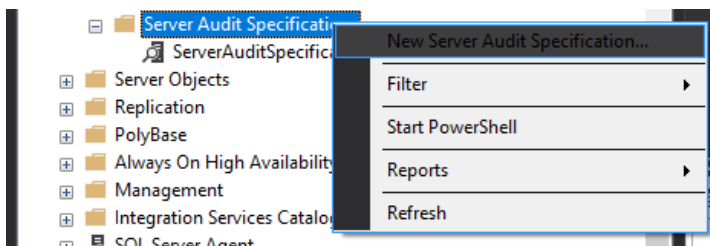
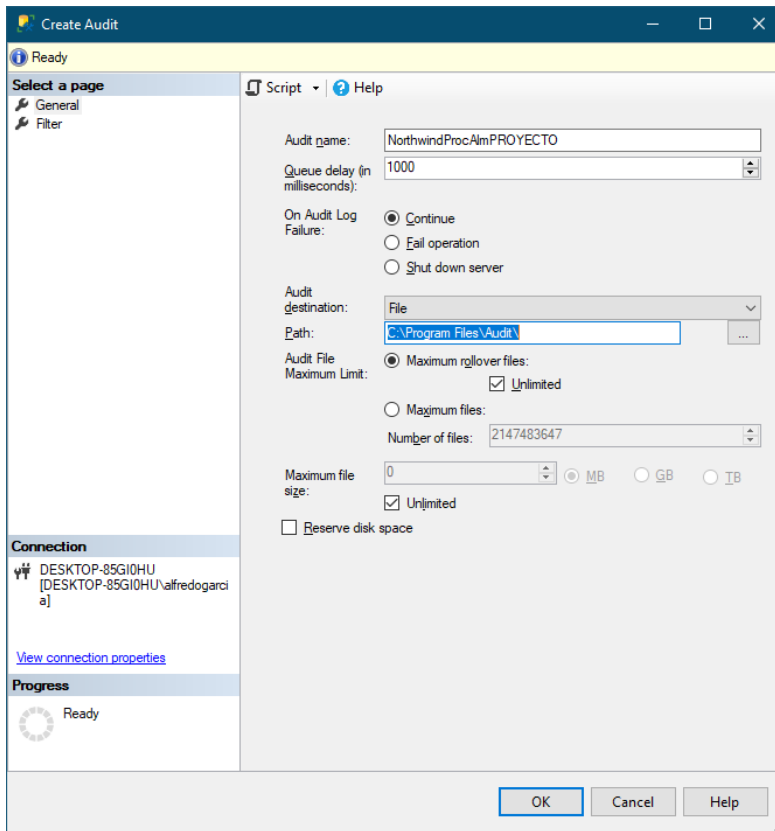
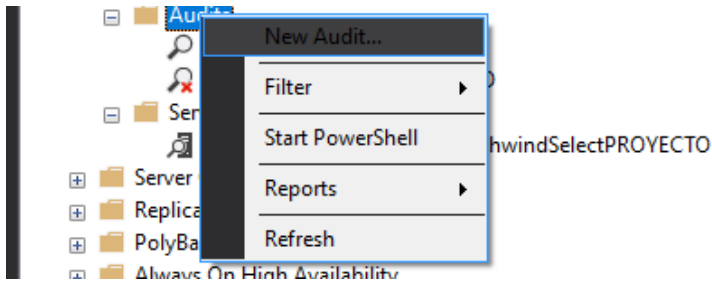
```
select event_time, statement, object_name, server_principal_name
from fn_get_audit_file('C:\Program Files\Audit\NorthwindSelectPROYECTO_8C043116-
D5D3-4850-BE75-BE1B2CBB6EEF_0_133146676869040000.sqlaudit'
, default, default)
where statement like 'select%'
order by event_time
```

```
select *
from fn_get_audit_file('C:\Program Files\Audit\NorthwindSelectPROYECTO_8C043116-
D5D3-4850-BE75-BE1B2CBB6EEF_0_133146676869040000.sqlaudit'
, default, default)
where statement like 'select%'
order by event time
```

Results Messages				
	event_time	statement	object_name	server_principal_name
2277	2022-12-04 23:11:35.8118152	select * from categories	Categories	DESKTOP-85GI0HU\alfredogarcia
2278	2022-12-04 23:11:35.8128579	select * from customers	Customers	DESKTOP-85GI0HU\alfredogarcia
2279	2022-12-04 23:11:35.8784466	select * from employees	Employees	DESKTOP-85GI0HU\alfredogarcia
2280	2022-12-04 23:11:35.9169187	select * from employee_territories	Employee Terr...	DESKTOP-85GI0HU\alfredogarcia
2281	2022-12-04 23:11:35.9179264	select * from [order details]	Order Details	DESKTOP-85GI0HU\alfredogarcia
2282	2022-12-04 23:11:35.9847404	select * from orders	Orders	DESKTOP-85GI0HU\alfredogarcia
2283	2022-12-04 23:11:36.0200004	select * from products	Products	DESKTOP-85GI0HU\alfredogarcia
2284	2022-12-04 23:11:36.0240052	select * from region	Region	DESKTOP-85GI0HU\alfredogarcia
2285	2022-12-04 23:11:36.0240052	select * from shippers	Shippers	DESKTOP-85GI0HU\alfredogarcia
2286	2022-12-04 23:11:36.0240052	select * from suppliers	Suppliers	DESKTOP-85GI0HU\alfredogarcia
2287	2022-12-04 23:11:36.0422931	select * from territories	Territories	DESKTOP-85GI0HU\alfredogarcia

Results		Messages								
	event_time	sequence_number	action_id	succeeded	permission_bitmask	is_column_permission	session_id	server_principal_id	database_principal_id	target_se
2...	2022-12-04 23:12:24.5035381	1	SL	1	0x00000000000000000000000000000001	1	63	264	1	0
2...	2022-12-04 23:12:24.5035381	1	SL	1	0x00000000000000000000000000000001	1	63	264	1	0
2...	2022-12-04 23:12:24.5035381	1	SL	1	0x00000000000000000000000000000001	1	63	264	1	0
2...	2022-12-04 23:12:24.5504134	1	SL	1	0x00000000000000000000000000000001	1	63	264	1	0
2...	2022-12-04 23:12:24.5504134	1	SL	1	0x00000000000000000000000000000001	1	61	264	1	0
2...	2022-12-04 23:12:24.5504134	1	SL	1	0x00000000000000000000000000000001	1	64	264	1	0
2...	2022-12-04 23:12:24.5871797	1	SL	1	0x00000000000000000000000000000001	1	63	264	1	0
2...	2022-12-04 23:12:24.5881768	1	SL	1	0x00000000000000000000000000000001	1	61	264	1	0
2...	2022-12-04 23:12:24.5881768	1	SL	1	0x00000000000000000000000000000001	1	64	264	1	0
2...	2022-12-04 23:13:00.1642808	1	SL	1	0x00000000000000000000000000000001	1	60	259	1	0

2.- PROPONER UN MÉTODO PARA AUDITAR LA EXECUCIÓN DE TODOS LOS PROCEDIMIENTOS ALMACENADOS DE LA BD NORTHWIND. CREAR DOS PROCEDIMIENTOS ALMACENADO Y EXPONGA EL MÉTODO DE REVISIÓN DE LA AUDITORÍA.



Create Server Audit Specification

Ready

Select a page

General

Name: ServerAuditSpecification-NorthwindProcAlmPROYECTO

Audit: NorthwindProcAlmPROYECTO

Actions:

	Audit Action Type	Object Class
1	DATABASE_OBJECT_ACCESS_GROUP	
2	SCHEMA_OBJECT_ACCESS_GROUP	
3	DATABASE_OBJECT_PERMISSION_CHANGE_GROUP	
4	DATABASE_OBJECT_CHANGE_GROUP	
5	DATABASE_OWNERSHIP_CHANGE_GROUP	
6		

Connection

DESKTOP-85G10HU
[DESKTOP-85G10HU\alfredogarci
a]

View connection properties

Progress

Ready

OK Cancel Help

ServerAuditSpecification-NorthwindSelectPROYECTO

ServerAuditSpecification-NorthwindProcAlmPROYECTO

Server Objects

Replication

PolyBase

Always On High Availability

Management

Integration Services Catalogs

SQL Server Agent

Event Profiler

DESKTOP-85G10HU (SQL Server 15.0.2095.3 - tec)

Databases

Security

Server Objects

Replication

PolyBase

Always On High Availability

New Server Audit Specification...

Enable Server Audit Specification

Script Server Audit Specification as

Policies

Facets

Start PowerShell

Reports

Delete

Refresh

Properties

2... 2022-12-04 23:12:24.588176

Enable Server Audit Specification

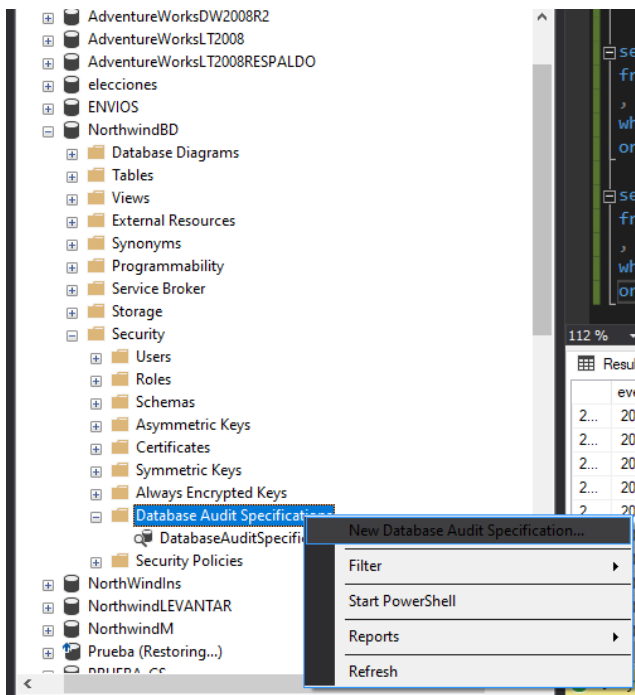
Success

1 Total
1 Success

Details:

Action	Status	Message
Enable Server Audit Specification 'Serv...	Success	

Close



```

use NorthwindBD
create proc sp_customers
as
begin
    select * from customers
end
go
execute sp_customers
--drop procedure sp_customers

```

```

use NorthwindBD
create proc sp_orders
as
begin
    select * from orders
end
go
execute sp_orders
--drop procedure sp_orders

```

Create Database Audit Specification

Ready

Select a page: General

Script Help

Name: DatabaseAuditSpecification-NorthwindProcAlmPROYECTO

Audit: NorthwindProcAlmPROYECTO

Actions:

	Audit Action Type	Object Class	Object Schema	Object Name	Principal Name
1	EXECUTE	OBJECT	dbo	sp_customers	dbo
2	EXECUTE	OBJECT	dbo	sp_orders	dbo
3					

Connection: DESKTOP-85G10HU [DESKTOP-85G10HU\alfredogarcia]

View connection properties

Progress: Ready

AdventureWorksLT2008RESPALDO

elecciones

ENVIOS

NorthwindBD

- Database Diagrams
- Tables
- Views
- External Resources
- Synonyms
- Programmability
- Service Broker
- Storage
- Security
 - Users
 - Roles
 - Schemas
 - Asymmetric Keys
 - Certificates
 - Symmetric Keys
 - Always Encrypted Keys
 - Database Audit Specification
 - DatabaseAuditSpecification
 - DatabaseAuditSpecification
 - Security Policies
- NorthwindIns
- NorthwindLEVANTAR
- NorthwindM...

Ready

New Database Audit Specification...
 Enable Database Audit Specification
 Script Database Audit Specification as
 Policies
 Facets
 Start PowerShell
 Reports
 Delete
 Refresh
 Properties

```

select * f
end
go
execute sp_cus
--drop procedu
use NorthwindB
create proc sp
as
begin
select * f
end
go
execute sp_ord
  
```

Enable Database Audit Specification

Success

1 Total
1 Success

Details:

Action	Status	Message
Enable Database Audit Specification 'D...	Success	

Close

3.- UTILIZANDO TRIGGER DDL A NIVEL SERVIDOR AUDITAR LA CREACIÓN, ELIMINACIÓN O MODIFICACIÓN DE BASE DE DATOS, INICIOS DE SESIÓN Y COPIAS DE SEGURIDAD- RESTAURACIONES. GRABAR EN UNA TABLA LOS SIGUIENTES DATOS:

ID

FECHA DEL EVENTO,

SERVIDOR,-

INICIO DE SESIÓN,

TIPO DE EVENTO, -

TIPO DE OBJETO,-

SENTENCIA Y

DETALLE DEL EVENTO XML.

REALIZAR 5 ACCIONES SOBRE BASE DE DATOS, 5 ACCIONES SOBRE INICIOS DE SESIÓN, 5 COPIAS DE SEGURIDAD Y 5 RESPALDOS.

```
use master
create table tabla_problema3(
    ID int identity primary key,
    FechaEvento datetime not null,
    Servidor varchar(200) not null,
    Login varchar(200) not null,
    TipoEvento varchar(200) not null,
    TipoObjeto varchar(200) null,
    Sentencia varchar(max) not null,
    DetalleEvento xml not null
);
go

--drop table tabla_problema3;

create trigger trigger_problema3 on all server
for CREATE_DATABASE, DROP_DATABASE, ALTER_DATABASE,
--CREATE_LOGIN, DROP_LOGIN, ALTER_LOGIN
DDL_SERVER_SECURITY_EVENTS as insert into tabla_problema3
select EVENTDATA().value('(/EVENT_INSTANCE/PostTime)[1]', 'DATETIME') as
FechaEvento, EVENTDATA().value('(/EVENT_INSTANCE/ServerName)[1]', 'VARCHAR(200)') as
Servidor,
EVENTDATA().value('(/EVENT_INSTANCE/LoginName)[1]', 'VARCHAR(200)') as Login,
EVENTDATA().value('(/EVENT_INSTANCE/EventType)[1]', 'VARCHAR(200)') as TipoEvento,
EVENTDATA().value('(/EVENT_INSTANCE/ObjectTypeName)[1]', 'VARCHAR(200)') as
TipoObjeto, EVENTDATA().value('(/EVENT_INSTANCE/SQLCommand/CommandText)[1]',
'VARCHAR(200)') as Sentencia,
EVENTDATA() as DetalleEvento
go

--drop trigger trigger_problema3 on all server
--Acciones Base de datos
use master
create database bdejemplo1
```

```

create database bdejemplo2
create database bdejemplo3
drop database bdejemplo1
drop database bdejemplo2
drop database bdejemplo3

--Acciones Inicios de sesión
create login pepito with password = '123'
must_change , check_expiration = on
go
create login chuy with password = '123'
must_change , check_expiration = on
go
alter login pepito with password = '12345'
go
alter login chuy with password = '12345'
go
sp_addsrvrolemember pepito, Securityadmin
go
sp_addsrvrolemember chuy, Securityadmin
go
drop login pepito
drop login chuy

select * from tabla_problema3

```

ID	FechaEvento	Servidor	Login	TipoEvento	TipoObjeto	Sentencia	DetalleEvento
1	2022-12-07 21:45:14.987	DESKTOP-85G10HU	DESKTOP-85G10HU\alfredogarcia	CREATE_DATABASE	NULL	create database bdejemplo1	<EVENT_INSTANCE><EventType>CREATE_DATAF
2	2022-12-07 21:45:18.010	DESKTOP-85G10HU	DESKTOP-85G10HU\alfredogarcia	CREATE_DATABASE	NULL	create database bdejemplo2	<EVENT_INSTANCE><EventType>CREATE_DATAF
3	2022-12-07 21:45:19.407	DESKTOP-85G10HU	DESKTOP-85G10HU\alfredogarcia	CREATE_DATABASE	NULL	create database bdejemplo3	<EVENT_INSTANCE><EventType>CREATE_DATAF
4	2022-12-07 21:45:20.857	DESKTOP-85G10HU	DESKTOP-85G10HU\alfredogarcia	DROP_DATABASE	NULL	drop database bdejemplo1	<EVENT_INSTANCE><EventType>DROP_DATABA
5	2022-12-07 21:45:24.807	DESKTOP-85G10HU	DESKTOP-85G10HU\alfredogarcia	CREATE_LOGIN	LOGIN	create login pepito with password = '12345' must...	<EVENT_INSTANCE><EventType>CREATE_LOGIN
6	2022-12-07 21:45:24.843	DESKTOP-85G10HU	DESKTOP-85G10HU\alfredogarcia	CREATE_LOGIN	LOGIN	create login chuy with password = '12345' must...	<EVENT_INSTANCE><EventType>CREATE_LOGIN
7	2022-12-07 21:45:28.437	DESKTOP-85G10HU	DESKTOP-85G10HU\alfredogarcia	ALTER_LOGIN	LOGIN	alter login pepito with password = '12345'	<EVENT_INSTANCE><EventType>ALTER_LOGIN<
8	2022-12-07 21:45:28.463	DESKTOP-85G10HU	DESKTOP-85G10HU\alfredogarcia	ALTER_LOGIN	LOGIN	alter login chuy with password = '12345'	<EVENT_INSTANCE><EventType>ALTER_LOGIN<
9	2022-12-07 21:45:31.467	DESKTOP-85G10HU	DESKTOP-85G10HU\alfredogarcia	ADD_SERVER_ROLE_MEMBER	LOGIN	alter server role [Securityadmin] add member [pe...	<EVENT_INSTANCE><EventType>ADD_SERVER_I
10	2022-12-07 21:45:31.483	DESKTOP-85G10HU	DESKTOP-85G10HU\alfredogarcia	ADD_SERVER_ROLE_MEMBER	LOGIN	alter server role [Securityadmin] add member [ch...	<EVENT_INSTANCE><EventType>ADD_SERVER_I
11	2022-12-07 21:45:49.753	DESKTOP-85G10HU	DESKTOP-85G10HU\alfredogarcia	DROP_LOGIN	LOGIN	drop login chuy	<EVENT_INSTANCE><EventType>DROP_LOGIN</

4.- UTILIZANDO TRIGGER DDL A NIVEL DE BASE DE DATOS (NORTHWIND) AUDITAR LA CREACIÓN, ELIMINACIÓN O MODIFICACIÓN DE TABLAS VISTAS, PROCEDIMIENTOS ALMACENADOS, FUNCIONES Y TRIGGER. GRABAR EN UNA TABLA:

CLAVE,

FECHA DEL EVENTO,

INICIO DE SESIÓN,

USUARIO DE BASE DE DATOS,

NOMBRE DE BASE DE DATOS,

TIPO DE EVENTO,

NOMBRE COMPLETO DEL OBJETO: ESQEMA.NOMBREOBJETO,

SENTENCIA Y

DETALLE DEL EVENTO XML.

REALIZAR UN COMANDO PARA VISTAS, PROCEDIMIENTOS ALMACENADOS, FUNCIONES Y TRIGGER.

```
use NorthwindBD
go

create table tabla_problema4 (
ID int identity primary key,
FechaEvento datetime not null,
Login varchar(200) not null,
NombreUsuario varchar(200) not null,
NombreBaseDatos varchar(200) not null,
TipoEvento varchar(200) not null,
NombreObjeto varchar(200) not null,
Sentencia varchar(max) not null,
DetalleEvento xml not null
);
go
--drop table tabla_problema4

use NorthwindBD
create trigger trigercito on database
for CREATE_TABLE, DROP_TABLE, ALTER_TABLE,
CREATE_VIEW, DROP_VIEW, ALTER_VIEW,
CREATE_PROCEDURE, DROP_PROCEDURE, ALTER_PROCEDURE,
CREATE_FUNCTION, DROP_FUNCTION, ALTER_FUNCTION,
CREATE_TRIGGER, DROP_TRIGGER, ALTER_TRIGGER
--DDL_VIEW_EVENTS, DDL_PROCEDURE_EVENTS, DDL_FUNCTION_EVENTS, DDL_TRIGGER_EVENTS
as insert into tabla_problema4
select EVENTDATA().value('/EVENT_INSTANCE/PostTime')[1], 'DATETIME' as
FechaEvento, EVENTDATA().value('/EVENT_INSTANCE/LoginName')[1], 'VARCHAR(200)' as
Login,
EVENTDATA().value('/EVENT_INSTANCE/UserName')[1], 'VARCHAR(200)' as
NombreUsuario, EVENTDATA().value('/EVENT_INSTANCE/DatabaseName')[1],
'VARCHAR(200)' as NombreBaseDatos,
EVENTDATA().value('/EVENT_INSTANCE/EventType')[1], 'VARCHAR(200)' as
TipoEvento, EVENTDATA().value('/EVENT_INSTANCE/SchemaName')[1], 'VARCHAR(200)' +
'.' + EVENTDATA().value('/EVENT_INSTANCE/ObjectName')[1], 'VARCHAR(30)' as
NombreObjeto,
EVENTDATA().value('/EVENT_INSTANCE/TSQLCommand/CommandText')[1],
'VARCHAR(max)' as Sentencia, EVENTDATA() AS DetalleEvento;
go
--drop trigger trigercito on all server

--Pruebas para Tablas
create table tienda(
tiendaid int,
calle varchar(50)
)
go

alter table tienda add colonia varchar(50)
go

drop table tienda
go
```

--Pruebas para Vistas

```
create view vw_products as
select
p.productid, p.productname, p.quantityperunit, prodnitprice = p.unitprice,
p.unitsinstock, p.unitsonorder, p.reorderlevel,
s.supplierid, s.companyname, s.contactname, s.address,
s.city, s.region, s.postalcode, s.country, s.phone, s.fax, s.homepage,
c.categoryid, c.categoryname, c.description, c.picture
from products p
inner join suppliers s on p.supplierid = s.supplierid
inner join categories c on p.categoryid = c.categoryid
```

```
alter view vw_products as
```

```
select * from products
```

```
drop view vw_products
```

--Pruebas para Procedimientos Almacenados

```
use NorthwindBD
```

```
create proc sp_customers2
```

```
as
```

```
begin
```

```
    select * from customers
```

```
end
```

```
go
```

```
alter proc sp_customers2 as
```

```
begin
```

```
    select * from [Order Details]
```

```
end
```

```
go
```

```
drop procedure sp_customers2
```

```
use NorthwindBD
```

```
create proc sp_orders2
```

```
as
```

```
begin
```

```
    select * from orders
```

```
end
```

```
go
```

```
alter proc sp_orders2 as
```

```
begin
```

```
    select * from Shippers
```

```
end
```

```
go
```

```
drop procedure sp_orders2
```

--Pruebas para Funciones

```
create function fn_customers()
```

```
returns table as
```

```
return(
```

```
select companyname from customers
```

```
)
```

```

alter function fn_customers()
returns table as
return(
select contacttitle from customers
)

```

```
drop function fn_customers
```

```

--Pruebas para Triggers
create trigger trigger_prueba
on employees for delete as
begin
    select 'Hey'
end
go

```

```

alter trigger trigger_prueba
on employees for delete as
begin
    select ':D'
end
go

```

```
drop trigger trigger_prueba
```

```
select * from tabla_problema4
```

ID	FechaEvento	Login	NombreUsuario	NombreBaseDatos	TipoEvento	NombreObjeto	Sentencia	DetalleEvento
1	2022-12-07 22:28:13.330	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	CREATE_TRIGGER	triggercto	create trigger triggercto on database for CREAT...	<EVENT_INSTANCE><Event Type>CREATE
2	2022-12-07 22:28:24.167	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	CREATE_TABLE	dbo.tienda	create table tienda(tiendaid int, calle varchar(5...	<EVENT_INSTANCE><Event Type>CREATE
3	2022-12-07 22:28:26.637	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	ALTER_TABLE	dbo.tienda	alter table tienda add colonia varchar(50)	<EVENT_INSTANCE><Event Type>ALTER
4	2022-12-07 22:28:28.447	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	DROP_TABLE	dbo.tienda	drop table tienda	<EVENT_INSTANCE><Event Type>DROP
5	2022-12-07 22:29:01.753	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	CREATE_VIEW	dbo.vw_products	create view vw_products as select p.productid...	<EVENT_INSTANCE><Event Type>CREATE
6	2022-12-07 22:29:01.753	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	CREATE_VIEW	dbo.vw_products	create view vw_products as select p.productid...	<EVENT_INSTANCE><Event Type>CREATE
7	2022-12-07 22:29:05.563	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	ALTER_VIEW	dbo.vw_products	alter view vw_products as select * from products	<EVENT_INSTANCE><Event Type>ALTER
8	2022-12-07 22:29:05.563	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	ALTER_VIEW	dbo.vw_products	alter view vw_products as select * from products	<EVENT_INSTANCE><Event Type>ALTER
9	2022-12-07 22:29:07.933	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	DROP_VIEW	dbo.vw_products	drop view vw_products	<EVENT_INSTANCE><Event Type>DROP
10	2022-12-07 22:29:07.933	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	DROP_VIEW	dbo.vw_products	drop view vw_products	<EVENT_INSTANCE><Event Type>DROP
11	2022-12-07 22:29:49.477	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	CREATE_PROCEDURE	dbo.sp_customers2	create proc sp_customers2 as begin select * fr...	<EVENT_INSTANCE><Event Type>CREATE
12	2022-12-07 22:29:49.477	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	CREATE_PROCEDURE	dbo.sp_customers2	create proc sp_customers2 as begin select * fr...	<EVENT_INSTANCE><Event Type>CREATE
13	2022-12-07 22:29:55.557	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	ALTER_PROCEDURE	dbo.sp_customers2	alter proc sp_customers2 as begin select * fro...	<EVENT_INSTANCE><Event Type>ALTER
14	2022-12-07 22:29:55.557	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	ALTER_PROCEDURE	dbo.sp_customers2	alter proc sp_customers2 as begin select * fro...	<EVENT_INSTANCE><Event Type>ALTER
15	2022-12-07 22:30:00.253	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	DROP_PROCEDURE	dbo.sp_customers2	drop procedure sp_customers2	<EVENT_INSTANCE><Event Type>DROP
16	2022-12-07 22:30:00.253	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	DROP_PROCEDURE	dbo.sp_customers2	drop procedure sp_customers2	<EVENT_INSTANCE><Event Type>DROP
17	2022-12-07 22:30:05.763	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	CREATE_PROCEDURE	dbo.sp_orders2	create proc sp_orders2 as begin select * from ...	<EVENT_INSTANCE><Event Type>CREATE
18	2022-12-07 22:30:05.763	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	CREATE_PROCEDURE	dbo.sp_orders2	create proc sp_orders2 as begin select * from ...	<EVENT_INSTANCE><Event Type>CREATE
19	2022-12-07 22:30:11.923	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	ALTER_PROCEDURE	dbo.sp_orders2	alter proc sp_orders2 as begin select * from Shi...	<EVENT_INSTANCE><Event Type>ALTER
20	2022-12-07 22:30:11.923	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	ALTER_PROCEDURE	dbo.sp_orders2	alter proc sp_orders2 as begin select * from Shi...	<EVENT_INSTANCE><Event Type>ALTER
21	2022-12-07 22:30:16.580	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	DROP_PROCEDURE	dbo.sp_orders2	drop procedure sp_orders2	<EVENT_INSTANCE><Event Type>DROP
22	2022-12-07 22:30:16.580	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	DROP_PROCEDURE	dbo.sp_orders2	drop procedure sp_orders2	<EVENT_INSTANCE><Event Type>DROP
23	2022-12-07 22:30:48.750	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	CREATE_FUNCTION	dbo.fn_customers	create function fn_customers() returns table as r...	<EVENT_INSTANCE><Event Type>CREATE
24	2022-12-07 22:30:48.750	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	CREATE_FUNCTION	dbo.fn_customers	create function fn_customers() returns table as r...	<EVENT_INSTANCE><Event Type>CREATE
25	2022-12-07 22:30:51.313	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	ALTER_FUNCTION	dbo.fn_customers	alter function fn_customers() returns table as ret...	<EVENT_INSTANCE><Event Type>ALTER
26	2022-12-07 22:30:51.313	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	ALTER_FUNCTION	dbo.fn_customers	alter function fn_customers() returns table as ret...	<EVENT_INSTANCE><Event Type>ALTER
27	2022-12-07 22:32:37.140	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	DROP_FUNCTION	dbo.fn_customers	drop function fn_customers	<EVENT_INSTANCE><Event Type>DROP
28	2022-12-07 22:32:37.140	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	DROP_FUNCTION	dbo.fn_customers	drop function fn_customers	<EVENT_INSTANCE><Event Type>DROP
29	2022-12-07 22:32:45.310	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	CREATE_TRIGGER	dbo.trigger_prueba	create trigger trigger_prueba on employees for d...	<EVENT_INSTANCE><Event Type>CREATE
30	2022-12-07 22:32:45.310	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	CREATE_TRIGGER	dbo.trigger_prueba	create trigger trigger_prueba on employees for d...	<EVENT_INSTANCE><Event Type>CREATE
31	2022-12-07 22:32:48.260	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	ALTER_TRIGGER	dbo.trigger_prueba	alter trigger trigger_prueba on employees for del...	<EVENT_INSTANCE><Event Type>ALTER
32	2022-12-07 22:32:48.260	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	ALTER_TRIGGER	dbo.trigger_prueba	alter trigger trigger_prueba on employees for del...	<EVENT_INSTANCE><Event Type>ALTER
33	2022-12-07 22:32:50.567	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	DROP_TRIGGER	dbo.trigger_prueba	drop trigger trigger_prueba	<EVENT_INSTANCE><Event Type>DROP
34	2022-12-07 22:32:50.567	DESKTOP-85G10HU\alfredogarcia	dbo	NorthwindBD	DROP_TRIGGER	dbo.trigger_prueba	drop trigger trigger_prueba	<EVENT_INSTANCE><Event Type>DROP

5.- AUDITAR LOS CAMBIOS DE LAS TABLAS DE LA BASE DE DATOS NORTHWIND, GRABAR EN UNA TABLA LOS CAMPOS:

TIPOTRANSACCION: INSERT, UPDATE, DELETE

NOMBRE DE LA TABLA

CAMPO DE LA LLAVE PRIMARIA

CAMPO MODIFICADO

VALOR ORIGINAL

VALOR NUEVO

FECHA DE LA TRANSACCIÓN

NOMBRE DE USUARIO

Tabla	Acción	Campos
Products	Update	Productname, unitprice
Customers	Update/Delete	Adress, phone
Employees	Insert/Delete	
Order Details	Update	Unitprice, quantity

```
use NorthwindBD
create table tabla_problema5 (
  TipoTransaccion varchar(1000),
  NombreTabla varchar(1000),
  CampoPK varchar(1000),
  CampoModificado varchar(1000),
  ValorOriginal Varchar(1000),
  ValorNuevo Varchar(1000),
  FechaTransaccion DateTime Not null constraint DF_TipoCambios_FechaTran DEFAULT
  (getdate()),
  NombreUsuario varchar(1000)
)
--drop table tabla_problema5

--Products: Accion = Update, Campos = ProductName, UnitPrice
create trigger tr_products ON products for update
as begin
declare @TipoTransaccion varchar(1000)
declare @NombreTabla varchar(1000)
declare @CampoPK varchar(1000)
declare @CampoModificado varchar(1000)
declare @ValorOriginal Varchar(1000)
declare @ValorNuevo Varchar(1000)
declare @FechaTransaccion datetime
declare @NombreUsuario varchar(1000)

if exists(select * from inserted)
```

```

        if exists(select * from deleted)
            select @TipoTransaccion = 'Update'
        else
            select @TipoTransaccion = 'Insert'
    else
        select @TipoTransaccion = 'Delete'

    select @NombreTabla = 'Products'
    select @NombreUsuario = SYSTEM_USER
    select @FechaTransaccion = GETDATE()

    IF UPDATE(ProductName) --validar si se cambia el campo ProductName
    begin
        SELECT @CampoModificado = 'ProductName'
        SELECT @ValorNuevo = CONVERT(varchar(1000),ProductName) FROM inserted
        SELECT @ValorOriginal = CONVERT(varchar(1000),ProductName) FROM deleted
    end
    ELSE IF UPDATE(UnitPrice) --validar si se cambia el campo UnitPrice
    begin
        SELECT @CampoModificado = 'UnitPrice'
        SELECT @ValorNuevo = CONVERT(varchar(1000),UnitPrice) FROM inserted
        SELECT @ValorOriginal = CONVERT(varchar(1000),UnitPrice) FROM deleted
    end

    if exists (SELECT * FROM inserted)
        SELECT @CampoPK = 'ProductID=' + convert(varchar(1000),ProductID) FROM
inserted
    else
        SELECT @CampoPK = 'ProductID=' + convert(varchar(1000),ProductID) FROM
deleted

    INSERT
tabla_problema5(TipoTransaccion,NombreTabla,CampoPK,CampoModificado,ValorOriginal,ValorNuevo,FechaTransaccion,NombreUsuario)
VALUES
(@TipoTransaccion,@NombreTabla,@CampoPK,@CampoModificado,@ValorOriginal,@ValorNuevo,
@FechaTransaccion,@NombreUsuario)
END
GO
--drop trigger tr_products
--update
update products set ProductName = 'Lechuga' where productid = '1'
update products set UnitPrice = '35' where productid = '1'

select * from products

select * from tabla_problema5
go

--Customers: Accion = Update/Delete, Campos = Address, Phone
create trigger tr_customers ON customers for update, delete
as begin
declare @TipoTransaccion varchar(1000)
declare @NombreTabla varchar(1000)
declare @CampoPK varchar(1000)
declare @CampoModificado varchar(1000)
declare @ValorOriginal Varchar(1000)
declare @ValorNuevo Varchar(1000)
declare @FechaTransaccion datetime

```

```

declare @NombreUsuario varchar(1000)

if exists(select * from inserted)
    if exists(select * from deleted)
        select @TipoTransaccion = 'Update'
    else
        select @TipoTransaccion = 'Insert'
else
    select @TipoTransaccion = 'Delete'

select @NombreTabla = 'Customers'
select @NombreUsuario = SYSTEM_USER
select @FechaTransaccion = GETDATE()

IF UPDATE(Address) --validar si se cambia el campo Address
begin
    SELECT @CampoModificado = 'Address'
    SELECT @ValorNuevo = CONVERT(varchar(1000),Address) FROM inserted
    SELECT @ValorOriginal = CONVERT(varchar(1000),Address) FROM deleted
end
ELSE IF UPDATE(Phone) --validar si se cambia el campo Phone
begin
    SELECT @CampoModificado = 'Phone'
    SELECT @ValorNuevo = CONVERT(varchar(1000),Phone) FROM inserted
    SELECT @ValorOriginal = CONVERT(varchar(1000),Phone) FROM deleted
end

if exists (SELECT * FROM inserted)
    SELECT @CampoPK = 'CustomerID=' + convert(varchar(1000),CustomerID)
FROM inserted
else
    SELECT @CampoPK = 'CustomerID=' + convert(varchar(1000),CustomerID)
FROM deleted

INSERT
tabla_problema5(TipoTransaccion,NombreTabla,CampoPK,CampoModificado,ValorOriginal,ValorNuevo,FechaTransaccion,NombreUsuario)
VALUES
(@TipoTransaccion,@NombreTabla,@CampoPK,@CampoModificado,@ValorOriginal,@ValorNuevo,
@FechaTransaccion,@NombreUsuario)
END
GO
--drop trigger tr_customers
--update
update customers set Address = 'Las Quintas' where CustomerID = 'AROUT'
update customers set phone = '6671230064' where CustomerID = 'AROUT'
--un insert para hacer el delete
INSERT "Customers" VALUES('ZZZZZ','Tradição Hipermercados','Anabela Domingues','Sales Representative','Av. Inês de Castro, 414','Sao Paulo','SP','05634-030','Brazil','(11) 555-2167','(11) 555-2168')
delete customers where CustomerID like 'ZZZZZ'

select * from customers

select * from tabla_problema5
go

--Order Details: Accion = Update, Campos = UnitPrice, Quantity
create trigger tr_orderdetails ON [Order Details] for update

```

```

as begin
declare @TipoTransaccion varchar(1000)
declare @NombreTabla varchar(1000)
declare @CampoPK varchar(1000)
declare @CampoModificado varchar(1000)
declare @ValorOriginal Varchar(1000)
declare @ValorNuevo Varchar(1000)
declare @FechaTransaccion datetime
declare @NombreUsuario varchar(1000)

if exists(select * from inserted)
    if exists(select * from deleted)
        select @TipoTransaccion = 'Update'
    else
        select @TipoTransaccion = 'Insert'
else
select @TipoTransaccion = 'Delete'

select @NombreTabla = 'Order Details'
select @NombreUsuario = SYSTEM_USER
select @FechaTransaccion = GETDATE()

IF UPDATE(UnitPrice) --validar si se cambia el campo UnitPrice
begin
    SELECT @CampoModificado = 'UnitPrice'
    SELECT @ValorNuevo = CONVERT(varchar(1000),UnitPrice) FROM inserted
    SELECT @ValorOriginal = CONVERT(varchar(1000),UnitPrice) FROM deleted
end
ELSE IF UPDATE(Quantity) --validar si se cambia el campo Quantity
begin
    SELECT @CampoModificado = 'Quantity'
    SELECT @ValorNuevo = CONVERT(varchar(1000),Quantity) FROM inserted
    SELECT @ValorOriginal = CONVERT(varchar(1000),Quantity) FROM deleted
end

if exists (SELECT * FROM inserted)
    SELECT @CampoPK = 'OrderID=' + convert(varchar(1000),OrderID) FROM
inserted
else
    SELECT @CampoPK = 'OrderID=' + convert(varchar(1000),OrderID) FROM
deleted

INSERT
tabla_problema5(@TipoTransaccion,@NombreTabla,@CampoPK,@CampoModificado,@ValorOriginal,@ValorNuevo,@FechaTransaccion,@NombreUsuario)
VALUES
(@TipoTransaccion,@NombreTabla,@CampoPK,@CampoModificado,@ValorOriginal,@ValorNuevo,
@FechaTransaccion,@NombreUsuario)
END
GO

--drop trigger tr_orderdetails
--un insert para hacer el update
INSERT "Order Details" VALUES(10251,53,32.8,25,0) --el 10249 ya existe en la tabla
orders
--update
update [Order Details] set UnitPrice = '11700' where OrderID = '10251'

select * from orders
select * from [Order Details] where orderid = 10251

```

```
select * from tabla_problema5
go
```

Results		Messages						
	Tipo Transaccion	Nombre Tabla	Campo PK	Campo Modificado	Valor Original	Valor Nuevo	Fecha Transaccion	Nombre Usuario
1	Update	Products	ProductID=1	ProductName	Came	Came	2022-12-08 00:43:24.663	DESKTOP-85GI0HU\alfredogarcia
2	Update	Products	ProductID=1	UnitPrice	42.00	42.00	2022-12-08 00:43:26.273	DESKTOP-85GI0HU\alfredogarcia
3	Update	Products	ProductID=1	ProductName	Came	Lechuga	2022-12-08 00:43:45.740	DESKTOP-85GI0HU\alfredogarcia
4	Update	Products	ProductID=1	UnitPrice	42.00	35.00	2022-12-08 00:43:50.210	DESKTOP-85GI0HU\alfredogarcia
5	Update	Customers	CustomerID=AROUT	Address	120 Hanover Sq.	Las Quintas	2022-12-08 00:45:05.613	DESKTOP-85GI0HU\alfredogarcia
6	Update	Customers	CustomerID=AROUT	Phone	(171) 555-7788	6671230064	2022-12-08 00:45:07.970	DESKTOP-85GI0HU\alfredogarcia
7	Delete	Customers	CustomerID=ZZZZZ	NULL	NULL	NULL	2022-12-08 00:45:56.677	DESKTOP-85GI0HU\alfredogarcia
8	Update	Order Details	OrderID=10251	UnitPrice	16.80	11700.00	2022-12-08 00:47:54.897	DESKTOP-85GI0HU\alfredogarcia