ABAD - sprawozdanie Z3

Weronika Zbierowska
nr indeksu: 319130

1. Proszę zrobić w bazie administracyjnej tabelę do przechowania uruchomień backupu.

```
CREATE TABLE APBD23_ADM.dbo.BK_LOG
(
	id_bk INT NOT NULL IDENTITY CONSTRAINT PK_BK_LOG PRIMARY KEY,
	name_bk NVARCHAR(100) NOT NULL,
	filename_bk NVARCHAR(200) NOT NULL,
	username NVARCHAR(100) NOT NULL DEFAULT USER_NAME(),
	hostname NVARCHAR(100) NOT NULL DEFAULT HOST_NAME(),
	date_bk DATETIME NOT NULL DEFAULT GETDATE()
)
```

Commands completed successfully.

2. Napisac 2 procedury:

- bk_db- backup pojedynczej bazy

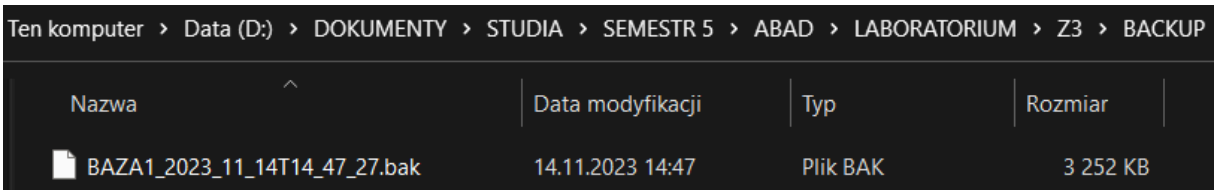
- bk_all_db- backup wszystkich baz

do pliku na wyznaczonym katalogu.

```
GO
CREATE PROCEDURE bk_db(@dbname NVARCHAR(50), @directory NVARCHAR(200))
AS
	IF NOT EXISTS (SELECT 1 FROM sysdatabases d WHERE d.name = @dbname)
	BEGIN
		DECLARE @error_msg NVARCHAR(100) = N'Baza danych ' + @dbname + ' nie
istnieje!'
		RAISERROR(@error_msg, 16, 1)
		RETURN
	END

	IF RIGHT(@directory, 1) != N'\'
	BEGIN
		SET @directory = @directory + N'\'
	END

	DECLARE @filename NVARCHAR(100)
	SET @filename = REPLACE(REPLACE(CONVERT(NCHAR(19), GETDATE(), 126), N':',
N'_'),'-','_')
```

```
	DECLARE @filepath NVARCHAR(300)
	SET @filepath = @directory + RTRIM(@dbname) + N'_' + @filename + N'.bak'

	DECLARE @sql NVARCHAR(300)
	SET @sql = 'BACKUP DATABASE ' + @dbname + ' TO DISK = ''' + @filepath + ''''
	EXEC sp_sqlExec @sql

	SET @sql = N'INSERT INTO APBD23_ADM.dbo.BK_LOG (name_bk, filename_bk) VALUES
(N''' + @dbname + ''', N''' + @filepath + ''')'
	EXEC sp_sqlExec @sql
GO

EXEC bk_db N'BAZA1', N'D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP'
Processed 384 pages for database 'BAZA1', file 'BAZA1' on file 1.
Processed 2 pages for database 'BAZA1', file 'BAZA1_log' on file 1.
BACKUP DATABASE successfully processed 386 pages in 0.011 seconds (274.147 MB/sec).

SELECT CONVERT(NVARCHAR(5), l.id_bk) AS id_bk,
	CONVERT(NVARCHAR(10), l.name_bk) AS name_bk,
	CONVERT(NVARCHAR(90), l.filename_bk) AS filename_bk,
	CONVERT(NVARCHAR(10), l.username) AS username,
	CONVERT(NVARCHAR(10), l.hostname) AS hostname,
	l.date_bk
FROM APBD23_ADM.dbo.BK_LOG l
```

id_bk	name_bk	filename_bk	username	hostname	date_bk
1	BAZA1	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\BAZA1_2023_11_14T14_47_27.bak	dbo	WERA	2023-11-14 14:47:27.853



Backup dla bazy ‘BAZA1’ został wykonany pomyślnie.

```
GO
CREATE PROCEDURE bk_all_db(@directory NVARCHAR(200))
AS
	DECLARE @dbname NVARCHAR(50)
```

```
	DECLARE CD INSENSITIVE CURSOR FOR
		SELECT d.[name] FROM sys.databases d
	OPEN CD
	FETCH NEXT FROM CD INTO @dbname
	WHILE @@FETCH_STATUS = 0
	BEGIN
		EXEC bk_db @dbname, @directory
		FETCH NEXT FROM CD INTO @dbname
	END
	CLOSE CD
	DEALLOCATE CD
GO

EXEC bk_all_db N'D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP'

SELECT CONVERT(NVARCHAR(5), l.id_bk) AS id_bk,
	CONVERT(NVARCHAR(15), l.name_bk) AS name_bk,
	CONVERT(NVARCHAR(100), l.filename_bk) AS filename_bk,
	CONVERT(NVARCHAR(10), l.username) AS username,
	CONVERT(NVARCHAR(10), l.hostname) AS hostname,
	l.date_bk
FROM APBD23_ADM.dbo.BK_LOG l
WHERE l.id_bk != 1
```

id_bk	name_bk	filename_bk	username	hostname	date_bk
2	master	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\master_2023_11_14T15_01_16.bak	dbo	WERA	2023-11-14 15:01:16.137
3	tempdb	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\tempdb_2023_11_14T15_01_16.bak	dbo	WERA	2023-11-14 15:01:16.143
4	model	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\model_2023_11_14T15_01_16.bak	dbo	WERA	2023-11-14 15:01:16.190
5	msdb	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\msdb_2023_11_14T15_01_16.bak	dbo	WERA	2023-11-14 15:01:16.300
6	APBD23_ADM	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\APBD23_ADM_2023_11_14T15_01_16.bak	dbo	WERA	2023-11-14 15:01:16.363
7	APBD23_TEST	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\APBD23_TEST_2023_11_14T15_01_16.bak	dbo	WERA	2023-11-14 15:01:16.473
8	A	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\A_2023_11_14T15_01_16.bak	dbo	WERA	2023-11-14 15:01:16.600
9	B	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\B_2023_11_14T15_01_16.bak	dbo	WERA	2023-11-14 15:01:16.693
10	C	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\C_2023_11_14T15_01_16.bak	dbo	WERA	2023-11-14 15:01:16.833
11	D	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\D_2023_11_14T15_01_16.bak	dbo	WERA	2023-11-14 15:01:16.913
12	E	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\E_2023_11_14T15_01_16.bak	dbo	WERA	2023-11-14 15:01:17.023
13	F	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\F_2023_11_14T15_01_17.bak	dbo	WERA	2023-11-14 15:01:17.117
14	G	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\G_2023_11_14T15_01_17.bak	dbo	WERA	2023-11-14 15:01:17.257
15	H	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\H_2023_11_14T15_01_17.bak	dbo	WERA	2023-11-14 15:01:17.340
16	I	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\I_2023_11_14T15_01_17.bak	dbo	WERA	2023-11-14 15:01:17.447
17	J	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\J_2023_11_14T15_01_17.bak	dbo	WERA	2023-11-14 15:01:17.540
18	K	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\K_2023_11_14T15_01_17.bak	dbo	WERA	2023-11-14 15:01:17.650
19	L	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\L_2023_11_14T15_01_17.bak	dbo	WERA	2023-11-14 15:01:17.743
20	M	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\M_2023_11_14T15_01_17.bak	dbo	WERA	2023-11-14 15:01:17.853
21	N	D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\N_2023_11_14T15_01_17.bak	dbo	WERA	2023-11-14 15:01:17.950

```
22  O       D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\O_2023_11_14T15_01_17.bak          dbo     WERA    2023-11-14 15:01:18.103
23  P       D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\P_2023_11_14T15_01_18.bak          dbo     WERA    2023-11-14 15:01:18.183
24  Q       D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\Q_2023_11_14T15_01_18.bak          dbo     WERA    2023-11-14 15:01:18.310
25  BAZA1   D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\BAZA1_2023_11_14T15_01_18.bak     dbo     WERA    2023-11-14 15:01:18.403
26  BAZA2   D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\BAZA2_2023_11_14T15_01_18.bak     dbo     WERA    2023-11-14 15:01:18.513
27  BAZA3   D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\BAZA3_2023_11_14T15_01_18.bak     dbo     WERA    2023-11-14 15:01:18.607
28  BAZA4   D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\BAZA4_2023_11_14T15_01_18.bak     dbo     WERA    2023-11-14 15:01:18.733
29  BAZA5   D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP\BAZA5_2023_11_14T15_01_18.bak     dbo     WERA    2023-11-14 15:01:18.827

(28 rows affected)
```

Backupy dla wszystkich baz zostały wykonane pomyślnie.

3. Napisać procedurę, która:

- korzystając z tabel z zadania Z2 i procedur do statystyk, które przechowują liczby rekordów

- do backupu wybierze bazy gdzie pomiędzy dwoma statystykami dla tej samej bazy w tej samej tabeli nastąpił przyrost powyżej 100 rekordów (lub zadany parametr @liczba)

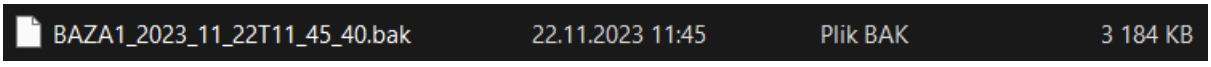
```
GO
CREATE PROCEDURE bk_db_stats(@number INT = 100, @directory NVARCHAR(200))
AS
	DECLARE @dbname NVARCHAR(50), @tablename NVARCHAR(100),
		@max_id INT, @last_id INT,
		@max_id_n_records INT, @last_id_n_records INT,
		@found BIT = 0

	DECLARE CD INSENSITIVE CURSOR FOR
		SELECT d.dbname
		FROM APBD23_ADM.dbo.DB_CHECK d
		GROUP BY d.dbname
	OPEN CD
	FETCH NEXT FROM CD INTO @dbname
	WHILE @@FETCH_STATUS = 0
	BEGIN
		SELECT @max_id = MAX(t.check_id)
		FROM APBD23_ADM.dbo.DB_CHECK_ITEMS t
			JOIN APBD23_ADM.dbo.DB_CHECK d ON (t.check_id = d.check_id)
		WHERE d.dbname = @dbname

		SELECT @last_id = MAX(t.check_id)
		FROM APBD23_ADM.dbo.DB_CHECK_ITEMS t
			JOIN APBD23_ADM.dbo.DB_CHECK d ON (t.check_id = d.check_id)
		WHERE d.dbname = @dbname
```

```
	AND t.check_id < @max_id

DECLARE CT INSENSITIVE CURSOR FOR
	SELECT t.table_name
	FROM APBD23_ADM.dbo.DB_CHECK_ITEMS t
		JOIN APBD23_ADM.dbo.DB_CHECK d ON (t.check_id = d.check_id)
	WHERE d.dbname = @dbname
	GROUP BY t.table_name
OPEN CT
FETCH NEXT FROM CT INTO @tablename
WHILE @@FETCH_STATUS = 0 AND @found = 0 AND @last_id IS NOT NULL
BEGIN
	SELECT @max_id_n_records = t.n_records
	FROM APBD23_ADM.dbo.DB_CHECK_ITEMS t
		JOIN APBD23_ADM.dbo.DB_CHECK d ON (t.check_id = d.check_id)
	WHERE d.dbname = @dbname
		AND t.table_name = @tablename
		AND t.check_id = @max_id

	SELECT @last_id_n_records = t.n_records
	FROM APBD23_ADM.dbo.DB_CHECK_ITEMS t
		JOIN APBD23_ADM.dbo.DB_CHECK d ON (t.check_id = d.check_id)
	WHERE d.dbname = @dbname
		AND t.table_name = @tablename
		AND t.check_id = @last_id

	IF @max_id_n_records - @last_id_n_records >= @number
	BEGIN
		SET @found = 1
	END

	FETCH NEXT FROM CT INTO @tablename
END
CLOSE CT
DEALLOCATE CT

IF @found = 1
BEGIN
```

```
                EXEC bk_db @dbname, @directory
                SET @found = 0
            END

            FETCH NEXT FROM CD INTO @dbname
        END
        CLOSE CD
        DEALLOCATE CD
GO

/* Dodanie nowego rekordu w tabeli 'woj' w 'BAZA1', aby statystyki się
zaktualizowały.*/
INSERT INTO BAZA1.dbo.woj(kod_woj, nazwa) VALUES (N'OPO', N'opolskie')
EXEC db_check_tables N'BAZA1'

SELECT t.check_id,
       CONVERT(NVARCHAR(15), t.table_name) AS table_name,
       t.n_records
FROM APBD23_ADM.dbo.DB_CHECK_ITEMS t
       JOIN APBD23_ADM.dbo.DB_CHECK d ON (t.check_id = d.check_id)
WHERE d.dbname = N'BAZA1'
       AND t.table_name = N'woj'
check_id    table_name      n_records
----------- --------------- -----------
1           woj             7
25          woj             7
30          woj             8
```

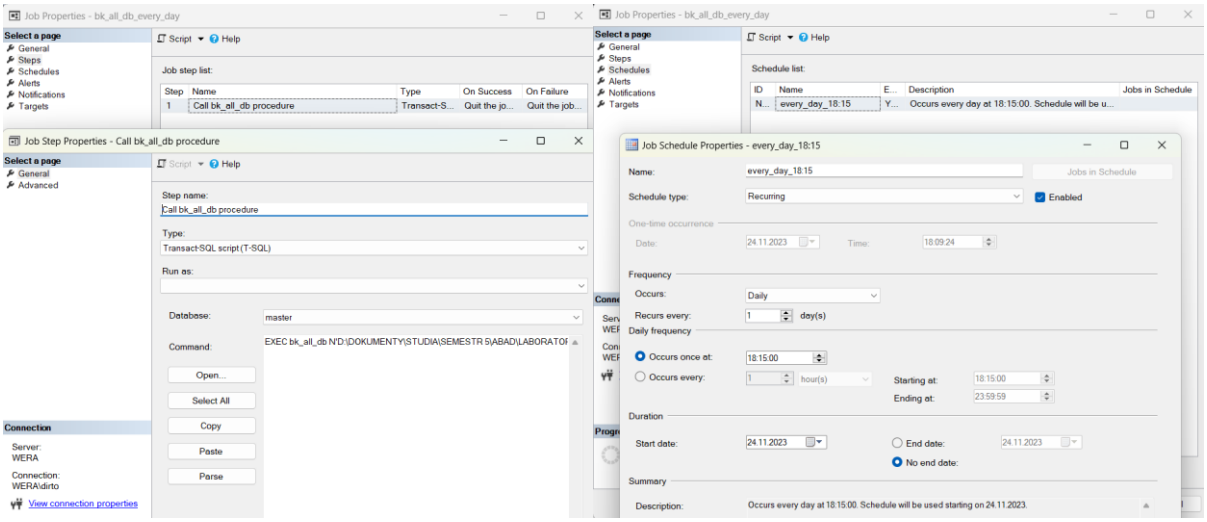
W tabeli widać różnicę 1 rekordu w tabeli 'woj' pomiędzy zebraniami statystyk, więc procedura 'bk_db_stats' dla argumentu @number = 1 powinna wywołać backup bazy 'BAZA1'.

```
EXEC bk_db_stats 1, N'D:\DOKUMENTY\STUDIA\SEMESTR 5\ABAD\LABORATORIUM\Z3\BACKUP'
Processed 384 pages for database 'BAZA1', file 'BAZA1' on file 1.
Processed 2 pages for database 'BAZA1', file 'BAZA1_log' on file 1.
BACKUP DATABASE successfully processed 386 pages in 0.016 seconds (188.476 MB/sec).
```

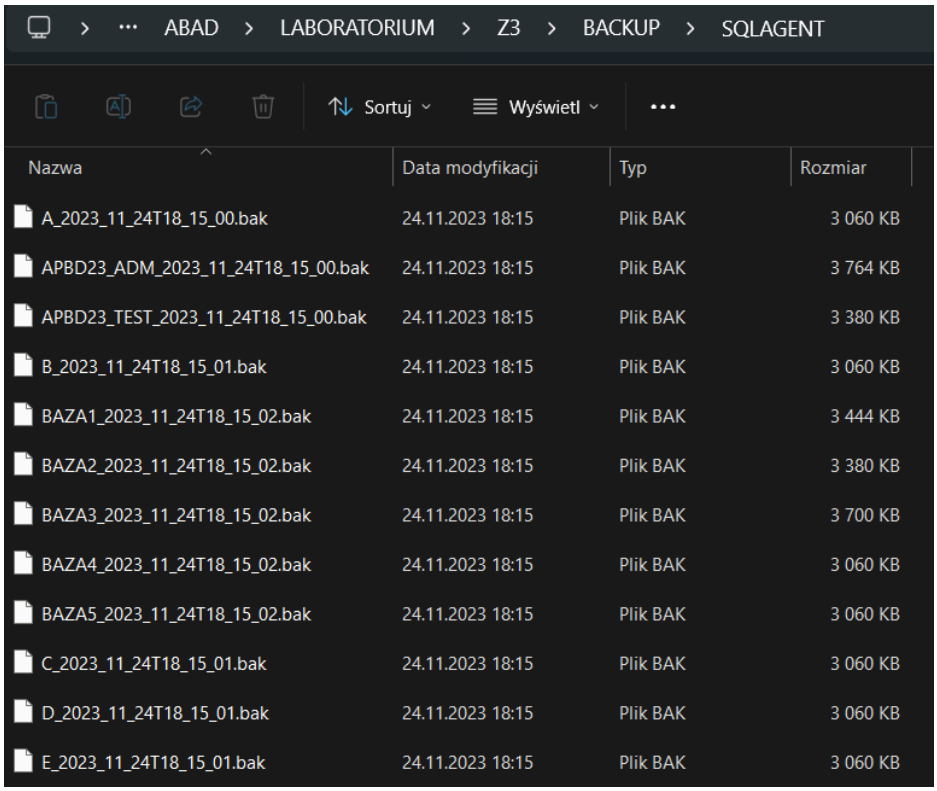


Backup dla jedynej bazy o zmianie statystyk o minimum 1 rekord w 1 tabeli (‘BAZA1’) został wykonany.

4. Zaplanować uruchamianie procedury backupy wszystkich baz poprzez SQL Agent na co dzień.



Zaplanowałam JOB poprzez SQLAgent na robienie backup'u wszystkich baz codziennie o 18:15.



Backup został automatycznie wykonany dla wszystkich baz o godzinie 18:15.