

# Databases Laboratory Work Nr 2

## Isac Artur

### Title:

CREAREA SI INTRETINEREA BAZEI DE DATE

### Prerequisites:

Computer (again), SQL book

### Objectives:

To create, modify and arrange databases

### Tasks:

1. Creați o baza de date plasată fizic în mapa MyDocuments\Data, fixând o creștere a fișierului primar a bazei de 16MB cu limita de creștere de 128 MB și a logului de 64 MB cu limita de creștere de 1024 MB. Pentru fișierele secundare să se definească un Filegroup nou implicit, setând creșterea fișierelor secundare de 64 MB cu limita de 1024 MB.

2. Creați o baza de date, unde fișierul log să fie fizic plasat în mapa MyDocuments\Log, numele fișierului log în mediul sistemului de operare trebuie să se deosebească de cel logic definit în schema fizică. Este important ca baza de date creată să fie compatibilă cu sistemul MS SQL Server 2017 și ea să fie accesibilă numai unui singur utilizator într-un moment de timp.

3. Creați planul de întreținere a bazei de date, construită în sarcina 1. Spațiul neutilizat de fișierele bazei de date trebuie împărțit atunci când el atinge mărimea 2000Mb. Spațiul eliberat trebuie să fie returnat sistemului de operare. Această operațiune trebuie să ruleze în fiecare vineri, la ora 00:00. Raportul executării planului de întreținere trebuie salvat în dosarul MyDocuments\SQL\_event\_logs. Inițializați executarea planului. După executare, verificați rezultatele în fișierul log.

4. Creați planul de întreținere a bazei de date, construită în exercitiul 2. Numele planului va fi: „Reconstruire index”. În cadrul acestui plan, sistemul trebuie să realizeze reconstruirea indecșilor numai asupra tabelor de bază (exclusiv viziunilor) din toate schemele care există în baza de date în cauză. Spațiul liber pe pagina trebuie să fie 10%. Sortarea indecșilor trebuie să se realizeze în tempdb. După reconstruire, trebuie să urmeze colectarea statisticilor complete despre indecșii reconstruiți. Al treilea pas al planului trebuie să constituie sarcina de curățare a istoriei despre operațiile de Backup-Restore ce au avut loc pe SQL Server. Trebuie să se ștergă istoricul care este mai vechi de 6 săptămâni. Acest plan trebuie să fie executat în fiecare prima duminică a lunii. Creați dosarul MyDocuments\SQL\_reports. Raportul de executare a planului trebuie să fie adăugat în acest fișier. Procesul de mentenanță - să fie logat în mod extended. Inițializați executarea planului. După executare, verificați rezultatele în fișierul log generat

### Implementation:

## Task 1.

Creating a new database **task\_1** with size limits as defined in task!

**New Database**

Select a page: General, Options, Filegroups

Script Help

Database name: task\_1

Owner: <default>

☒ Use full-text indexing

Database files:

Logical Name	File Type	Filegroup	Initial Size (MB)	Autogrowth / Maxsize
task_1	ROWS...	PRIMARY	16	By 64 MB, Limited to 128 MB
task_1_log	LOG	Not Applicable	64	By 64 MB, Limited to 1024 ...

Add Remove

OK Cancel

And now we create a filegroup for this DB

**New Database**

Select a page: General, Options, Filegroups

Script Help

Rows

Name	Files	Read-Only	Default	Autogrow All Files
PRIMARY	1		<input type="checkbox"/>	<input type="checkbox"/>
Task_1	0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Add Filegroup Remove

FILESTREAM

Name	FILESTREAM Files	Read-Only	Default
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Add Filegroup Remove

MEMORY OPTIMIZED DATA

Name	FILESTREAM Files
------	------------------

Add Filegroup Remove

OK Cancel

## Task 2.

In new database we rename standard log name to **log** and put in predefined path

**New Database**

Select a page: General, Options, Filegroups

Script Help

Database name: Task\_2

Owner: sa

☒ Use full-text indexing

Database files:

	File Type	Filegroup	Initial Size (MB)	Autogrowth / Maxsize	Path
Task_2	ROWS...	PRIMARY	8	By 64 MB, Unlimited	C:\MyDocuments\Data
log	LOG	Not Applicable	8	By 64 MB, Unlimited	C:\MyDocuments\Logs

Connection: Server: DESKTOP-HTN4CSL, Connection: DESKTOP-HTN4CSL\foxfu, View connection properties

Progress: Ready

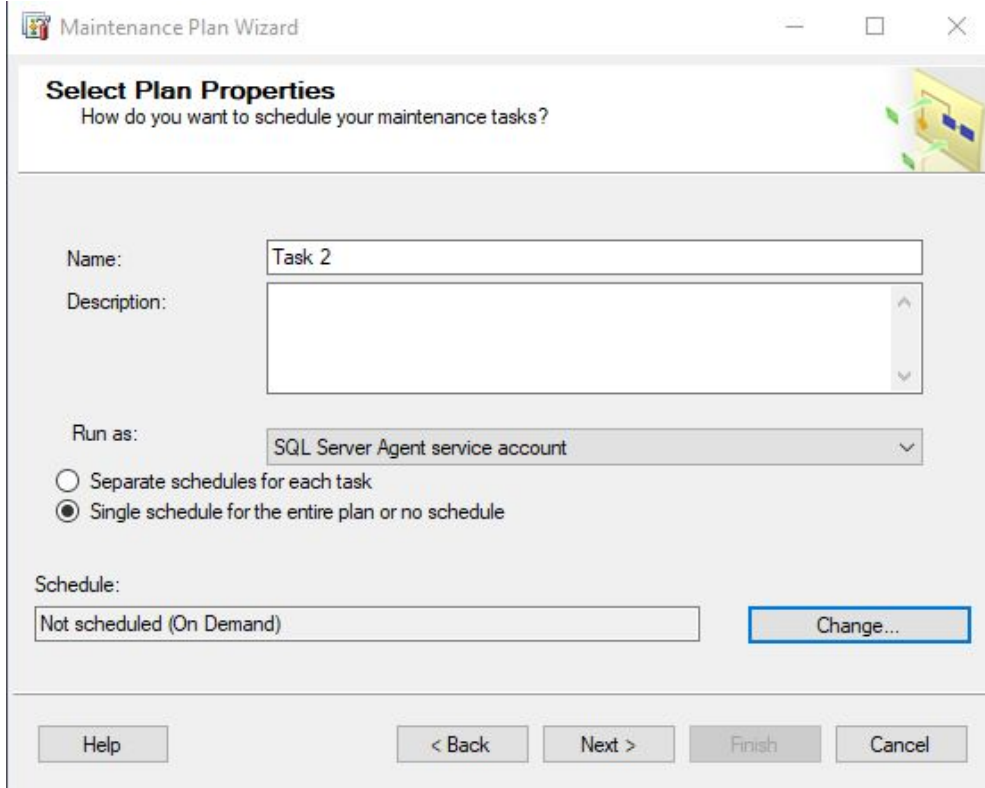
Add Remove

OK Cancel

Database files:		
I		Path
Task_2	...	C:\MyDocuments\Data
log	...	C:\MyDocuments\Logs

### Task 3

By using maintenance plan wizard I create new maintenance plan



The screenshot shows the 'Maintenance Plan Wizard' window, specifically the 'Select Plan Properties' step. The title bar reads 'Maintenance Plan Wizard'. The main heading is 'Select Plan Properties' with the subtitle 'How do you want to schedule your maintenance tasks?'. The 'Name' field contains 'Task 2'. The 'Description' field is empty. The 'Run as' dropdown is set to 'SQL Server Agent service account'. There are two radio buttons: 'Separate schedules for each task' (unselected) and 'Single schedule for the entire plan or no schedule' (selected). The 'Schedule' dropdown is set to 'Not scheduled (On Demand)', with a 'Change...' button to its right. At the bottom, there are buttons for 'Help', '< Back', 'Next >', 'Finish', and 'Cancel'.

**Select Plan Properties**  
How do you want to schedule your maintenance tasks?

Name: Task 2

Description:

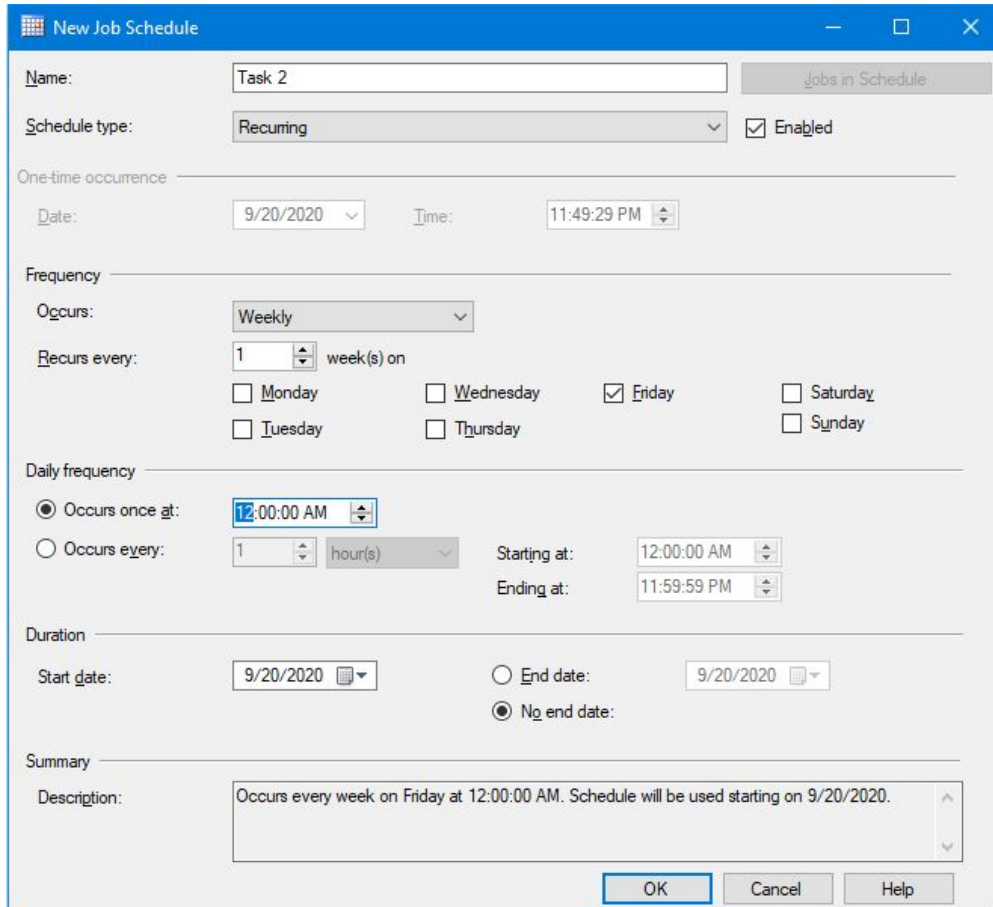
Run as: SQL Server Agent service account

☐ Separate schedules for each task  
☒ Single schedule for the entire plan or no schedule

Schedule: Not scheduled (On Demand) Change...

Help < Back Next > Finish Cancel

And set appropriate schedule



The screenshot shows the 'New Job Schedule' dialog box. The title bar reads 'New Job Schedule'. The 'Name' field contains 'Task 2'. The 'Schedule type' dropdown is set to 'Recurring', and the 'Enabled' checkbox is checked. The 'One-time occurrence' section is collapsed. The 'Frequency' section is expanded, showing 'Occurs' set to 'Weekly', 'Recur every' set to '1' week(s) on, and days selected: Friday. The 'Daily frequency' section is expanded, showing 'Occurs once at' set to '12:00:00 AM'. The 'Duration' section is expanded, showing 'Start date' set to '9/20/2020' and 'No end date' selected. The 'Summary' section is expanded, showing a description: 'Occurs every week on Friday at 12:00:00 AM. Schedule will be used starting on 9/20/2020.' At the bottom, there are buttons for 'OK', 'Cancel', and 'Help'.

**New Job Schedule**

Name: Task 2 Jobs in Schedule

Schedule type: Recurring ☒ Enabled

One-time occurrence

Date: 9/20/2020 Time: 11:49:29 PM

Frequency

Occurs: Weekly

Recur every: 1 week(s) on

☐ Monday ☐ Wednesday ☒ Friday ☐ Saturday  
☐ Tuesday ☐ Thursday ☐ Sunday

Daily frequency

☒ Occurs once at: 12:00:00 AM  
☐ Occurs every: 1 hour(s) Starting at: 12:00:00 AM Ending at: 11:59:59 PM

Duration

Start date: 9/20/2020 ☐ End date: 9/20/2020 ☒ No end date

Summary

Description: Occurs every week on Friday at 12:00:00 AM. Schedule will be used starting on 9/20/2020.

OK Cancel Help

And we set Shrink database

The screenshot shows the 'Select Maintenance Tasks' step of the Maintenance Plan Wizard. The title bar reads 'Maintenance Plan Wizard'. The main heading is 'Select Maintenance Tasks' with the subtitle 'Which tasks should this plan perform?'. Below this, it says 'Select one or more maintenance tasks:'. A list of tasks is shown with checkboxes: 'Check Database Integrity', 'Shrink Database' (checked), 'Reorganize Index', 'Rebuild Index', 'Update Statistics', 'Clean Up History', 'Execute SQL Server Agent Job', 'Back Up Database (Full)', 'Back Up Database (Differential)', 'Back Up Database (Transaction Log)', and 'Maintenance Cleanup Task'. A yellow information box at the bottom states: 'The Shrink Database task reduces the disk space consumed by the database and log files by removing empty data and log pages.' Navigation buttons at the bottom include 'Help', '< Back', 'Next >', 'Finish', and 'Cancel'.

Shrink will trigger if database size will grow over 2GB

The screenshot shows the 'Define Shrink Database Task' step of the Maintenance Plan Wizard. The title bar reads 'Maintenance Plan Wizard'. The main heading is 'Define Shrink Database Task' with the subtitle 'Configure the maintenance task.' Below this, it says 'Databases:' followed by a dropdown menu set to 'Specific databases'. There are two input fields: 'Shrink database when it grows beyond:' with the value '2000' and unit 'MB', and 'Amount of free space to remain after shrink:' with the value '10' and unit '%'. A radio button is selected for 'Retain freed space in database files'. At the bottom, the 'Schedule:' section shows 'Not scheduled (On Demand)' with a 'Change...' button. Navigation buttons at the bottom include 'Help', '< Back', 'Next >', 'Finish >>', and 'Cancel'.

Almost

The screenshot shows the 'Maintenance Plan Wizard' window, specifically the 'Select Report Options' step. The window has a blue title bar with the text 'Maintenance Plan Wizard'. Below the title bar, the main area is titled 'Select Report Options' with a subtitle 'Select options for saving or distributing a report of the maintenance plan actions.' There are two checkboxes: 'Write a report to a text file' (checked) and 'E-mail report' (unchecked). The 'Write a report to a text file' checkbox is followed by a text box for 'Folder location' containing 'C:\MyDocuments\SQL\_event\_logs' and a browse button (...). The 'E-mail report' checkbox is followed by a 'To:' label and a dropdown menu. At the bottom, there are five buttons: 'Help', '< Back', 'Next >', 'Finish >>', and 'Cancel'.

**Maintenance Plan Wizard**

**Select Report Options**  
Select options for saving or distributing a report of the maintenance plan actions.

☒ Write a report to a text file

Folder location: C:\MyDocuments\SQL\_event\_logs

☐ E-mail report

To:

Help < Back Next > Finish >> Cancel

Now we execute our plan and after this - check logs

The screenshot shows the 'Execute Maintenance Plan' window. The title bar says 'Execute Maintenance Plan'. The main area is titled 'Status:' and shows a large green checkmark icon followed by the word 'Success'. To the right of the icon, there is a summary table with three columns: 'Total', 'Success', 'Error', and 'Warning'. Below this, there is a 'Details:' section with a table showing the execution details. The table has four columns: 'Action', 'Status', and 'Message'. The first row shows 'Execute maintenance plan. Task 2' with a status of 'Success'. At the bottom, there are two buttons: 'Close' and 'Report' with a dropdown arrow.

**Execute Maintenance Plan**

Status:

**Success**

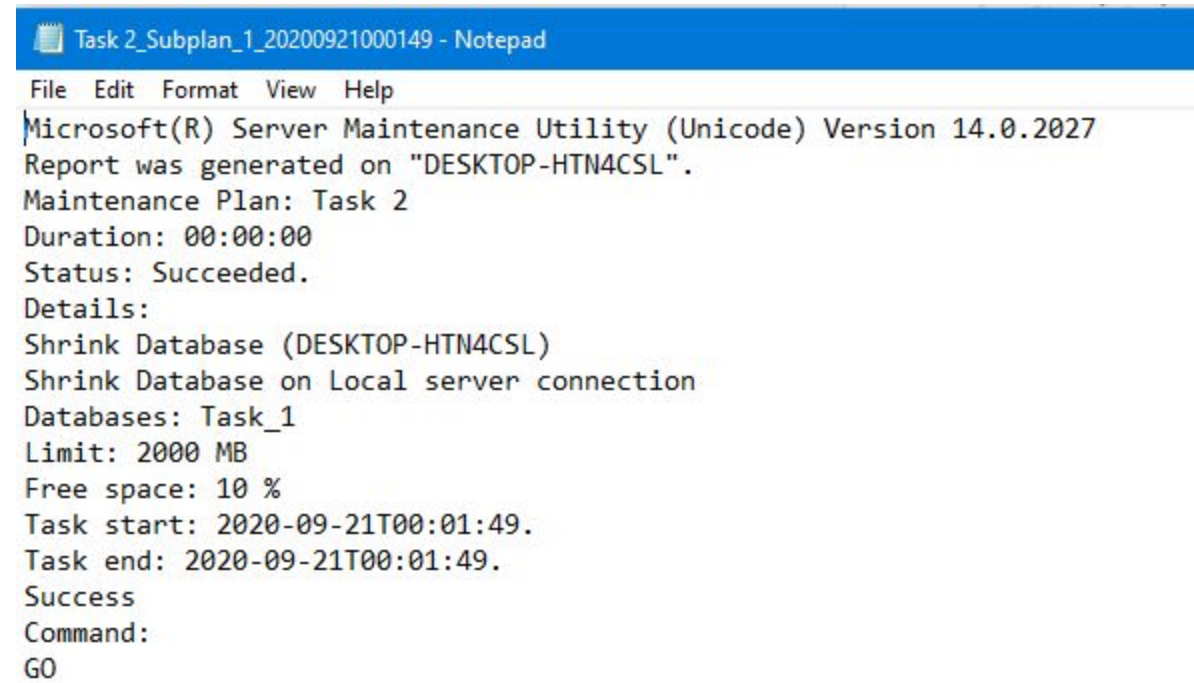
1	Total	0	Error
1	Success	0	Warning

Details:

Action	Status	Message
Execute maintenance plan. Task 2	Success	

Close Report ▼

Great! It works



```
Task 2_Subplan_1_20200921000149 - Notepad
File Edit Format View Help
Microsoft(R) Server Maintenance Utility (Unicode) Version 14.0.2027
Report was generated on "DESKTOP-HTN4CSL".
Maintenance Plan: Task 2
Duration: 00:00:00
Status: Succeeded.
Details:
Shrink Database (DESKTOP-HTN4CSL)
Shrink Database on Local server connection
Databases: Task_1
Limit: 2000 MB
Free space: 10 %
Task start: 2020-09-21T00:01:49.
Task end: 2020-09-21T00:01:49.
Success
Command:
GO
```

#### Task 4

We create maintenance plan called Reconstructure index.

Name	Reconstruire index		
Description			
Subplan	Description	Schedule	Run as
Subplan_1		Occurs every month on day 7 at 12:...	SQL Server Agent service account

This maintenance plan will do 3 operations: Rebuild indexes and left 10% free space, update statistics (only index statistics) and clean up history (only backup history) every 6 weeks





This plan will trigger every 7 (first Sunday) of a month

**Job Schedule Properties - Reconstruire index.Subplan\_1**

Name:  Jobs in Schedule

Schedule type: Recurring ☒ Enabled

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One-time occurrence

Date:  Time:

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Frequency

Occurs: Monthly

☒ Day  of every  month(s)

☐ The first Monday of every  month(s)

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Daily frequency

☒ Occurs once at:

☐ Occurs every:  hour(s) Starting at:  Ending at:

---

Duration

Start date:  ☐ End date:  ☒ No end date:

---

Summary

Description:

OK Cancel Help

## Conclusion:

I am able to create my own databases and to create maintenance planes for it