JOBSHEET
PRAKTIKUM BASIS DATA LANJUT

Jurusan Teknologi Informasi
POLITEKNIK NEGERI MALANG

WEEK 3

SQL SERVER – DATA TYPE, FUNCTIONS, & TABLE EXPRESSION

Information Technology Department, Malang State Polytechnic

Jobsheet- 3 : Data Types and Functions in Data Types

Advanced Database Course

Supervisor: Advanced Database Teaching Team

Topics
1. Data Type
2. Functions on Data Types

Objective

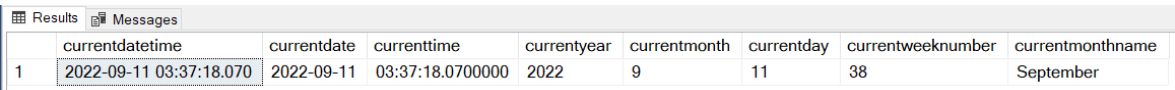Students are expected to be able to:
1. Understanding how to perform date & time queries
2. Understanding how to use date & time functions
3. Understanding how to combine character data
4. Understanding how to use character functions
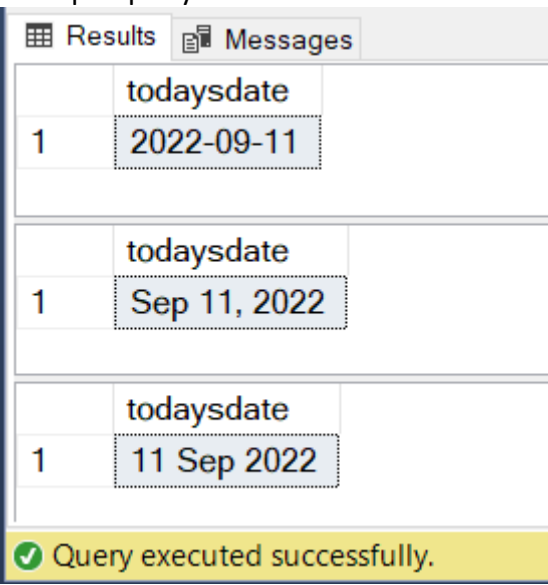
General Instructions
1. Follow the steps in the practical sections in the order given.
2. Answer all questions marked [Question-X] that are found in certain steps in each part of the practicum.
3. In each step of the practicum, there is an explanation that will help you answer the questions in instruction number 2, so read and do all the practicum parts in this jobsheet.
4. Write the answers to the questions in the instructions number 3 in a report that is done using a word processing application (Word, OpenOffice, or other similar). Export as a **PDF file** with the following name format:
   - **BDL_Class_03_YourFullName** .pdf
     o **Example** : BDL_TI2Z_03_Bang Mudrik.pdf
   - Collect the PDF files as a practical report to the supervising lecturer.
   - In addition to the file name, also include your identity on the first page of the report.

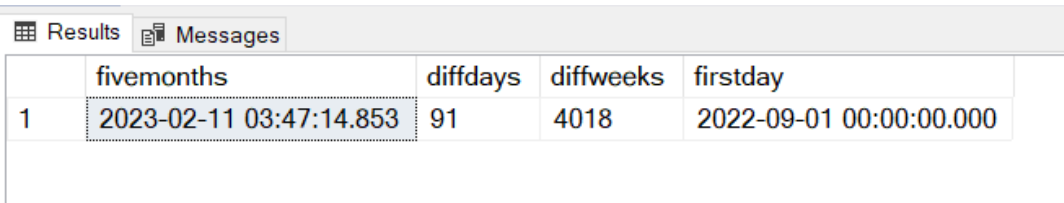**Practical – Part 1: Writing a SELECT query to get the current date and time**

Step	Information
1	[Question- 1] Write a SELECT query to display the columns containing: a. Current date and time, name the alias *currentdatetime* b. Just the current date, name the alias *currentdate* c. Just the current time (HH:mm:ss), name it alias *current time* d. This year only, name it alias *currentyear* e. Just this month number (number), give it an alias name *currentmonth* f. Only the day number in this month , give it an alias name *currentday* g. Just the number of the nth week *of* the year, give it the alias *currentweeknumber*

	h. Current month name, give alias *currentmonthname* Execute the query, and *screenshot* the results.
3	Compare the results of executing the query in step 2 above with the results in the following image: |	Results	Messages						
---	---	---	---	---	---	---	---	---
	currentdatetime	currentdate	currenttime	currentyear	currentmonth	currentday	currentweeknumber	currentmonthname
1	2022-09-11 03:37:18.070	2022-09-11	03:37:18.0700000	2022	9	11	38	September	 The values obtained will of course be different because they depend on when the query is executed.
4	[Question- 2] Can the *currentdatetime alias* be used in [Question-1-b] to replace the *currentdate alias* ? Explain!

Practical – Part 2: Writing a SELECT query to get *date data type*

Step	Information
1	[Question- 3] Write a SELECT query using several different T-SQL functions (`CAST` , `CONVERT` , other specific functions, etc.) to display today's date . Name it *todaysdate* as an alias for the column name. Example query results: 		Results	Messages
---	---	---
	todaysdate	
1	2022-09-11	| |	todaysdate	
---	---	---
1	Sep 11, 2022	| |	todaysdate	
---	---	---
1	11 Sep 2022		 ✅ Query executed successfully.

Practical – Part 3: Writing SELECT queries that use several *date* and *time functions*
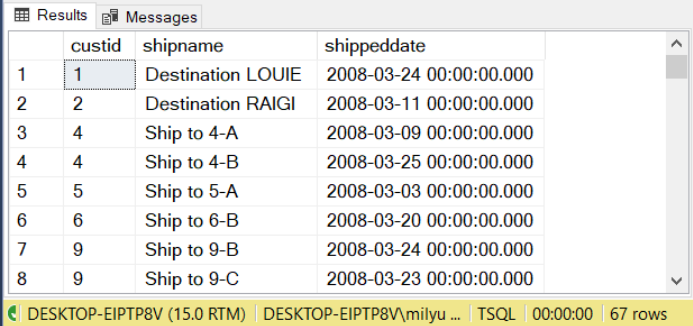
Step	Information
1	[Question- 4] Write a SELECT query that returns several columns containing: a. Date and time 5 months from now. Name the alias *fivemonths* . b. The number of days between the current date and the first column (*fivemonths* in point a above). Name the alias *diffdays* . c. The number of weeks between August 17, 1945 and August 17, 2022. Use the alias *diffweeks* . d. The first day of the month based on the current date and time. Use the alias *firstday* .
2	Execute the query above , and *screenshot* the results. Compare the results obtained with the following results: ▦ Results ▥ Messages |	fivemonths	diffdays	diffweeks	firstday
---	---	---	---	---
1	2023-02-11 03:47:14.853	91	4018	2022-09-01 00:00:00.000	

Lab – Part 4: Observation on Sales.Somedates table

Step	Information

1	Write a T-SQL query to create a table named *Sales.Somedates* with the following contents, then execute it.
	
	``sql
	CREATE TABLE Sales . Somedates (
	        isitdate varchar (9)
	);
	
	INSERT INTO Sales . Somedates (isitdate) VALUES
	        ('20230101'),
	        ('20230102'),
	        ('20230103X'),
	        ('20230104'),
	        ('20230105'),
	        ('20230106'),
	        ('20230107Y'),
	        ('20230108');
	``

2	[Question- 5] Write a T-SQL query to get a column named *isitdate* in the *Sales.Somedates table* . Then create a new column named *converteddate of the date* data type based on *the isitdate* column . If the data in the *isitdate column* cannot be converted to the *date data type* , *return* NULL.
3	Execute step 2 above, and *screenshot* the result.

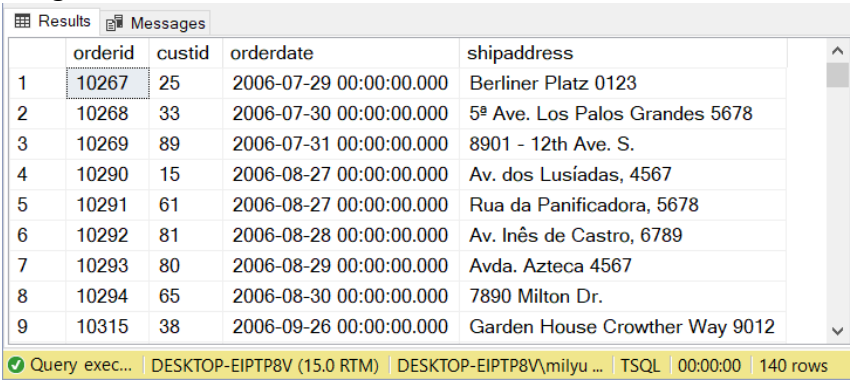|	
4	[Question- 6] What is the difference between the `SYSDATETIME` and `CURRENT_TIMESTAMP functions` ? Show the difference in the results of the two functions.
5	[Question- 7] What is the general format of the `DATE type` ?
6	**Conclusion** : After testing this section, students will be able to know how to display the date and time with T-SQL.

Practical – Part 5: Writing Queries Using *Date* and *Time Functions*

Step	Information
1	**Scenario** : The Sales Department wants sales reports in different time periods. The Sales staff wants to analyze sales data based on customers, products, and orders made at the end of the month. To be able to create the report, you as the DB Admin must write a SELECT query using various *date* and *time functions* .
2	[Question- 8] Write a SELECT query to get unique data in the *custid, shipname, shipdate columns* in the *Sales.Orders table* . Filter the results to only display orders in March 2008.
3	Execute step 2 above, and *screenshot* the result. Compare it with the result in the following image:
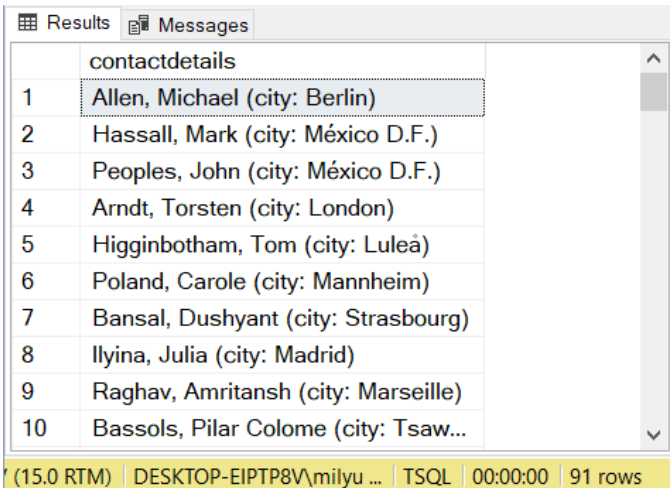
Lab – Part 6 : Writing Queries SELECT to calculate the first and last day in 1 month

Step	Information
1	[Question-9] Write a SELECT query displaying the following 3 columns: a. Date and time when you worked on this jobsheet b. **The earliest** date of the month when you worked on this jobsheet c. **last** date of the month when you worked on this jobsheet
2	[Question-10] Execute step 1 above and screenshot the results. What can you conclude from this experiment?

Practical – Part 7: Writing a SELECT query to generate order data for the last 5 days in 1 month
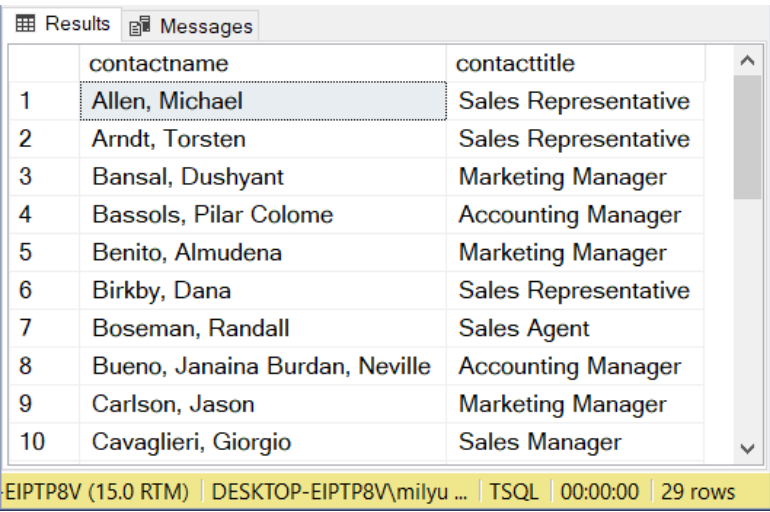
Step	Information
1	[Question- 11] Write a SELECT query to display the *orderid* , *custid* , *orderdate* , and *shipaddress columns* from the *Sales.Orders table* . Filter the results to only display orders from the last 5 days in a month.
2	Execute step 1 above and screenshot the result. Compare it with the result in the following image:
3	**Conclusion** : After this trial, students will be able to know how to use various date and time functions in T-SQL.

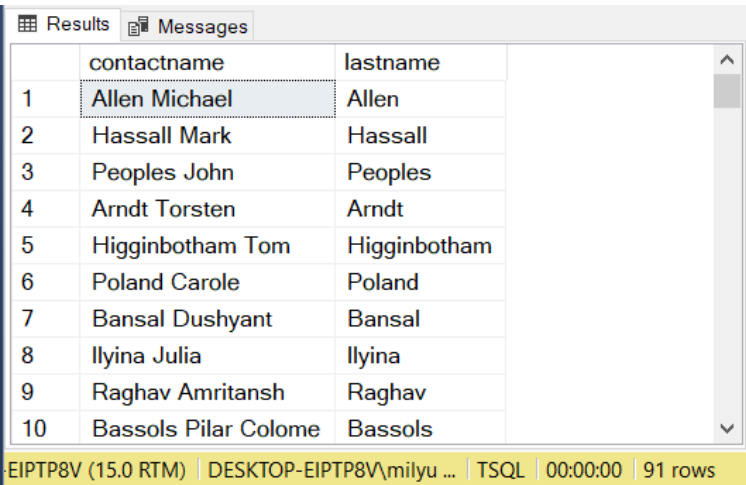## Practical – Part 8 : Writing a SELECT query to combine 2 columns

Step	Information
1	**Scenario** : Marketing staff needs a more concise report when showing it to customers, by combining 2 data columns into 1.
2	[Question-1 2] Write a SELECT query against the *Sales.Customers table* and get *the contactname* and *city columns* . Combine the two columns so that it looks like this: Allen, Michael (city:Berlin,)
3	Execute the query in step 1 and screenshot the result. Compare it with the result shown in the following image:

Practical – Part 9 : Writing a SELECT query to display all customers based on the first character in the contact name.

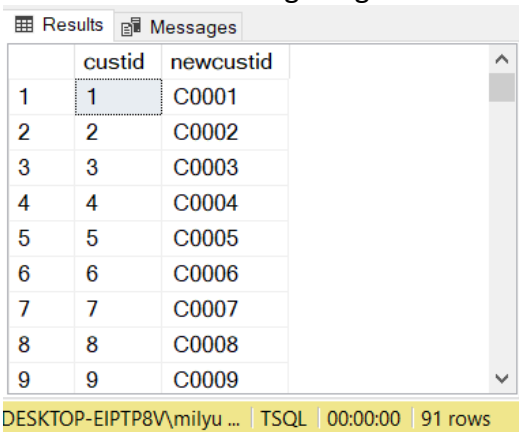| Step	Information
1	[Question- 13] Write a SELECT query to display *the contactname* and *contacttitle columns* from the *Sales.Customers table* . Filter to display only contact names whose first character is 'A' through 'G'.
2	Execute the query in step 1 above and screenshot the result. Compare it with the result shown in the following image:

3	**Conclusion** : After this trial, students should be able to understand and know how to combine character data.
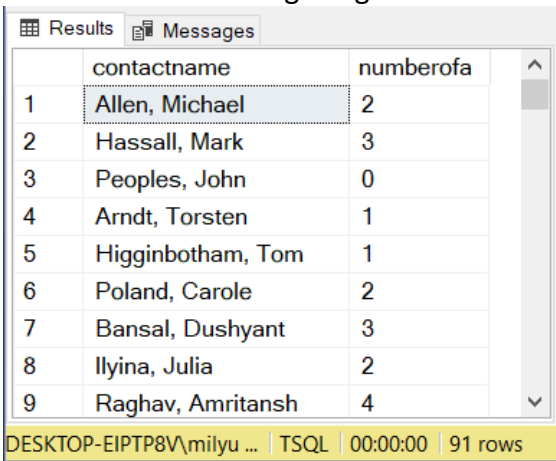
Practical – Part 10 : Writing a SELECT query using the SUBSTRING function

Step	Information
1	[Question- 14] Write a SELECT query to display the *contactname column* from the *Sales.Customers table* and *replace* all commas with empty strings. Then, based on this column, add a column named *lastname* containing all the characters before the comma using the SUBSTRING function .
2	Execute the query in step 1 above and screenshot the result. Compare it with the result shown in the following image:

Practical – Part 11 : Writing a SELECT query to change the customer code

Step	Information
1	[Question-1 5] Write a SELECT query to display the *custid column* from the *Sales.Customers table* . Based on this column, add a column containing the 6-digit customer code, formatted with the letter C and a leading 0. For example, *a custid* with code 1 is displayed as `C00001` , etc.
2	Execute the query in step 1 above and *screenshot* the result. Compare it with the result shown in the following image: Results | Messages |	custid	newcustid
---	---	---
1	1	C0001
2	2	C0002
3	3	C0003
4	4	C0004
5	5	C0005
6	6	C0006
7	7	C0007
8	8	C0008
9	9	C0009	 DESKTOP-EIPTP8V\milyu ... | TSQL | 00:00:00 | 91 rows

Practical – Part 14 : Writing a SELECT query to display the number of occurrences of a character

Step	Information
1	[Question-1 6] Write a SELECT query to display *the contactname column* from the *Sales.Customers table* . Based on this column, add a column that displays the number of 'a' characters in the contact name. (Hint: Use the `REPLACE` and `LEN string functions`). Sort the results by largest.
2	Execute the query in step 1 above and *screenshot* the result. Compare it with the result shown in the following image: Results | Messages |	contactname	numberofa
---	---	---
1	Allen, Michael	2
2	Hassall, Mark	3
3	Peoples, John	0
4	Arndt, Torsten	1
5	Higginbotham, Tom	1
6	Poland, Carole	2
7	Bansal, Dushyant	3
8	Ilyina, Julia	2
9	Raghav, Amritansh	4	 DESKTOP-EIPTP8V\milyu ... | TSQL | 00:00:00 | 91 rows

| 3 | Conclusion: After the trial is conducted, students can find out how to use various character functions. |

-- Have a great time doing it -