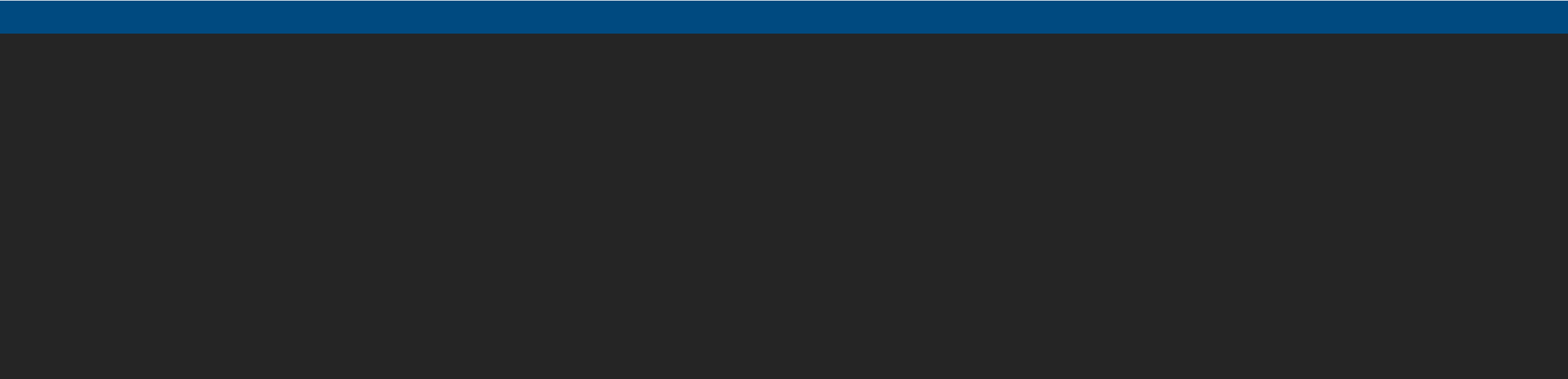
***JTI POLINEMA***



**Jurusan Teknologi Informasi**

**POLITEKNIK NEGERI MALANG**



**WEEK**

**3**

**SQL SERVER**

–

**DATA**

**TYPE**

**, FUN**

**CTIONS**

**, & TABLE EXPRESSION**



**JOBSHEET**

**PRAKTIKUM BASIS DATA LANJUT**

Information Technology Department, Malang State



Polytechnic

**Jobsheet- 3 : Data Types and Functions in Data Types**

**Advanced Database Course**

**Supervisor:** Advanced Database Teaching Team

SAFRIZAL RAHMAN\_19\_SIB\_2G

# 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

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| **Step** | **Information** |
| **1** | [Question- 1 ] Write a SELECT query to display the columns containing:   1. Current date and time, name the alias *currentdatetime* 2. Just the current date, name the alias *currentdate* 3. Just the current time (HH:mm:ss), name it alias *current time* 4. This year only, name it alias *currentyear* 5. Just this month number (number), give it an alias name *currentmonth* 6. Only the day number in this month , give it an alias name *currentday* 7. Just the number of the nth week *of* the year, give it the alias *currentweeknumber*   SELECT  GETDATE() AS currentdatetime,  CONVERT(date, GETDATE()) AS currentdate,  CONVERT(time, GETDATE()) AS currenttime,  YEAR(GETDATE()) AS currentyear,  MONTH(GETDATE()) AS currentmonth,  DAY(GETDATE()) AS currentday,  DATEPART(week, GETDATE()) AS currentweeknumber,  DATENAME(month, GETDATE()) AS currentmonthname; |
|  | 1. Current month name, give alias *currentmonthname* Execute the query, and *screenshot* the results.     SELECT  GETDATE() AS currentdatetime,  CONVERT(date, GETDATE()) AS currentdate,  CONVERT(time, GETDATE()) AS currenttime,  YEAR(GETDATE()) AS currentyear,  MONTH(GETDATE()) AS currentmonth,  DAY(GETDATE()) AS currentday,  DATEPART(week, GETDATE()) AS currentweeknumber,  DATENAME(month, GETDATE()) AS currentmonthname; |
| **3** | Compare the results of executing the query in step 2 above with the results in the following image:  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!  In SQL, an alias defined in the SELECT clause for a column cannot directly be reused within the same SELECT clause to define or replace another column. However, aliases can be used in subsequent parts of the query, such as in the WHERE, GROUP BY, or HAVING clauses. This means that the alias currentdatetime created for one of the columns in your initial query cannot directly replace currentdate in the same SELECT list. |

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

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| **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.   SELECT  CAST(GETDATE() AS DATE) AS todaysdate,  CONVERT (VARCHAR, GETDATE(), 107) AS todaysdate,  CONVERT (VARCHAR, GETDATE(), 106) AS todaysdate ;      Example query results: |

# Practical – Part 3: Writing SELECT queries that use several *date* and *time functions*

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| **Step** | **Information** |
| **1** | [ Question- 4 ] Write a SELECT query that returns several columns containing:   1. Date and time 5 months from now. Name the alias *fivemonths* . 2. The number of days between the current date and the first column ( *fivemonths* in point a above). Name the alias *diffdays* . 3. The number of weeks between August 17, 1945 and August 17, 2022. Use the alias *diffweeks* . 4. The first day of the month based on the current date and time. Use the alias *firstday* .   SELECT  DATEADD(month, 5, GETDATE()) AS fivemonths,  DATEDIFF(day, GETDATE(), DATEADD(month, 5, GETDATE())) AS diffdays,  DATEDIFF(week, '1945-08-17', '2022-08-17') AS diffweeks,  DATEADD(month, DATEDIFF(month, 0, GETDATE()), 0) AS firstday; |
| **2** | Execute the query above , and *screenshot* the results. Compare the results obtained with the following results: |

# Lab – Part 4: Observation on Sales.Somedates table

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| **Step** | **Information** |
| **1** | Write a T-SQL query to create a table named *Sales.Somedates* with the following contents, then execute it.    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.  The SYSDATETIME function returns the current date and time with more precision (including fractional seconds), while CURRENT\_TIMESTAMP returns the current date and time with less precision. Here is a query to show the difference: |
| **5** | [ Question- 7 ] What is the general format of the DATE type ?  The general format of the DATE type in SQL Server is YYYY-MM-DD. This format is used to store date values without time components. |
| **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*

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| **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.  SELECT DISTINCT  custid,  shipname,  shippeddate  FROM  Sales.Orders  WHERE  shippeddate >= '2008-03-01' AND shippeddate < '2008-04-01'; |
| **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

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| **Step** | **Information** |
| **1** | [ Question-9 ] Write a SELECT query displaying the following 3 columns:   1. Date and time when you worked on this jobsheet 2. **The earliest** date of the month when you worked on this jobsheet 3. **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

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| **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

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| **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.**

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| **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

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| **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

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| **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: |

**q**

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

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| **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: |

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

***-- Have a great time doing it -***

**Team Teaching Advanced Database**