

How the MySQL Database is Organized

Hourly Data

The hourly data recorded on the B16 Form is in its own database called “bhohourlydata”.

The tables within this database are the different weather variables on the B16 Form. The variables on the B16 that are currently in the database are Lowest Visibility, Hourly Precipitation, Relative Humidity, Sky Cover (eighths), Hourly Sunshine minutes, Hourly Temperature, and Hourly Wind Speed and Direction.

For each parameter the basic format is:

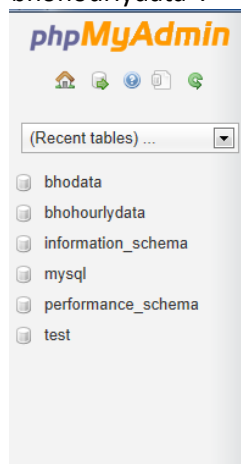
Table name: **VARIABLENAME**

Name	Type	Null	Default
date	date	No	None
time	int(3)	No	None
VARIABLENAME	Depending on type of information this will change	Depending on type of information this will change	Depending on type of information this will change

For each table, there needs to be an index to help with the searching capabilities. For each table, there is a binary tree using two different parts of the table. The two parts that are being used are the date and the time.

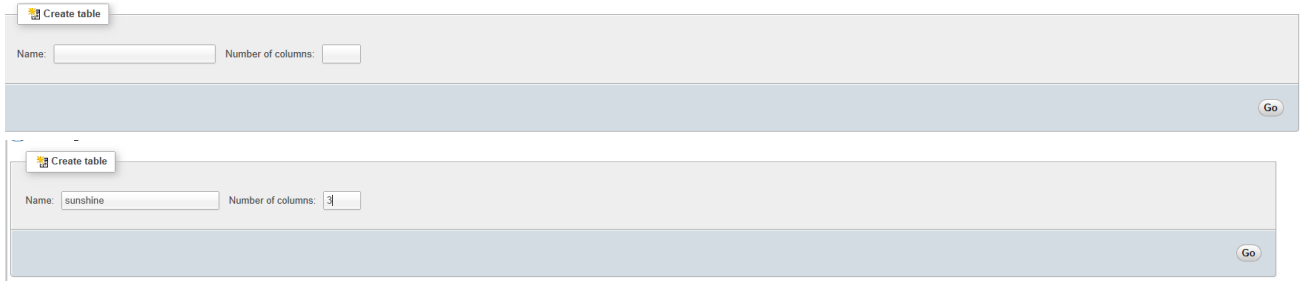
How to Create Hourly Table and Binary Key using PHPMYAdmin

1. On the computer with WAMP installed on it go to: <http://localhost/phpmyadmin/>
2. Then navigate to the database called “bhohourlydata”.



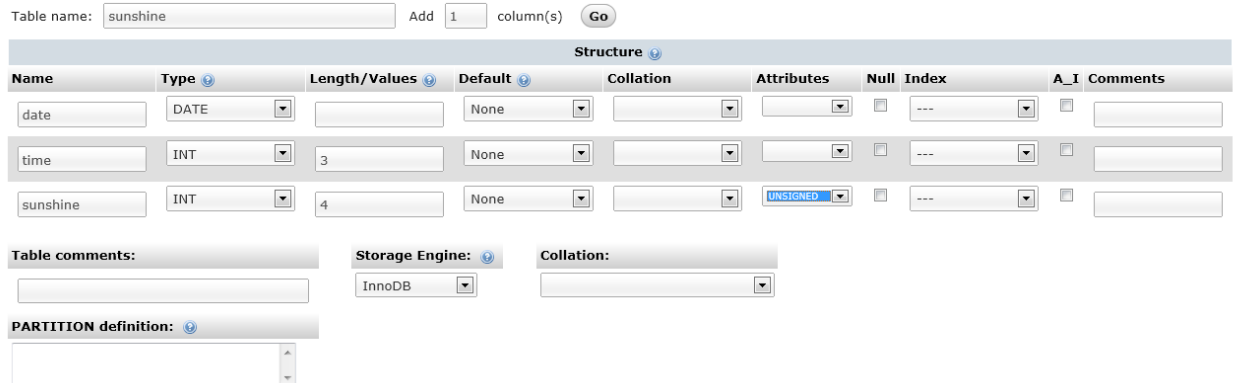
3. To create the new table go to the bottom of the page and type in the table name, and depending on the weather variable, enter in the number of columns then click go. The normal choice is 3 columns.

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Two screenshots of the 'Create table' dialog in phpMyAdmin. The first screenshot shows the 'Name' and 'Number of columns' fields empty. The second screenshot shows the 'Name' field filled with 'sunshine' and the 'Number of columns' field filled with '3'.

4. Add in the values for the different attributes such as date, time, and then the parameter name. Then click go to add the table into the database.

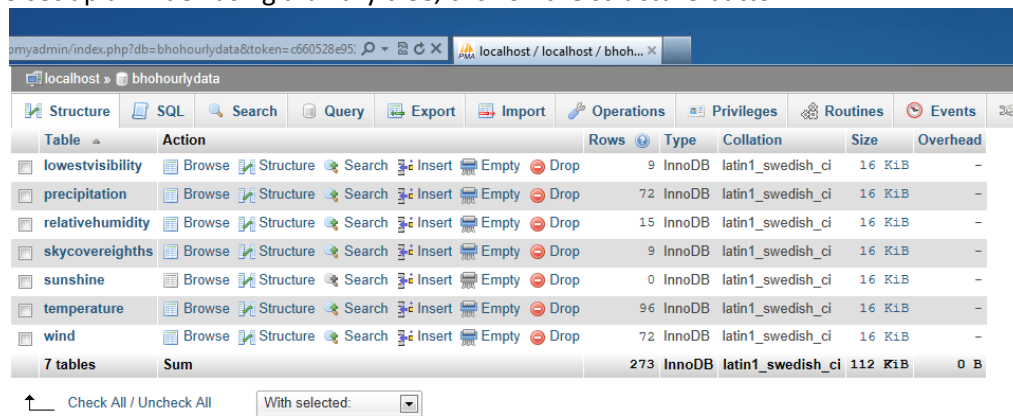


Screenshot of the 'Structure' tab in phpMyAdmin for the 'sunshine' table. The table has 1 column(s). The columns are:

Name	Type	Length/Values	Default	Collation	Attributes	Null	Index	A_I	Comments
date	DATE		None				---		
time	INT	3	None				---		
sunshine	INT	4	None		UNSIGNED		---		

Table comments:
Storage Engine: InnoDB
Collation:
PARTITION definition:

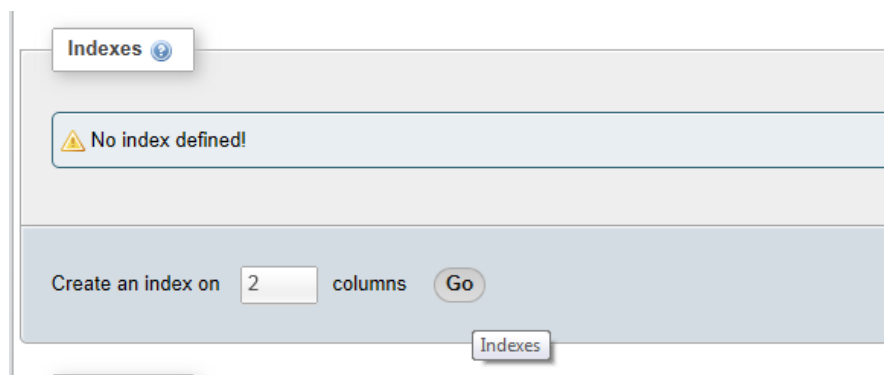
5. To set up an index using a binary tree, click on the structure button.



Screenshot of the phpMyAdmin interface showing the 'Structure' tab for the 'bhohourlydata' database. The table list is as follows:

Table	Action	Rows	Type	Collation	Size	Overhead
lowestvisibility	Structure Search Insert Empty Drop	9	InnoDB	latin1_swedish_ci	16 K1B	-
precipitation	Structure Search Insert Empty Drop	72	InnoDB	latin1_swedish_ci	16 K1B	-
relativehumidity	Structure Search Insert Empty Drop	15	InnoDB	latin1_swedish_ci	16 K1B	-
skycoveareighths	Structure Search Insert Empty Drop	9	InnoDB	latin1_swedish_ci	16 K1B	-
sunshine	Structure Search Insert Empty Drop	0	InnoDB	latin1_swedish_ci	16 K1B	-
temperature	Structure Search Insert Empty Drop	96	InnoDB	latin1_swedish_ci	16 K1B	-
wind	Structure Search Insert Empty Drop	72	InnoDB	latin1_swedish_ci	16 K1B	-
7 tables	Sum	273	InnoDB	latin1_swedish_ci	112 K1B	0 B

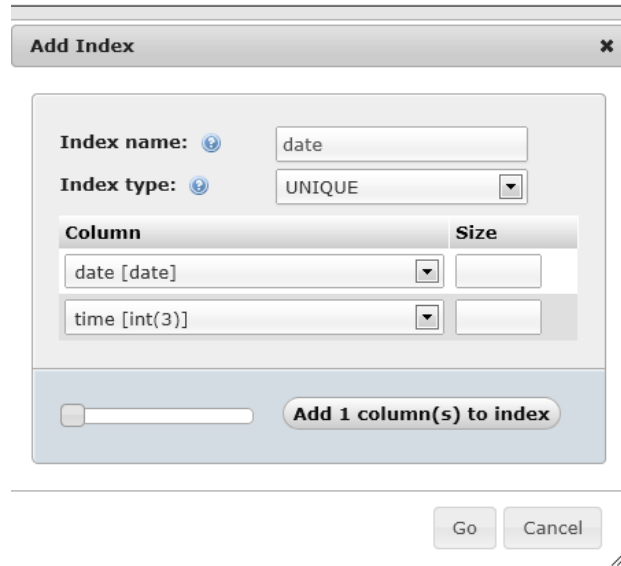
6. Click on the indexes list to add a new index for a table. Create the new index for 2 columns.



Screenshot of the 'Indexes' dialog in phpMyAdmin. It shows a warning 'No index defined!' and a field to 'Create an index on 2 columns'.

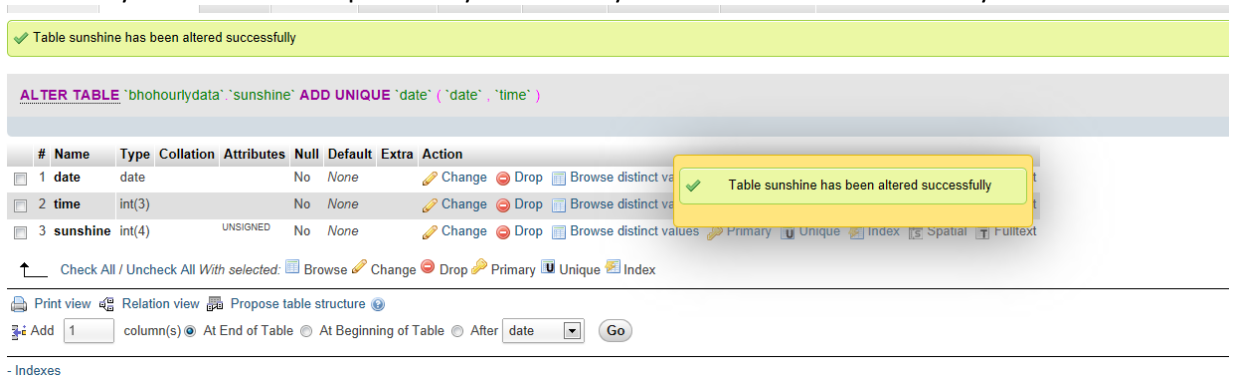
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- The name of the index will be called “date”. The index type will be kept as UNIQUE. The two columns that need to be chosen are date and time. Then click Go.



The 'Add Index' dialog box is shown. It has a title bar with 'Add Index' and a close button. Inside, there are two labels: 'Index name:' with a text input field containing 'date', and 'Index type:' with a dropdown menu set to 'UNIQUE'. Below these is a table with two columns: 'Column' and 'Size'. The 'Column' column has two entries: 'date [date]' and 'time [int(3)]'. The 'Size' column has two empty input fields. At the bottom of the table is a button labeled 'Add 1 column(s) to index'. Below the table is a 'Go' button and a 'Cancel' button.

- The hourly table is now set up correctly and is ready to receive data from the entry forms.



The MySQL Workbench interface is shown. At the top, a green message bar says 'Table sunshine has been altered successfully'. Below this, the SQL editor shows the command: `ALTER TABLE `bhohourlydata`.`sunshine` ADD UNIQUE `date` (`date` , `time`)`. Below the SQL editor is a table structure view. It has columns: #, Name, Type, Collation, Attributes, Null, Default, Extra, and Action. The table has three rows: 1. #1, Name: date, Type: date, Null: No, Default: None, Extra: Change, Drop, Browse distinct values. 2. #2, Name: time, Type: int(3), Null: No, Default: None, Extra: Change, Drop, Browse distinct values. 3. #3, Name: sunshine, Type: int(4), Attributes: UNSIGNED, Null: No, Default: None, Extra: Change, Drop, Browse distinct values, Primary, Unique, Index, Spatial, Fulltext. Below the table structure view is a 'Check All / Uncheck All With selected:' button, followed by 'Browse', 'Change', 'Drop', 'Primary', 'Unique', and 'Index' buttons. At the bottom, there is a 'Print view' button, a 'Relation view' button, and a 'Propose table structure' button. Below these is a 'Add' button, a text input field containing '1', a dropdown menu set to 'column(s)', a radio button selected for 'At End of Table', a radio button for 'At Beginning of Table', a radio button for 'After', a dropdown menu set to 'date', and a 'Go' button.

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	date	date			No	None		Change Drop Browse distinct values
2	time	int(3)			No	None		Change Drop Browse distinct values
3	sunshine	int(4)		UNSIGNED	No	None		Change Drop Browse distinct values Primary Unique Index Spatial Fulltext

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Daily Data

The daily data is stored into its own database called “bhodailydata”. The tables in this database are the different daily averages for each weather variable recorded.

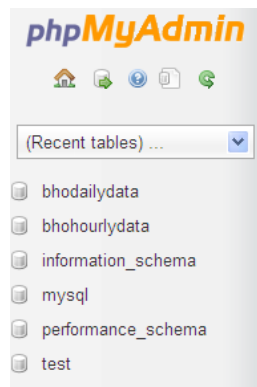
The basic format for these tables is:

Table name: **VARIABLENAME**

Name	Type	Null	Default
date	date	No	None
VARIABLENAME	Depending on type of information this will change	Depending on type of information this will change	Depending on type of information this will change

For each table there needs to be an index to help with the querying. For each table the index will be the date, and it will be a primary key.

1. On the computer with WAMP installed on it go to: <http://localhost/phpmyadmin/>
2. Then navigate to the database called “bhodailydata”.



3. To create the new table go to the bottom of the page and type in the table name, and depending on the weather variable, enter in the number of columns then click go. The normal choice is 2 columns.

Two screenshots of the 'Create table' form in phpMyAdmin. The first screenshot shows the form with empty input fields for 'Name' and 'Number of columns', and a 'Go' button at the bottom right. The second screenshot shows the same form with 'Name' filled with the text 'temperature' and 'Number of columns' filled with the number '2', with the 'Go' button still at the bottom right.

4. Add in the values for the different attributes such as date and the parameter name. Then click go to add the table into the database.

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Table name: Add column(s)

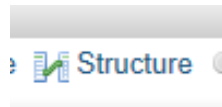
Name	Type	Length/Values	Default	Collation	Attributes	Null	Index	A_I	Comments
date	DATE		None			<input type="checkbox"/>	---	<input type="checkbox"/>	
temperature	FLOAT	5,2	None		UNSIGNED	<input type="checkbox"/>	---	<input type="checkbox"/>	

Table comments:

Storage Engine: Collation:

PARTITION definition:

- To set up an index using a primary key, click on the structure button.



- Click on the indexes list to add a new index for a table. Create the new index for 1 column.

Indexes

No index defined!

Create an index on columns

- The index type will be PRIMARY. The column that needs to be used is date. Then click Go.

Add Index

Index name:

Index type:

Column	Size
date [date]	

- The daily table is now set up correctly and is ready to receive data from the entry forms.

✓ Table temperature has been altered successfully

ALTER TABLE `bhodata`.`temperature` ADD PRIMARY KEY (`date`)

[Edit] [Create PHP Cs]

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	date	date		No	None		Change Drop Browse distinct values Primary Unique Index Spatial Fulltext	
2	temperature	float(5,2)		No	None		Change Drop Browse distinct values Primary Unique Index Spatial Fulltext	

Check All / Uncheck All With selected: ☐ Browse

Print view Relation view Propose table structure

Add column(s) At End of Table At Beginning of Table After