

Giga Creations Tools 'GCTools'

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README File

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<http://www.gigacreations.net/>

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1 About GCTools

1.1 Purpose

GCTools was designed to help web developers create dynamic, feature-rich, applications quickly. It was not intended to be a Content Management System (CMS), a web forum, a photo gallery, a login system, or anything in particular. Instead, GCTools aimed to enable developers to create anything they wanted.

This allowed GCTools to be extremely flexible, and streamlined. The developer only has to include those classes that he actually needs, not an entire library of functions that may, or may not, be needed. This is one of the reasons GCTools has been developed so extensively. The developers have put a lot of time into thinking about what it is that a developer may need, and how can we do it with the most simple implementation available.

1.2 History

The very first code of GCTools was written in early September, 2010. The initial idea was not to create a framework, but to develop a management system for an object-oriented design class at the University of Louisville. The initial code was fairly small, and only included a few classes.

At the time, PHP had not really been developed with objects in mind. Most code was small scripts that was reminiscent of old C code. Although objects existed in PHP, they had not been utilized to a large extent. This was the aim of J. 'Giga' Murphy during his class... to show his class that PHP could be used as a viable object-oriented language for web development. Following the class, development came to a halt as other classes took priority. The code was committed to a private Git repository, and was largely forgotten about until late April, 2011. At this time development ramped up.

Within a week more than 4 new classes were created, and much of the older code was optimized. GCTools also gained another developer, M. 'Beanyhead' Parker. Not only was a new developer added, but the project was released under the GPL v3 license, and pushed to a public GitHub repository for others to utilize. This also enabled people in the community to add to the project, and help to improve it.

1.3 Future of GCTools

The future of GCTools at this moment is unknown. Open-source developers are still needed to help contribute to the project, and the project is still lacking some major features.

You may check on the status of GCTools at the project's website, <http://www.gigacreations.net/>

1.4 GCTools Versioning Scheme

The version scheme for individual files uses 3 groups (Version: X.X.X). They are explained as follows:

1. First Group
 - (a) This is the overall file version
 - (b) An integer greater than zero (0) indicates that everything in the file has been stabilized at one point. Please refer to the following groups for more information about this.
2. Second Group
 - (a) This indicates how many classes in the current file are stable.
 - (b) An integer of zero (0) means that no class is fully stable yet.
 - (c) An integer greater than zero (0) means that this many classes in the file are stable.
 - (d) This does not provide what classes are currently stable. Please refer to the change log for that information.
3. Third Group
 - (a) This is a revision number.
 - (b) It is not always updated (everyone forgets things sometimes), and thus shouldn't be relied upon.
 - (c) Basically, the higher the revision number, the greater likelihood that a particular class is almost stable.

1.5 Contributing to GCTools

Contributions to the code of GCTools are always welcome. This is why we have released the code under the GPL v3 license. If you haven't already, feel free to fork our project on the GitHub site.

Additionally, if you'd like to become a long-term contributor to GCTools, please send us an e-mail at webmaster@gigacreations.net with some more information about you so we can add you as a contributor to the GitHub repository.

2 Installing GCTools

2.1 Getting the files

There are multiple ways to obtain the GCTools files. Each way has its own little path, and each has advantages/disadvantages. If you want a stable release, please make sure you read this section carefully. If you want the most bleeding-edge release that probably hasn't been tested, then you should follow the Git instructions.

2.1.1 From our Website

From time-to-time we will release a version of GCTools that we feel is stable. It will be found at our project page on <http://www.gigacreations.net/gctools/>. This page will provide you with a link to download any of our stable releases. If you have problems getting the release, please use the support, or contact, pages to report the issue.

2.1.2 From our GitHub Repository

The Git repository is the central location for all GCTools files. It is constantly being updated with new designs, bugfixes, refined features, etc. Our Git repository is on GitHub at <http://github.com/giga1699/GCTools>. From there you can download a zip archive of the current files, or get the address to pull the data using Git on your own system.

If you wish for GCTools to be up-to-date, you should use Git on your system. It will allow you to pull the updated code with a single command. You must keep in mind that the code you pull from our Git repository may not be tested, and could break parts of GCTools that are already in place.

2.2 Enabling GCTools on your Web Server

There are numerous ways to utilize GCTools within your existing, or new, code. Our recommendation is to put the GCTools files in another directory on your web server that is not accessible from the internet. Then, go into your php.ini file, and add the path to GCTools into the default include path for PHP. When you do that, be sure to make the path to GCTools, and the files, readable by your web server user. They SHOULD NOT be writable by that user.

3 GCTools Files

3.1 autoload.inc.php

3.1.1 Class Variables

There are no class variables

3.1.2 Class Functions

The only function is the '`__autoload`' function which is a "magic" PHP function that tries to include the right file based on what class you are trying to use. It has not been tested in GCTools, but was developed to try to assist new users in loading the proper files before using a class.

3.2 cache.inc.php

3.2.1 Class Variables

1. cacheDir: This defines the directory to store cached files. It must exist, and be writable.

3.2.2 Class Functions

1. Cache(\$cacheDir)
 - (a) \$cacheDir defines the directory to store cached files
 - (b) Pre/Post Conditions:
 - i. Precondition: The \$cacheDir should be defined.
 - ii. Postcondition: The cache class is initialized.
 - (c) This function initializes the Cache class. It ensures that the cache directory exists, and is writable. If the directory does not exist, or is not writable, an exception is thrown.
2. getCacheDir()
 - (a) Pre/Post Conditions:
 - i. Precondition: \$cacheDir should be set
 - ii. Postcondition: Returns the \$cacheDir, or FALSE otherwise
 - (b) This function provides the user with the location of the cache directory.
3. setCacheDir(\$dir)
 - (a) \$dir defines the new location of the directory to store cached files.
 - (b) Pre/Post Conditions:
 - i. Precondition: \$dir should be set, and a writable directory
 - ii. Postcondition: Return TRUE on success, and FALSE otherwise
 - (c) This function allows the user to change the location of the cache directory after the class has already been initialized.
4. createCache(\$file)
 - (a) \$file defines the path to the file to be cached
 - (b) Pre/Post Conditions:
 - i. Precondition: \$file should be a valid file
 - ii. Postcondition: Create a cache of the file and return TRUE on success, or FALSE on failure
 - (c) This function allows the user to create a cache of a file.

3.2.3 Class Example

```
<?php
require_once('cache.inc.php');

try {
    $cache = new Cache('/path/to/my/cache/directory')
}
catch (Exception $e) {
    //There was some kind of error, so handle it
}

if (!$cache->createCache('/path/to/my/file')) {
    //There was an error creating the cache
}

//We're done. The cached file is /path/to/my/cache/directory/file.cache.html
?>
```

3.3 computer.inc.php

3.3.1 Class Variables

1. id: Defines a unique ID for the computer system.
2. name: Defines the computer's name (generally the DNS name).
3. mac: Defines the computer's MAC address.
4. ip: Defines the IPv4 address of the computer.
5. ip6: Defines the IPv6 address of the computer (if needed).
6. osType: Defines the type of operating system.
7. osName: Defines the operating system's name.
8. serial: Defines the serial number for the computer.
9. location: Defines a location for the computer.
10. make: Defines the make (manufacturer) of the computer.
11. model: Defines the model of the computer.
12. cpu: Defines CPU information.
13. ram: Defines RAM information.
14. hdd: Defines hard drive information.
15. licensing: Defines licensing information.
16. notes: Defines additional notes about the computer.

3.3.2 Class Functions

1. Computer()
 - (a) Pre/Post-conditions:
 - i. Precondition: None
 - ii. Postcondition: Sets up the Computer class variables for use
 - (b) This function is the class constructor. It sets up all the variables for use.
2. getID()
 - (a) Pre/Post-conditions:
 - i. Precondition: id should be defined
 - ii. Postcondition: Return the ID of the computer, or FALSE otherwise
 - (b) This function allows the user to get the unique ID of the computer.
3. setID(\$newID)
 - (a) \$newID: Defines a new unique ID for the computer.
 - (b) Pre/Post-conditions:
 - i. Precondition: \$newID should be defined
 - ii. Postcondition: Set the ID

- (c) This function allows the user to set the unique ID for the computer.
- 4. getName()
 - (a) Pre/Post-conditions:
 - i. Precondition: name should be defined
 - ii. Postcondition: Return the name of the computer, or FALSE otherwise.
 - (b) This function allows the user to get the name of the computer.
- 5. setName(\$newName)
 - (a) \$newName: Defines the new name for the computer.
 - (b) Pre/Post-conditions:
 - i. Precondition: \$newName should be defined
 - ii. Postcondition: Set the new name of the computer.
 - (c) This function allows the user to set the name of the computer.
- 6. getMac()
 - (a) Pre/Post-conditions:
 - i. Precondition: mac should be defined
 - ii. Postcondition: Return the MAC address of the computer, or FALSE otherwise
 - (b) This function allows the user to get the MAC address of the computer.
- 7. setMac(\$macAddress)
 - (a) \$macAddress: Defines the MAC address of the computer.
 - (b) Pre/Post-conditions:
 - i. Precondition: \$macAddress should be defined, and be a valid MAC address
 - ii. Postcondition: Set the MAC address of the computer.
 - (c) This function allows the user to set the MAC address of a computer.
- 8. getIP()
 - (a) Pre/Post-conditions:
 - i. Precondition: ip should be defined
 - ii. Postcondition: Return the IP address, or FALSE otherwise
 - (b) This function allows the user to get the IP address of a computer.
- 9. setIP(\$ipAddr)
 - (a) \$ipAddr: Defines the IPv4 IP address of the computer.
 - (b) Pre/Post-conditions:
 - i. Precondition: \$ipAddr should be defined, and a valid IPv4 address
 - ii. Postcondition: Set the IPv4 address
 - (c) This function allows the user to set an IPv4 address for the computer.

3.3.3 Class Example

This class is still being constructed

3.4 database.inc.php

3.4.1 Class Variables

3.4.1.1 Database Class

1. dbType: defines the type of database that is being used.
2. dbLoc: defines the location of the database. This can be an IP address, a hostname, a file location, etc.
3. dbUser: defines the username used to connect to the database, if needed.
4. dbPass: defines the password used to connect to the database, if needed.
5. dbName: defines the name of the database to use.
6. lastError: defines the text of the last error that occurred, if any.

3.4.1.2 MySQL Class

1. myCon: defines the MySQL connection

3.4.1.3 MSSQL Class

3.4.1.4 PGSQL Class

3.4.1.5 SQLite Class

3.4.2 Class Functions

3.4.2.1 Database Class

1. (Protected) Database(\$loc, \$user, \$pass, \$name, \$type)
 - (a) \$loc defines the location of the database. This may be an IP address, a hostname or a location on the server.
 - (b) \$user defines the username used to login to the database.
 - (c) \$pass defines the password used in conjunction to the username to log into the server.
 - (d) \$name defines the default database to begin working with.
 - (e) \$type defines the type of database you will be working with.
 - (f) Pre/Post-conditions:
 - i. Precondition: The database location, username, password, name and type should be defined.
 - ii. Postcondition: The class will set-up the variables that will be used to connect to the database, and conduct queries.
 - (g) This sets up the class to perform database operations.
2. hasError()
 - (a) Pre/Post-conditions:

- i. Precondition: None
 - ii. Postcondition: Returns TRUE if an error has occurred, and FALSE otherwise
- (b) This function will enable the user to check if an error has occurred during a database operation.
- 3. getLastError()
 - (a) Pre/Post-conditions:
 - i. Precondition: An error should have occurred.
 - ii. Postcondition: Returns the error message the the database gave when the last error occurred.
 - (b) This function gets the last error message provided by the database.
- 4. (protected) resetError()
 - (a) Pre/Post-conditions:
 - i. Precondition: None.
 - ii. Postcondition: Any error is cleared from the class.
 - (b) This function is used internally by the class to clear any previous errors that occurred.

3.4.2.2 MySQL Class

1. 1. MySQL(\$loc, \$user, \$pass, \$name, \$errorCallback=NULL)
 - (a) \$loc defines the location of the MySQL server. This can be either an IP address, or a hostname.
 - (b) \$user defines the username used to log into the MySQL server.
 - (c) \$pass defines the password used in conjunction with the username to log into the database.
 - (d) \$name defines the default database to use to perform database functions.
 - (e) \$errorCallback defines the callback function to send the error an additional way, if one occurs.
 - (f) Pre/Post-conditions:
 - i. Precondition: The location of the SQL server, the username, the password and the database name is given.
 - ii. Postcondition: The MySQL server is connected to
 - (g) This function connects to a MySQL server to perform MySQL functions. It will attempt to load the MySQL libraries, if they are not already loaded. It will also initialize it's parent Database class so you can use all the functionality of the abstract Database class.
2. (Private) connect()
 - (a) Pre/Post-conditions:
 - i. Precondition: The MySQL class should be set up properly.
 - ii. Postcondition: The connection to the MySQL server is made, or errors or handled.
 - (b) This function is the one that actually makes the connection to the MySQL database.
3. (Protected) throwError([\$specialError])
 - (a) \$specialError defines a unique error that MySQL may not handle by itself, or an error that occurs before a MySQL connection is established
 - (b) Pre/Post-conditions:
 - i. Precondition: An error should have occurred
 - ii. Postcondition: The error is created in the Database class with the proper information.
 - (c) This function is called internally when any error has occurred during MySQL operations.

4. query(\$qString)
 - (a) \$qString defines the SQL Query string to be executed.
 - (b) Pre/Post-conditions:
 - i. Precondition: A query should be presented
 - ii. Postcondition: The class will attempt to execute the query, and handle any errors.
 - (c) **SECURITY NOTE:** The user is responsible for handling any sort of SQL injection type attacks. This function DOES NOT handle this by itself.
 - (d) This function takes a SQL query, and tries to execute it on a MySQL database. It will also handle any errors that occur during the execution of the query.
5. changeDB(\$dbName)
 - (a) \$dbName defines the new database to use for queries.
 - (b) Pre/Post-conditions:
 - i. Precondition: A database name is given
 - ii. Postcondition: The class attempts to change the database to use for MySQL operations. Returns TRUE on success, and FALSE on failure.
 - (c) This function changes the database that is used to execute queries.
6. escapeString(\$string)
 - (a) \$string defines a string to escape using MySQL
 - (b) Pre/Post-conditions:
 - i. Precondition: A string should be given
 - ii. Postcondition: The string is escaped using the current MySQL connection.
 - (c) This function escapes a string to be safe in a MySQL query.
7. connected()
 - (a) Pre/Post-conditions:
 - i. Precondition: None
 - ii. Postcondition: Returns TRUE if the MySQL connection is active, and FALSE otherwise
 - (b) This function informs the user if the MySQL connection is still active, or not.
8. reconnect()
 - (a) Pre/Post-conditions:
 - i. Precondition: None
 - ii. Postcondition: Will close any current connection, and re-establish a connection to the MySQL server
 - (b) This function is used to reconnect to a MySQL server. It is used internally if the MySQL connection is lost, and can be used by the user to reconnect using the given credentials at initialization time.
9. setErrorCallback(\$callback)
 - (a) \$callback Defines a callback function that is called when a MySQL error occurs
 - (b) Pre/Post-conditions:
 - i. Precondition: \$callback should be defined
 - ii. Postcondition: Set the errorCallback. Returns TRUE on success, and FALSE otherwise.
 - (c) This function allows the user to set/change the error callback after the MySQL class has been initialized.

3.4.2.3 MSSQL Class This class is still under development, and has not been tested.

3.4.2.4 PGSQL Class This class is still under development, and has not been tested.

3.4.2.5 SQLite Class This class is still under development, and has not been tested.

3.4.3 Class Example

```
<?php
require_once('database.inc.php');
require_once('error.inc.php');

$errorHandler = new Error('errorto@mydomain.com', 'errorfrom@somedomain.com');
$errorHandler->setErrorSubject('MySQL Error');

try {
    $mysql = new MySQL('hostname', 'username', 'password', \
        'database', array($errorHandler, 'sendError'));
}
catch (Exception $e) {
    //Something went wrong
    echo $mysql->getLastError();
}

//Let's do a query
$mysql->query("SELECT * FROM 'users' WHERE 'username'=''" . \
    $mysql->escapeString($username) . "'");

//Check if we're still connected
if (!$mysql->connected())
    $mysql->reconnect();
?>
```

3.5 error.inc.php

3.5.1 Class Variables

3.5.1.1 *abstract* GCErrors Class

1. errorFrom: Defines the e-mail address to display in the From: header when sending an error e-mail
2. errorTo: Defines who error e-mails should be sent to
3. errorSubject: Defines the subject for the e-mail when sending error e-mails

3.5.1.2 GCErrorsHandler Class

1. errorHandlerSet: Defines if the GCErrorsHandler has been set for errors.
2. exceptionHandlerSet: Defines if the GCErrorsHandler has been set for exceptions.

3.5.2 Class Functions

3.5.3 Class Example

```
<?php
require_once("error.inc.php");

try {
    $error = new GCErrHandler("to@errormessage.com", \
        "from@errorsfrom.com");
}
catch (Exception $e) {
    //Handle class init error here
}

$error->setErrorSubject("THERE WAS AN ERROR!");

$error->sendError("There was an error in a script. Please go take a look at it.");

?>
```

4 Credits

4.1 Code Contributors

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5 Change Log

This is still in the works

6 License

GCTools has been released under the GPL v3 license.

6.1 GPL v3

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