

Peppero Locks



build passing

tl;dr

This README.md details the Eloquent Model relationships and functionality included in *Peppero Locks*. It is best rendered in an IDE which provides links to classes and migrations (contents page links will work in VSCode but not PHPStorm).

All class files are completed and adequately commented, so this document is an optional read.

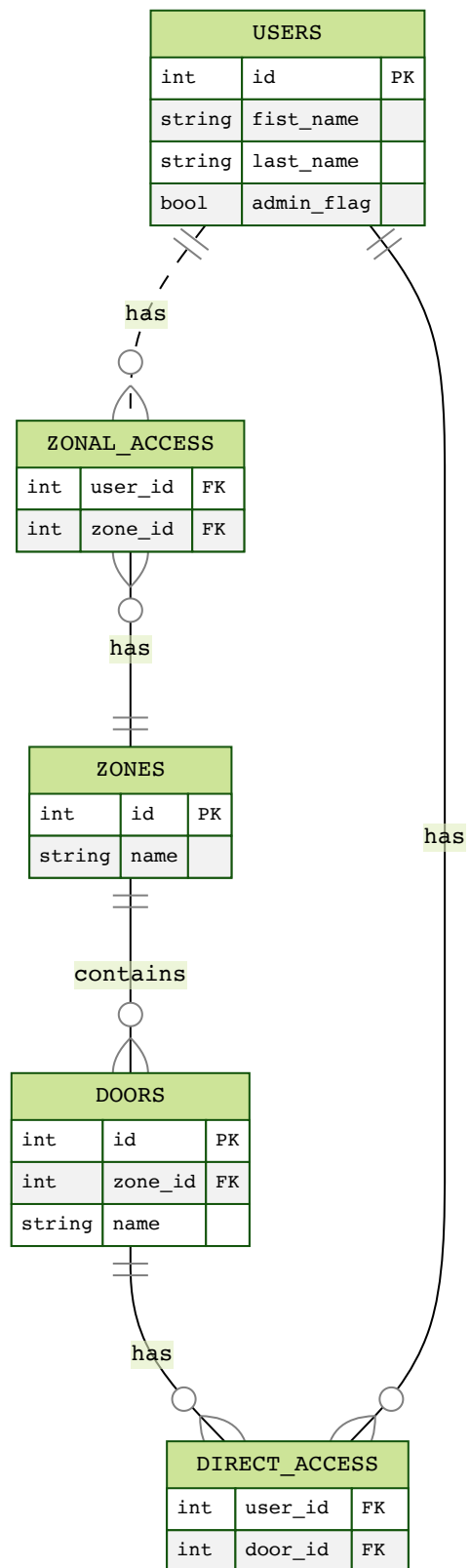
Screenshots from the `php artisan tinker` CLI can be seen in the final section of this readme.

The full project repository can also be found on [GitHub](#). Access to the private repository has been granted to [RGayaSU](#).

- [Entity Relationship Diagram](#)
- [Functionality](#)
 - [Explicit access](#)
 - [Zonal Access](#)
 - [Admin access](#)
 - `hasAccessToDoor()` [method](#)
 - [User expiry](#)
 - [Transitive relationships](#) (`HasManyThrough`)
- [References](#)
- [Tinker screenshots](#)

Entity Relationship Diagram

The ERD digram below shows the pivot tables used for the model along with primary and foreign key constraints.



Functionality

Explicit access

As the relationship between Users and Doors is a many-to-many relationship (many users could have direct access to the same door), an additional `direct_access` pivot table is used to store these associations (see [create_doors_users_table](#)).

Access to a Door can therefore be provided to a User by adding a record to the `direct_access` table. This can either be done via Eloquent's `attach` method, or using the `addAccessToDoor` method in the `User` class.

In the `UserSeeder`, this has been done for User with id 2:

```
/** Get an active non-admin user and check for explicit door access */
>>> $user = User::query()
    ->where([
        ['admin_flag', false],
        ['expiry_date', '>', '2022-12-01']
    ])
    ->first();

=> App\Models\User {#4620
    id: 2,
    first_name: "Ashlynn",
    last_name: "Wintheiser",
    admin_flag: 0,
    expiry_date: "2023-10-03",
    created_at: "2022-10-16 22:45:30",
    updated_at: "2022-10-16 22:45:30",
}

>>> $user->doors;

=> Illuminate\Database\Eloquent\Collection {#4660
    all: [
        App\Models\Door {#4696
            id: 166,
            zone_id: 9,
            name: "DR-166",
            created_at: "2022-10-16 22:45:30",
            updated_at: "2022-10-16 22:45:30",
            pivot: Illuminate\Database\Eloquent\Relations\Pivot {#4694
                user_id: 2,

                door_id: 166,
            },
        },
    ],
}

...

App\Models\Door {#4715
    id: 971,
    zone_id: 10,
    name: "DR-971",
    created_at: "2022-10-16 22:45:30",
    updated_at: "2022-10-16 22:45:30",
    pivot: Illuminate\Database\Eloquent\Relations\Pivot {#4615
        user_id: 2.
```

```

        zone_id: 9,
        door_id: 971,
      },
    ],
  },
}

/** Find doors for a user without explicit access */
>>> User::find(8)->doors;

=> Illuminate\Database\Eloquent\Collection {#4735
  all: [],
}

/** Add explicit access and verify */
>>> User::find(8)->addAccessToDoor(Door::first());

=> null

>>> User::find(8)->doors;

=> Illuminate\Database\Eloquent\Collection {#4730
  all: [
    App\Models\Door {#4729
      id: 166,
      zone_id: 9,
      name: "DR-166",
      created_at: "2022-10-16 22:45:30",
      updated_at: "2022-10-16 22:45:30",
      pivot: Illuminate\Database\Eloquent\Relations\Pivot {#4746
        user_id: 8,
        door_id: 166,
      },
    },
  ],
}

```

Zonal Access

Once again, the relationship between Users and Zones is a *many-to-many* relationship, so an additional *pivot* table, `zonal_access` stores these relations (see [create_users_zones_table](#)).

The database has been seeded with 10 zones using the [ZoneSeeder](#) class, 1 of which contains no doors (Zone 1) and one of which has no zonal access given to any users (Zone 10).

The [Zones](#) class shows the related Doors and Users via `doors` and `users` properties respectively:

```

/** Get a collection of doors assigned to Zone 2 */
>>> Zone::find(2)->doors;

=> Illuminate\Database\Eloquent\Collection {#4718
  all: [
    App\Models\Door {#4716
      id: 176,

```

```

        zone_id: 2,
        name: "DR-176",
        created_at: "2022-10-16 22:45:30",
        updated_at: "2022-10-16 22:45:30",
      },
      App\Models\Door {#4618
        id: 197,
        zone_id: 2,
        name: "DR-197",

        created_at: "2022-10-16 22:45:30",
        updated_at: "2022-10-16 22:45:30",
      },
    ],
  ],
}

```

```

/** Identify all users which have access to Zone 9 */
>>> Zone::find(9)->users;

```

```

=> Illuminate\Database\Eloquent\Collection {#4718
  all: [
    App\Models\User {#4736
      id: 1,
      first_name: "Sabrina",
      last_name: "Okuneva",
      admin_flag: 1,
      expiry_date: "2026-05-11",
      created_at: "2022-10-16 22:45:30",
      updated_at: "2022-10-16 22:45:30",
      access: Illuminate\Database\Eloquent\Relations\Pivot {#4749
        zone_id: 9,
        user_id: 1,
        created_at: "2022-10-16 22:45:30",
        updated_at: "2022-10-16 22:45:30",
      },
    },
  ],
}

...

App\Models\User {#4759
  id: 10,
  first_name: "Pamela",
  last_name: "Terry",
  admin_flag: 0,
  expiry_date: "2025-05-29",
  created_at: "2022-10-16 22:45:30",
  updated_at: "2022-10-16 22:45:30",
  access: Illuminate\Database\Eloquent\Relations\Pivot {#4719
    zone_id: 9,
    user_id: 10,

```

```

      created_at: "2022-10-16 22:45:30",
      updated_at: "2022-10-16 22:45:30",
    },
  ],
}

```

Note that in the `DoorSeeder` class, Zone 1 is skipped from attaching any doors.

Meanwhile, in the `UserSeeder` class, Zone 10 is skipped from attaching any users to.

Admin access

Admin rights can be determined via the `isAdmin` method in the `User` class.

Admin users have access to all doors implicitly, which can be shown by supplying any `Door` to the `hasAccessToDoor` method (see next section [below](#)).

This does not mean that for Admin users, *all* doors will be returned by the `doors` and `zoneDoors` properties (which will return just the explicitly accessible doors and zonally accessible doors respectively).

```

/** Check if user with id 5 is an admin */
>>> User::find(5)->isAdmin();

=> true

/** Update user with id 6 to be an admin */
>>> User::query()->where('id', 6)->update(['admin_flag' => true]);

=> 1

```

In the `UserSeeder` class, User 1 and User 5 are given admin rights.

hasAccessToDoor method

This method in the `User` class groups together the three possible kinds of door access to indicate whether a user has access to a supplied Door, through any of:

- Direct access (`direct_access` table) → verified via the `doors` property.
- Zone access (`zonal_access` table) → verified via the `zoneDoors` property.
- Admin rights (`users.admin_flag == true`) → checked using the `isAdmin` method.

NB: If re-seeding the database, the following Door ids will be invalid.

```

/** Verify that user 8 has access to to door from explicit access*/
>>> User::find(8)->hasAccessToDoor(Door::find(166));

=> true

/** Verify that admin user has access via non-zonal access */
>>> User::find(5)->hasAccessToDoor(Door::find(927));

=> true

/** Verify that user has access via zonal access */
>>> User::find(2)->hasAccessToDoor(Door::find(789));

=> true

/** Verify that an expired user doesn't have access to doors */
>>> User::find(3)->isActive();

=> false

>>> User::find(3)->zoneDoors;

=> Illuminate\Support\Collection {#4608
  all: [
    App\Models\Door {#4639
      id: 176,
      zone_id: 2,
      name: "DR-176",
      created_at: "2022-10-16 22:45:30",
      updated_at: "2022-10-16 22:45:30",
    },
    ...
  ]
}

>>> User::find(3)->hasAccessToDoor(Door::find(176));

=> false

```

User expiry

All users must include a value for `expiry_date`, after which point they will not be able to access any doors, regardless of their admin status.

The status of a user can be checked using the `isActive` method in the `User` class, and *manually* expired using the `expire` method.

```

/** Manually expire an active user */
>>> User::find(4)->isActive();

=> true

```

```
>>> User::find(4)->expire();

=> null

>>> User::find(4)->isActive();

=> false
```

Transitive relationships (HasManyThrough)

The Eloquent `HasManyThrough` class is not compatible with a *many-to-many* relationship as we have with Zones and Users.

Therefore, to show the transitive relationships, the `zoneDoors` property in the `User` class is a manual implementation which combines the lists of doors that can be accessed by a given user through *zone*-access.

```
/** Get the zones which user 7 can access */
>>> User::find(7)->zones;

=> Illuminate\Database\Eloquent\Collection {#5681
  all: [
    ...

    App\Models\Zone {#5698
      id: 2,
      name: "Zone 2",
      created_at: "2022-10-16 22:45:30",
      updated_at: "2022-10-16 22:45:30",
      access: Illuminate\Database\Eloquent\Relations\Pivot {#5695
        user_id: 6,
        zone_id: 2,
        created_at: "2022-10-16 22:45:30",
        updated_at: "2022-10-16 22:45:30",
      },
    },
    ...
  ],
}

/** Get the doors which zone 2 includes */
>>> Zone::find(2)->doors;

=> Illuminate\Database\Eloquent\Collection {#5678
  all: [
    ...

    App\Models\Door {#5686
```



```

        id: 197,
        zone_id: 2,
        name: "DR-197",
        created_at: "2022-10-16 22:45:30",
        updated_at: "2022-10-16 22:45:30",
    },
    ...
],
}

```

```

/** Verify that these doors are included in zoneDoors */
>>> User::find(7)->zoneDoors;

```

```

=> Illuminate\Support\Collection {#5714
  all: [
    ...
    App\Models\Door {#5741
      id: 197,
      zone_id: 2,
      name: "DR-197",
      created_at: "2022-10-16 22:45:30",
      updated_at: "2022-10-16 22:45:30",
    },
    ...
  ],
}

```

The `zoneDoors` property would be similar to a list of `door_ids` from the SQL query:

```

SELECT
    a.user_id
    ,d.zone_id
    ,d.id AS door_id
    ,d.name
FROM doors d
INNER JOIN zonal_access a
    ON d.zone_id = a.zone_id
WHERE a.user_id = 2
ORDER BY zone_id, door_id;

```

References

- PHPDocs and other conventions have been taken from [IxFD System PHP Conventions](#).
- Notes on Accessor properties from [Laravel.com](#).

Tinker screenshots

- Explicit access

```
>>> $user = User::query()->where([[ 'admin_flag', false], [ 'expiry_date', '>', '2022-12-01' ]])->first();
=> App\Models\User {#4620
  id: 2,
  first_name: "Ashlynn",
  last_name: "Wintheiser",
  admin_flag: 0,
  expiry_date: "2023-10-03",
  created_at: "2022-10-16 22:45:30",
  updated_at: "2022-10-16 22:45:30",
}

>>> $user->doors;
=> Illuminate\Database\Eloquent\Collection {#4660
  all: [
    App\Models\Door {#4696
      id: 166,
      zone_id: 9,
      name: "DR-166",
      created_at: "2022-10-16 22:45:30",
      updated_at: "2022-10-16 22:45:30",
      pivot: Illuminate\Database\Eloquent\Relations\Pivot {#4694
        user_id: 2,
        door_id: 166,
      },
    },
    App\Models\Door {#4697
      id: 188,
      zone_id: 6,
      name: "DR-188",
      created_at: "2022-10-16 22:45:30",
      updated_at: "2022-10-16 22:45:30",
      pivot: Illuminate\Database\Eloquent\Relations\Pivot {#4682
        user_id: 2,
        door_id: 188,
      },
    },
    App\Models\Door {#4698
      id: 197,
      zone_id: 2,
      name: "DR-197",
      created_at: "2022-10-16 22:45:30",
      updated_at: "2022-10-16 22:45:30",
      pivot: Illuminate\Database\Eloquent\Relations\Pivot {#4606
        user_id: 2,
        door_id: 197,
      },
    },
  ],
}
```

```
>>> User::find(8)->doors;
=> Illuminate\Database\Eloquent\Collection {#4735
  all: [],
}

>>> User::find(8)->addAccessToDoor(Door::first());
=> null

>>> User::find(8)->doors;
=> Illuminate\Database\Eloquent\Collection {#4730
  all: [
    App\Models\Door {#4729
      id: 166,
      zone_id: 9,
      name: "DR-166",
      created_at: "2022-10-16 22:45:30",
      updated_at: "2022-10-16 22:45:30",
      pivot: Illuminate\Database\Eloquent\Relations\Pivot {#4746
        user_id: 8,
        door_id: 166,
      },
    },
  ],
}
```

- Zonal Access

```
>>> Zone::find(1)->doors;
[!] Aliasing 'Zone' to 'App\Models\Zone' for this Tinker session.
=> Illuminate\Database\Eloquent\Collection {#4752
  all: [],
}
```

```
>>> Zone::find(2)->doors;
=> Illuminate\Database\Eloquent\Collection {#4718
  all: [
    App\Models\Door {#4716
      id: 176,
      zone_id: 2,
      name: "DR-176",
      created_at: "2022-10-16 22:45:30",
      updated_at: "2022-10-16 22:45:30",
    },
    App\Models\Door {#4618
      id: 197,
      zone_id: 2,
      name: "DR-197",
      created_at: "2022-10-16 22:45:30",
      updated_at: "2022-10-16 22:45:30",
    },
    App\Models\Door {#4607
      id: 374,
      zone_id: 2,
      name: "DR-374",
      created_at: "2022-10-16 22:45:30",
      updated_at: "2022-10-16 22:45:30",
    },
    App\Models\Door {#4611
      id: 390,
      zone_id: 2,
      name: "DR-390",
      created_at: "2022-10-16 22:45:30",
      updated_at: "2022-10-16 22:45:30",
    },
    App\Models\Door {#3665
      id: 451,
      zone_id: 2,
      name: "DR-451",
      created_at: "2022-10-16 22:45:30",
      updated_at: "2022-10-16 22:45:30",
    },
    App\Models\Door {#3666
      id: 541,
```

```

>>> Zone::find(10)->users;
=> Illuminate\Database\Eloquent\Collection {#4723
  all: [],
}

>>> Zone::find(9)->users;
=> Illuminate\Database\Eloquent\Collection {#4718
  all: [
    App\Models\User {#4736
      id: 1,
      first_name: "Sabrina",
      last_name: "Okuneva",
      admin_flag: 1,
      expiry_date: "2026-05-11",
      created_at: "2022-10-16 22:45:30",
      updated_at: "2022-10-16 22:45:30",
      access: Illuminate\Database\Eloquent\Relations\Pivot {#4749
        zone_id: 9,
        user_id: 1,
        created_at: "2022-10-16 22:45:30",
        updated_at: "2022-10-16 22:45:30",
      },
    },
    App\Models\User {#4610
      id: 2,
      first_name: "Ashlynn",
      last_name: "Wintheiser",
      admin_flag: 0,
      expiry_date: "2023-10-03",
      created_at: "2022-10-16 22:45:30",
      updated_at: "2022-10-16 22:45:30",
      access: Illuminate\Database\Eloquent\Relations\Pivot {#4725
        zone_id: 9,
        user_id: 2,
        created_at: "2022-10-16 22:45:30",
        updated_at: "2022-10-16 22:45:30",
      },
    },
    App\Models\User {#4755
      id: 3,
      first_name: "Audreanne",
      last_name: "Grady",
      admin_flag: 0,
      expiry_date: "2022-10-15",
      created_at: "2022-10-16 22:45:30",
      updated_at: "2022-10-16 22:45:30",
    },
  ],
}

```

- Admin access

```

>>> User::find(5)->isAdmin();
=> true

>>> User::query()->where('id', 6)->update(['admin_flag' => true]);
=> 1

```

- hasAccessToDoor() method

```

>>> User::find(8)->hasAccessToDoor(Door::find(166));
=> true

>>> User::find(5)->hasAccessToDoor(Door::find(927));
=> true

>>> User::find(2)->hasAccessToDoor(Door::find(789));
=> true

```

- User expiry

```
>>> User::find(4)->isActive();  
=> true  
  
>>> User::find(4)->expire();  
=> null  
  
>>> User::find(4)->isActive();  
=> false
```

- Transitive relationships (HasManyThrough)

```
>>> User::find(7)->zoneDoors;  
=> Illuminate\Support\Collection {#5714  
  all: [  
    App\Models\Door {#4462  
      id: 176,  
      zone_id: 2,  
      name: "DR-176",  
      created_at: "2022-10-16 22:45:30",  
      updated_at: "2022-10-16 22:45:30",  
    },  
    App\Models\Door {#5741  
      id: 197,  
      zone_id: 2,  
      name: "DR-197",  
      created_at: "2022-10-16 22:45:30",  
      updated_at: "2022-10-16 22:45:30",  
    },  
  ],  
}
```