Active Data Objects

- Pattern that allows information to be retrieved, inserted, and updated with minimal scripting.
- Database independent
  - Query syntax is generated by db adapter
- Safer queries
  - Values automatically escaped

Active Data Objects

- Read

  $query = $this->db->get('mytable');
  // Produces: SELECT * FROM mytable

  Modifiers:
  $this->db->where(), $this->db->like(), $this->db->join(), $this->db->group_by() ,
    ……

- Update

  $data = array('title' => 'My title' , 'name' => 'My Name');

  $this->db->insert('mytable', $data);
  // Produces: INSERT INTO mytable (title, name, date) VALUES ('My title', 'My name')

  $this->db->delete('mytable', array('id' => $id));

  $this->db->update('mytable', $data, array('id' => $id));

CRUD Pattern

- Pattern for operating on db tables

Operation	SQL
Create	INSERT
Read (Retrieve)	SELECT
Update (Modify)	UPDATE
Delete (Destroy)	DELETE

- CodeIgniter URL mapping:

  server_name/app_name/controller_name/create

  server_name/app_name/controller_name/read/id

  server_name/app_name/controller_name/update/id

  server_name/app_name/controller_name/delete/id

Transactions

- Atomic changes to multiple db records
- Failures
- Concurrency control

```
$this->db->trans_begin();

if ($this->db->trans_status() === FALSE) {
    $this->db->trans_rollback();
}
else {
    $this->db->trans_commit();
}
```

```php
1 <?php
2 class Campus_model extends CI_Model {
3
4     function getAll()
5     {
6
7
8     }
9
10     function get($id)
11     {
12
13
14     }
15
16     function delete($id) {
17
18     }
19
20     function insert($name) {
21
22     }
23
24     function update($campus) {
25
26
27     }
28
29
30 }
31 ?>
```

```php
1 <?php
2 class Campus  {
3     public $id;
4     public $name;
5
6
7     public function setId($id) {
8         $this->id = $id;
9     }
10
11     public function setName($name) {
12         $this->name = $name;
13     }
14
15     public function getId() {
16         return $this->id;
17     }
18
19     public function getName() {
20         return $this->name;
21     }
22
23
24 }
```

```php
1 <?php
2 class Crud extends CI_Controller {
3     function __construct() {
4         // Call the Controller constructor
5         parent::__construct();
6     }
7
8     function showAll() {
9         $this->load->model('campus_model');
10        $campuses = $this->campus_model->getAll();
11        $data['campuses']=$campuses;
12        $data['title']='CRUD Example';
13        $data['main']='crud/list.php';
14        $this->load->view('template',$data);
15    }
16
17    function newForm() {
18        $data['title']='CRUD Example';
19        $data['main']='crud/newForm.php';
20        $this->load->view('template',$data);
21    }
22
23    function create() {
24        $this->load->library('form_validation');
25        $this->form_validation->set_rules('name','Name','required|is_unique[campus.name]');
26
27        if ($this->form_validation->run() == true) {
28            $this->load->model('campus_model');
29            $this->campus_model->insert($this->input->get_post('name'));
30            redirect('crud/showAll', 'refresh');    //Then we redirect to the index page again
31        }
32        else {
33            $data['title']='CRUD Example';
34            $data['main']='crud/newForm.php';
35            $this->load->view('template',$data);
36        }
37    }
38
39    function read($id) {
40        $this->load->model('campus_model');
41        $campus = $this->campus_model->get($id);
42        $data['campus']=$campus;
43        $data['title']='CRUD Example';
44        $data['main']='crud/read.php';
45        $this->load->view('template',$data);
46    }
47
48    function editForm($id) {
49        $this->load->model('campus_model');
50        $campus = $this->campus_model->get($id);
51        $data['campus']=$campus;
52        $data['title']='CRUD Example';
53        $data['main']='crud/editForm.php';
54        $this->load->view('template',$data);
55    }
56
57    function update($id) {
58        $this->load->library('form_validation');
59        $this->form_validation->set_rules('name','Name','required');
60
61        $campus = new Campus();
62        $campus->id = $id;
63        $campus->name = $this->input->get_post('name');
64
65        if ($this->form_validation->run() == true) {
66            $this->load->model('campus_model');
67            $this->campus_model->update($campus);
68            redirect('crud/showAll', 'refresh');    //Then we redirect to the index page again
69        }
70        else {
71            $data['title']='CRUD Example';
72            $data['main']='crud/newForm.php';
73            $this->load->view('template',$data);
74        }
75
76        redirect('crud/showAll', 'refresh'); //Then we redirect to the index page again
77    }
78
79    function delete($id) {
80        $this->load->model('campus_model');
81
82        if (isset($id))
83            $this->campus_model->delete($id);
84
85        redirect('crud/showAll', 'refresh'); //Then we redirect to the index page again
86 }
87 }
88
89
```

```php
1 <h2>CRUD</h2>
2 <?php
3         echo "<p>" . anchor('crud/newForm','Add New') . "</p>";
4
5         echo "<table>";
6         echo "<tr><th>Name</th></tr>";
7
8         foreach ($campuses as $campus) {
9             echo "<tr>";
10            echo "<td>" . $campus->getName() . "</td>";
11
12
13
14
15            echo "</tr>";
16        }
17        echo "<table>";
18 ?>
19
20
```

```
 1 <h2>CRUD</h2>
 2 <?php
 3     echo "<p>" . anchor('crud/showAll','Back') . "</p>";
 4
 5     echo form_open("crud/update/$campus->id");
 6     echo form_label('Name');
 7     echo form_error('name');
 8     echo form_input('name',$campus->name,"required");
 9     echo form_submit('submit', 'Update');
10     echo form_close();
11 ?>
12
13
```

```
1 <h2>CRUD</h2>
2 <?php
3     echo "<p>" . anchor('crud/showAll','Back') . "</p>";
4
5     echo "<p> ID = " . $campus->id . "</p>";
6     echo "<p> NAME = " . $campus->getName() . "</p>";
7 ?>
8
9
```

```php
1 <h2>CRUD</h2>
2 <?php
3     echo "<p>" . anchor('crud/showAll','Back') . "</p>";
4
5     echo form_open('crud/create');
6     echo form_label('Name');
7     echo form_error('name');
8     echo form_input('name',set_value('name'),"required");
9     echo form_submit('submit', 'Create');
10    echo form_close();
11 ?>
12
13
```

```php
1 <?php
2
3 class Transaction extends CI_Controller {
4
5
6     function __construct() {
7         // Call the Controller constructor
8         parent::__construct();
9
10         session_start();
11     }
12
13     function showAll() {
14         $this->load->model('flight_model');
15         $this->load->model('ticket_model');
16
17         $flights = $this->flight_model->get_flights();
18         $tickets = $this->ticket_model->get_tickets();
19
20         $data['flights']=$flights;
21         $data['tickets']=$tickets;
22
23
24
25
26
27
28
29
30
31         $data['title']='Transactions Example';
32         $data['main']='list_flights.php';
33         $this->load->view('template',$data);
34     }
35
36
37     function recordSale($id) {
38         $this->load->model('flight_model');
39         $this->load->model('ticket_model');
40
41
42
43
44         $this->flight_model->update($id,0);
45         $this->ticket_model->insert('Sara', 'Smith', '', '', $id, 1);
46         $this->ticket_model->insert('John', 'Smith', '', '', $id, 2);
47         $this->ticket_model->insert('Mike', 'Smith', '', '', $id, 3);
48
49
50
51
52
53
54
55
56
57
58
59         redirect('transaction/showAll', 'refresh');
60     }
61 }
62
63
```

```php
<?php
class Flight_model extends CI_Model {

    function get_flights()
    {
        $query = $this->db->query("select f.id as 'id', c1.name as 'from', c2.name as 'to',
  t.time, f.date, f.available
                                    from flight f, timetable t, campus c1, campus c2
                                    where f.timetable_id = t.id and
                                            t.leavingfrom = c1.id and
                                            t.goingto = c2.id;");
        return $query->result();
    }


    function update($id, $seats) {
        $this->db->where('id',$id);
        return $this->db->update('flight',array('available'=>$seats));
    }




}
```

```php
 1 <?php
 2 class Ticket_model extends CI_Model {
 3
 4     function get_tickets()
 5     {
 6         $query = $this->db->get('ticket');
 7         return $query->result();
 8     }
 9
10
11     function insert($first, $last, $ccnumber, $ccexpiration, $flight_id, $seat) {
12         $data = array(
13                     'first' => $first,
14                     'last' => $last,
15                     'creditcardnumber' => $ccnumber,
16                     'creditcardexpiration' => $ccexpiration,
17                     'flight_id' => $flight_id,
18                     'seat' => $seat
19                 );
20
21         return $this->db->insert('ticket',$data);
22     }
23
24
25 }
```

```php
1 <h2>Transaction</h2>
2 <?php
3
4         if (isset($errno))
5             echo "<p>DB Error: ($errno) $errmsg</p>";
6
7
8
9         echo "<h3>Flights</h3>";
10
11        echo "<table>";
12        echo "<tr><th>To</th><th>From</th><th>Time</th><th>Date</th><th>Available</th></tr>";
13
14        foreach ($flights as $flight) {
15            echo "<tr>";
16            echo "<td>" . $flight->from . "</td>";
17            echo "<td>" . $flight->to . "</td>";
18            echo "<td>" . $flight->time . "</td>";
19            echo "<td>" . $flight->date . "</td>";
20            echo "<td>" . $flight->available . "</td>";
21
22            echo "<td>" . anchor("transaction/recordSale/$flight->id",'Ticket') . "</td>";
23
24            echo "</tr>";
25        }
26        echo "<table>";
27
28        echo "<h3>Tickets</h3>";
29
30
31        echo "<table>";
32        echo "<tr><th>First</th><th>Last</th><th>Flight ID</th><th>Seat</th></tr>";
33
34        foreach ($tickets as $ticket) {
35            echo "<tr>";
36            echo "<td>" . $ticket->first . "</td>";
37            echo "<td>" . $ticket->last . "</td>";
38            echo "<td>" . $ticket->flight_id . "</td>";
39            echo "<td>" . $ticket->seat . "</td>";
40            echo "</tr>";
41        }
42        echo "<table>";
43
44 ?>
45
46
```