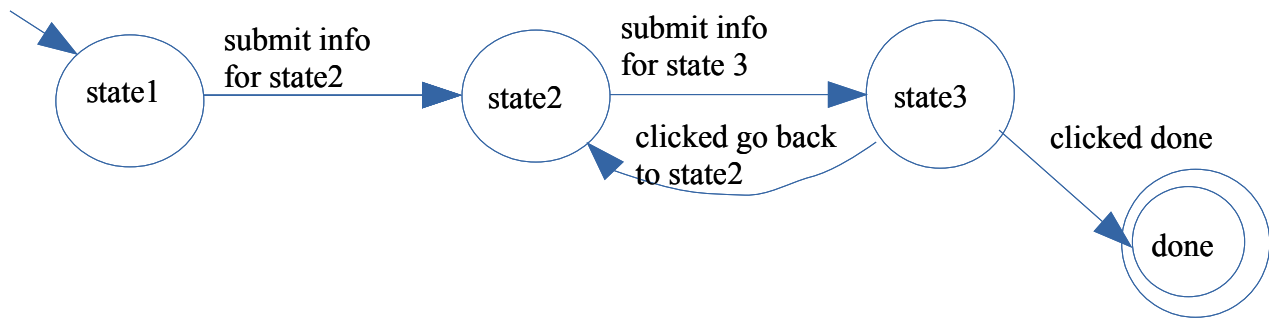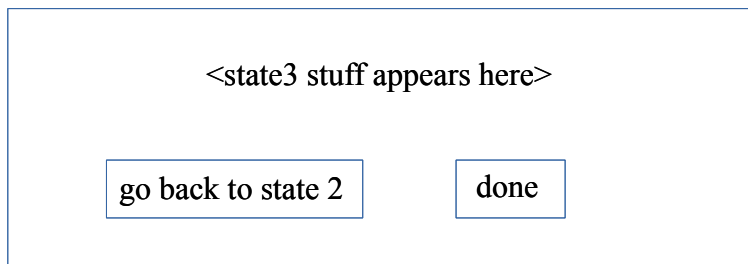# Food for thought: One approach to an application with a "branch back" to a previous state

Consider the following finite state diagram for an application:

assumption: state3 contains TWO submit buttons,

- one is "go back to state2" with `name="back-to-state2"`

- one is "done" with `name="done"`

Below is one approach to structuring the PHP for this, to consider/think about.

```php
<?php
    session_start();

    /*=== ... much stuff may be here ... ===*/

    /*===
        ONE possible approach,
        in a basic-3-state application,
        to allowing user in state 3 to CHOOSE to
        GO BACK to state 2 or QUIT

        a thought: you COULD have a branch in the elseif for
        each arrow in the finite state diagram...

        *    something to consider: in following an arrow from one state
             to another, WHAT values should be available at that point?
```

```
        *       (you might be able to combine some of the arrows in the
                same branch,
                BUT if so you'll likely need an if WITHIN that branch...)
===*/


// whenever there is NO next-state key in $_SESSION,
//      you start in state 1

if ( ! array_key_exists("next-state", $_SESSION) )
{
    state1();

    $_SESSION["next-state"] = "state2-from-state1";
}

// when you are coming to state2 FROM state1

elseif ( $_SESSION["next-state"] == "state2-from-state1" )
{
    // get needed info from $_POST array (from state1"s form)

    $needed_info1 = how_sanitize($_POST[...]);
    $needed_info2 = how_sanitize($_POST[...]);
    /* etc. */

    // ...and SAVE them for future-state use

    $_SESSION["needed_info1"] = $needed_info1;
    $_SESSION["needed_info2"] = $needed_info2;

    // NOW create state2 screen

    state2($needed_info1, $needed_info2 /* , etc */);

    $_SESSION["next-state"] = "state3";
}

// when you are coming to state2 FROM state3

elseif ( $_SESSION["next-state"] == "is-user-done")

        && (array_key_exists("back-to-state2", $_POST)) )
{
    // get needed info from session

    $needed_info1 = $_SESSION["needed_info1"];
    $needed_info2 = $_SESSION["needed_info2"];
    /* etc. */
```

```php
        // NOW create state2 screen

        state2($needed_info1, $needed_info2 /* , etc */);

        $_SESSION["next-state"] = "state3";
    }

    // when you are coming to state3 from state2

    elseif ( $_SESSION["next-state"] == "state3" )
    {
        state3();

        // HOW DO you know when session should be ended?
        //      ...based on USERs CHOICE from here!
        //      (which user has not MADE yet!!!)

        $_SESSION["next-state"] = "is-user-done";

    }

    // when the user HAS noted that they are DONE FROM state3

    elseif ( ($_SESSION["next-state"] == "is-user-done")

             && (array_key_exists("done", $_POST)) )
    {
        session_destroy();
        ?>
        <p> Done. </p>
        <p> <a href="<?= htmlentities($_SERVER['PHP_SELF'], ENT_QUOTES) ?>">
            Start Over </a> </p>
        <?php
    }

    // if NONE of the above were true -- make 'em start over

    else
    {
        ?>
        <p> <strong> YIKES! should not have gotten here! </strong> </p>
        <?php

        session_destroy();
        ?>
        <p> <a href="<?= htmlentities($_SERVER['PHP_SELF'], ENT_QUOTES) ?>">
            Start Over </a> </p>
        <?php
    }
    ?>
```