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/**
 * @file ctc_westSecaucus.js
 * @author Joey Damico
 * @date September 25, 2019
 * @summary CTC Controller Class for the West Secacus Interlocking
 */

// Color Constants For Drawing Routes
const Empty = '#999999';
const Lined = '#75fa4c';
const Occupied = '#eb3323';


/**
 * Class is the Backend for the West Secacus Interlocking This class
is what controlls the West Secacus Interlocking,
 * it is sort of like a backen, but is the controller, this is what
makes all the train movements possible,
 * and the ReactJS Component class gets information from this class to
display the correct status of the interlocking on the screen
 *
 * MEMBER VARIABLES
 * @member sw_1 -> Bool if Switch #1 is Reveresed or Not
 * @member sw_3 -> Bool if Switch #3 is Reveresed or Not
 *
 * @member sig_2w -> Bool if Signal #2w is Lined or Not
 * @member sig_2e -> Bool if Signal #2e is Lined or Not
 * @member sig_4w -> Bool if Signal #4w is Lined or Not
 * @member sig_4e -> Bool if Signal #4e is Lined or Not
 *
 * @member route_w_trk_1 = The west bound route for track #1
 * @member route_w_trk_2 = The west bound route for track #2
 * @member route_e_trk_1 = The east bound route for track #1
 * @member route_e_trk_2 = The east bound route for track #2
 *
 * @member time_occupied = The time the track was occupied, used to
know when to clear the route
 * @member int_occupied = Bool if the track is occupied or not
 */
class CTC_WestSecaucus {
    /**
     * constructor()
     * @summary The constructor for the CTC_WestSecaucus class
     *
     * @description This will initialize all the member variables when
the program is started
     */
    constructor() {
        // Bools for the switches
        this.sw_1 = false;
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        this.sw_3 = false;
        // Bools for the signals
        this.sig_2w = false;
        this.sig_2e = false;
        this.sig_4w = false;
        this.sig_4e = false;
        // Track routes
        this.route_w_trk_1 = null;
        this.route_w_trk_2 = null;
        this.route_e_trk_1 = null;
        this.route_e_trk_2 = null;
        // Used for routing and occupying the tracks
        this.int_occupied = false;
        this.time_occupied = null;
    }
    // ---- END constructor() ----

    /**
     * click_sig()
     * @summary the function that is called when clicking the signal,
creates a route
     *
     * @description When the function is called it will determine if a
route can be created,
     * and if so what the route is and sets it based off of the switch
status
     *
     * @param sigNum, the id of the signal clicked
     * @param next_block_1, The next block on Track #1
     * @param next_block_2, The next block on Track #2
     */
    click_sig(sigNum, next_block_1, next_block_2) {
        if (sigNum === "2W") {
            if (this.sw_3) {
                return
            }
            // Route W_1_1
            else if (!this.sw_1 && !this.sw_3) {
                if (this.sig_2w) {
                    this.route_w_trk_1 = null;
                    this.sig_2w = false;
                }
                else {
                    if (next_block_1 === Occupied || next_block_1 ===
Lined) {
                        alert("Cannot Line Route Because Conflict With
Next Block");
                        return;
                    }
                    this.route_w_trk_1 = "W_1_1__|
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__1_mill_westSecaucus"
                    this.sig_2w = true;
                }
            }
            // Route W_1_2
            else if (this.sw_1 && !this.sw_3) {
                if (this.sig_2w) {
                    this.route_w_trk_1 = null;
                    this.sig_2w = false;
                }
                else {
                    if (next_block_2 === Occupied || next_block_2 ===
Lined) {
                        return;
                    }
                    this.route_w_trk_1 = "W_1_2__|
__2_mill_westSecaucus"
                    this.sig_2w = true;
                }
            }
        }
        else if (sigNum === "4W") {
            if (!this.sw_3) {
                return;
            }
            // Route W_2_1
            if (!this.sw_1 && this.sw_3) {
                if (this.sig_4w) {
                    this.route_w_trk_2 = null;
                    this.sig_4w = false;
                }
                else {
                    if (next_block_1 === Occupied || next_block_1 ===
Lined) {
                        alert("Cannot Line Route Because Conflict With
Next Block");
                        return;
                    }
                    this.route_w_trk_2 = "W_2_1__|
__1_mill_westSecaucus"
                    this.sig_4w = true;
                }
            }
            // Route W_2_2
            else if (this.sw_1 && this.sw_3) {
                if (this.sig_4w) {
                    this.route_w_trk_2 = null;
                    this.sig_4w = false;
                }
                else {
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                    if (next_block_2 === Occupied || next_block_2 ===
Lined) {
                        alert("Cannot Line Route Because Conflict With
Next Block");
                        return;
                    }
                    this.route_w_trk_2 = "W_2_2__|
__2_mill_westSecaucus"
                    this.sig_4w = true;
                }
            }
        }
        else if (sigNum === "2E") {
            if (this.sw_1) {
                return;
            }
            // Route E_1_1
            else if (!this.sw_1 && !this.sw_3) {
                if (this.sig_2e) {
                    this.route_e_trk_1 = null;
                    this.sig_2e = false;
                }
                else {
                    if (next_block_1 === Occupied || next_block_1 ===
Lined) {
                        alert("Cannot Line Route Because Conflict With
Next Block");
                        return;
                    }
                    this.route_e_trk_1 = "E_1_1__|
__2_westSecaucus_laurel"
                    this.sig_2e = true;
                }
            }
            // Route E_1_2
            else if (!this.sw_1 && this.sw_3) {
                if (this.sig_2e) {
                    this.route_e_trk_1 = null;
                    this.sig_2e = false;
                }
                else {
                    if (next_block_2 === Occupied || next_block_2 ===
Lined) {
                        alert("Cannot Line Route Because Conflict With
Next Block");
                        return;
                    }
                    this.route_e_trk_1 = "E_1_2__|
__4_westSecaucus_laurel"
                    this.sig_2e = true;
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                }
            }
        }
        else if (sigNum === "4E") {
            if (!this.sw_1) {
                return;
            }
            // Route E_2_1
            else if (this.sw_1 && !this.sw_3) {
                if (this.sig_4e) {
                    this.route_e_trk_2 = null;
                    this.sig_4e = false;
                }
                else {
                    if (next_block_1 === Occupied || next_block_1 ===
Lined) {
                        alert("Cannot Line Route Because Conflict With
Next Block");
                        return;
                    }
                    this.route_e_trk_2 = "E_2_1__|
__2_westSecaucus_laurel";
                    this.sig_4e = true;
                }
            }
            // Route E_2_2
            else if (this.sw_1 && this.sw_3) {
                if (this.sig_4e) {
                    this.route_e_trk_2 = null;
                    this.sig_4e = false;
                }
                else {
                    if (next_block_2 === Occupied || next_block_2 ===
Lined) {
                        alert("Cannot Line Route Because Conflict With
Next Block");
                        return;
                    }
                    this.route_e_trk_2 = "E_2_2__|
__4_westSecaucus_laurel"
                    this.sig_4e = true;
                }
            }
        }
    }
    // ---- END click_sig() ----

    /**
     * set_occupied()
     * @summary Sets the track as occupied
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     *
     * @param n_state, The new state of the track
     * This was used to test, and never removed passing the state as a
paramemter, which is not needed anymore
     */
    set_occupied(n_state) {
        if (n_state === true) {
            this.int_occupied = n_state;
            this.time_occupied = new Date().getTime() / 1000;
        }
        else {
            console.log("ERROR");
        }
    }
    // ---- END set_occupied() ----

    /**
     * can_clear()
     * @summary Checks if a track could be cleared, meaning a train is
no longer in the interlocking
     *
     * @description Check the track if a train has been in the
interlocking for more then 4 seconds, if so it
     * clears that track
     */
    can_clear() {
        // Get the current time
        let current_time = new Date().getTime() / 1000;
        if (current_time - this.time_occupied > 4 && current_time -
this.time_occupied < 100000) {
            this.sig_2w = false;
            this.sig_2e = false;
            this.sig_4e = false;

            this.route_w_trk_1 = null;
            this.route_e_trk_1 = null;
            this.route_e_trk_2 = null;

            this.int_occupied = false;
            this.time_occupied = null;
        }
    }
    // ---- END can_clear() ----

    /**
     * get_routes()
     * @summary Gets all the routes from the interlocking
     *
     * @returns An Array holding every route variable from the
interlocking
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     */
    get_routes() {
        let routes = [
            this.route_w_trk_1, this.route_w_trk_2,
            this.route_e_trk_1, this.route_e_trk_2
        ];
        return routes;
    }
    // ---- END get_routes() ----

    /**
     * get_train_route()
     * @summary Returns the route for the train at a given track
     *
     * @param direction, The direction the train is moving
     * @param track, The Track number of the train
     */
    get_train_route(direction, track) {
        if (direction === "WEST") {
            if (track === "1") {
                return this.route_w_trk_2;
            }
            else {
                return this.route_w_trk_1;
            }
        }
        else {
            if (track === "1") {
                return this.route_e_trk_1;
            }
            else {
                return this.route_e_trk_2;
            }
        }
    }
    // ---- END get_train_route() ----

    /**
     * @summary Funtion to throw switch #1 in the interlocking
     *
     * The function sets the status of the switch, whether it is is
the normal possition
     * of reversed, (True = Reversed / False = Normal)
     */
    throw_sw_1() {
        if (this.sw_1 === false) {
            this.sw_1 = true;
        }
        else {
            this.sw_1 = false;
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        }
    }
    // ---- END throw_sw_1() ----

    /**
     * @summary Funtion to throw switch #3 in the interlocking
     *
     * The function sets the status of the switch, whether it is is
the normal possition
     * of reversed, (True = Reversed / False = Normal)
     */
    throw_sw_3() {
        if (this.sw_3 === false) {
            this.sw_3 = true;
        }
        else {
            this.sw_3 = false;
        }
    }
    // ---- END throw_sw_3() ----

    /**
     * get_interlocking_status()
     * @summary returns the status of the interlocking that would be
needed by the ReactJS Components
     *
     * @description All the information that is returned here is what
is needed by the ReactJS Component
     * for the interlocking that is need to draw the interlocking to
the screen
     *
     * @returns Object with the status of the interlocking
     */
    get_interlocking_status() {
        let status = {
            sw_1: this.sw_1,
            sw_3: this.sw_3,
            routes: this.get_routes(),
            occupied: this.int_occupied
        }

        return status;
    }
    // ---- END get_interlocking_status() ----
}

// This is required when using ReactJS
export default CTC_WestSecaucus;
```