Software Validation

Elevator

group 29

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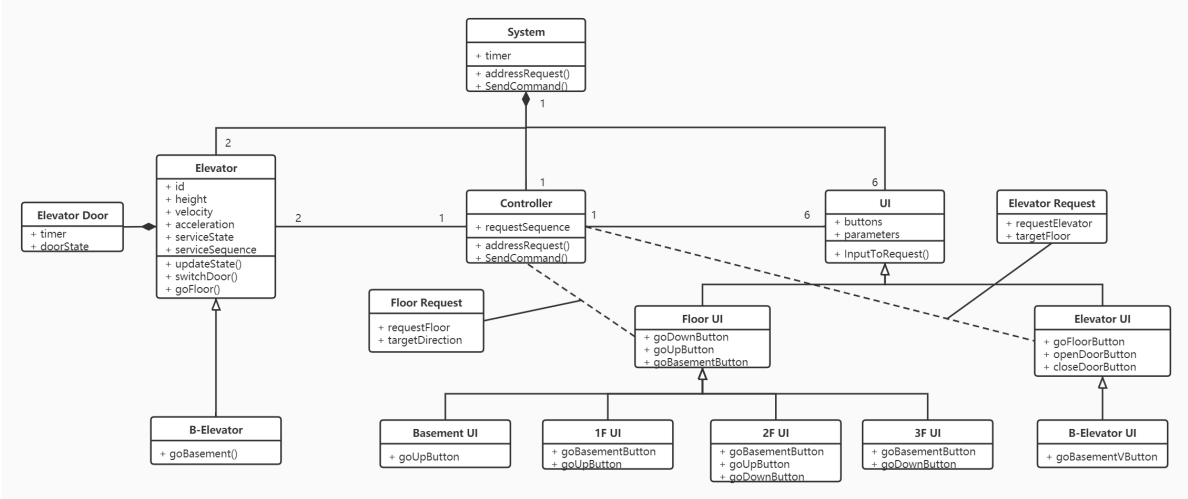
System Architecture



T1: Unit Test

T1.1 Controller Unit Test

T1.1.1 Test delete()

```
function delete(obj)
    stop(obj.timer);
    delete(obj.Lui) ;
    delete(obj.Rui) ;
    delete(obj.F1) ;
    delete(obj.F2) ;
    delete(obj.F3) ;
    delete(obj.FB) ;
    delete(obj.Version);
    delete(obj.timer);
end
```

- Coverage Criteria: Statement Coverage
- Test case

	Test Case T1.1.1
Coverage Item	Tcover1.1.1
Input	------
State	Lui = LctrlUI; Rui = RctrlUI; F1=F1UI; F2=F2UI; F3=F3UI; FB=FBUI; Version=EleVersion; timer=timer
Expected Output	All UI closed

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.1.2 Test Controller()

```
function obj = Controller()
    obj.Lui = LctrlUI;
    obj.Rui = RctrlUI;
    obj.F1 = F1UI;
    obj.F2 = F2UI;
    obj.F3 = F3UI;
    obj.FB = FBUI;
    obj.Lui.Ctrl = obj;
    obj.Rui.Ctrl = obj;
    obj.F1.Ctrl = obj;
    obj.F2.Ctrl = obj;
    obj.F3.Ctrl = obj;
    obj.FB.Ctrl = obj;
    obj.elevators = [Elevator('L'),Elevator('R')];
    obj.timer = timer;
    obj.Version = EleVersion;
    obj.Version.Ctrl = obj;
    obj.upRequest = [0 0 0 0];
    obj.downRequest = [0 0 0 0];
    obj.timer.TimerFcn=@obj.update;
    obj.timer.ExecutionMode='fixedRate';
    obj.timer.Period=obj.dt;
    start(obj.timer);
end
```

- Coverage Criteria: Statement Coverage
- Test case

	Test Case T1.1.2
Coverage Item	Tcover1.1.2
Input	------

State	Lui = LctrlUI;
	Rui = RctrlUI;
	F1 = F1UI;
	F2 = F2UI;
	F3 = F3UI;
	FB = FBUI;
	elevators = [Elevator('L'),Elevator('R')];
	timer = timer;
	Version = EleVersion;
	upRequest = [0 0 0 0];
	downRequest = [0 0 0 0];

Expected Output	All UI show up, all things set.

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.1.3 Test update()

```
function update(obj, ~, ~)
            if strcmp(obj.elevators(1).doorState,'Closed') &&
strcmp(obj.elevators(2).doorState,'Closed')//1.1.3.1
                obj.elevators(1).move;  % elevator move
                obj.elevators(2).move;
                obj.getRequest;         % get and go to service target floor
                obj.getNextTarget(obj.elevators(1));
                obj.getNextTarget(obj.elevators(2));
                obj.goNextTarget(obj.elevators(1));
                obj.goNextTarget(obj.elevators(2));
                obj.elevators(1).update;% elevator update
                obj.elevators(2).update;
            elseif strcmp(obj.elevators(1).doorState,'Closed')//1.1.3.2
                obj.elevators(1).move;
                obj.OpenDoor(obj.elevators(2));
                obj.CloseDoor(obj.elevators(2));
                obj.getRequest;         % get and go to service target floor
                obj.getNextTarget(obj.elevators(1));
                obj.goNextTarget(obj.elevators(1));
                obj.elevators(1).update;% elevator update
            elseif strcmp(obj.elevators(2).doorState,'Closed')//1.1.3.3
                obj.elevators(2).move;
                obj.OpenDoor(obj.elevators(1));
                obj.CloseDoor(obj.elevators(1));
                obj.getRequest;         % get and go to service target floor
                obj.getNextTarget(obj.elevators(2));
                obj.goNextTarget(obj.elevators(2));
                obj.elevators(2).update;% elevator update
            else//1.1.3.4
                obj.OpenDoor(obj.elevators(2));
                obj.CloseDoor(obj.elevators(2));
```

```
                obj.OpenDoor(obj.elevators(1));
                obj.CloseDoor(obj.elevators(1));
            end

            obj.LoadUI;             % update the ele and loadui
            obj.Version.LoadUI;
        end
```

- Coverage Criteria: Branch Coverage
- Test case

	Test Case T1.1.3.1
Coverage Item	Tcover1.1.3.1
Input	------
State	elevators(1).doorState='Closed' elevators(2).doorState='Closed'
Expected Output	All UI show up, all things set, door closed
	Test Case T1.1.3.2
Coverage Item	Tcover1.1.3.2
Input	------
State	elevators(1).doorState='Closed'
Expected Output	All UI show up, all things set, door2 open and close
	Test Case T1.1.3.3
Coverage Item	Tcover1.1.3.3
Input	------
State	elevators(2).doorState='Closed'
Expected Output	All UI show up, all things set, door1 open and close
	Test Case T1.1.3.4
Coverage Item	Tcover1.1.3.4
Input	------
State	------
Expected Output	All UI show up, all things set, door1,2 open and close

- Test coverage: 4/4=100%
- Test Result: 4 passed

T1.1.4 Test getRequest()

```
function getRequest(obj)                    % from uprequest to elevetor
            cur1 = obj.elevators(1).y/obj.floorHeight;
            cur2 = obj.elevators(2).y/obj.floorHeight;
            for i = 1:2
                if obj.upRequest(i+1)~=0
                    if cur1 < i && cur2 < i &&
strcmp(obj.elevators(1).serviceState,'Up') &&
strcmp(obj.elevators(2).serviceState,'Up')
                        if cur1 <=cur2//T1.1.4.1
                            obj.elevators(2).upService(i+1) = true;
                            obj.upRequest(i+1) = false;
                            return;
                        else//T1.1.4.2
                            obj.elevators(1).upService(i+1) = true;
                            obj.upRequest(i+1) = false;
                            return;
                        end
                    elseif cur1 < i &&
strcmp(obj.elevators(1).serviceState,'Up')//T1.1.4.3
                        obj.elevators(1).upService(i+1) = true;
                        obj.upRequest(i+1) = false;
                        return;
                    elseif cur2 < i &&
strcmp(obj.elevators(2).serviceState,'Up')//T1.1.4.4
                        obj.elevators(2).upService(i+1) = true;
                        obj.upRequest(i+1) = false;
                        return;
                    elseif sum(obj.elevators(2).upService)==0 &&
sum(obj.elevators(2).downService)==0 //T1.1.4.5
                        obj.elevators(2).serviceState = 'Up';
                        obj.elevators(2).upService(i+1) = true;
                        obj.upRequest(i+1) = false;
                        return;
                    elseif sum(obj.elevators(1).upService)==0 &&
sum(obj.elevators(1).downService)==0 //T1.1.4.6
                        obj.elevators(1).serviceState = 'Up';
                        obj.elevators(1).upService(i+1) = true;
                        obj.upRequest(i+1) = false;
                        return;
                    elseif strcmp(obj.elevators(2).serviceState,'Up')//T1.1.4.7
                        obj.elevators(2).upService(i+1) = true;
                        obj.upRequest(i+1) = false;
                        return;
                    end
                end
            end
            for i = 2:-1:1
                if obj.downRequest(i+1)
                    if cur1 > i && cur2 > i &&
strcmp(obj.elevators(1).serviceState,'Down') &&
strcmp(obj.elevators(2).serviceState,'Down')
                        if cur1 >= cur2//T1.1.4.8
                            obj.elevators(2).downService(i+1) = true;
                            obj.downRequest(i+1) = false;
                            return;
```

```
                        else//1.1.4.9
                            obj.elevators(1).downService(i+1) = true;
                            obj.downRequest(i+1) = false;
                            return;
                        end
                     elseif cur1 > i &&
strcmp(obj.elevators(1).serviceState,'Down')//1.1.4.10
                        obj.elevators(1).downService(i+1) = true;
                        obj.downRequest(i+1) = false;
                        return;
                    elseif cur2 > i &&
strcmp(obj.elevators(2).serviceState,'Down')//1.1.4.11
                        obj.elevators(2).downService(i+1) = true;
                        obj.downRequest(i+1) = false;
                        return;
                    elseif sum(obj.elevators(2).upService)==0 &&
sum(obj.elevators(2).downService)==0 //1.1.4.12
                        obj.elevators(2).serviceState = 'Down';
                        obj.elevators(2).downService(i+1) = true;
                        obj.downRequest(i+1) = false;
                        return;
                    elseif sum(obj.elevators(1).upService)==0 &&
sum(obj.elevators(1).downService)==0 //1.1.4.13
                        obj.elevators(1).serviceState = 'Down';
                        obj.elevators(1).downService(i+1) = true;
                        obj.downRequest(i+1) = false;
                        return;
                    elseif
strcmp(obj.elevators(2).serviceState,'Down')//1.1.4.14
                        obj.elevators(2).downService(i+1) = true;
                        obj.downRequest(i+1) = false;
                        return;
                    end
                end
            end

        end
```

- Coverage Criteria: Branch Coverage
- Test case

	Test Case T1.1.4.1
Coverage Item	Tcover1.1.4.1
Input	------
State	upRequest()!=0 elevator(1).y = 1 elevator(2).y = 2 elevators(1).serviceState='Up' elevators(2).serviceState='Up' cur1 <=cur2
Expected Output	elevators(2).upService(i+1) = true upRequest() = false;
	Test Case T1.1.4.2
Coverage Item	Tcover1.1.4.2
Input	------
State	upRequest()!=0 elevator(1).y = 2 elevator(2).y = 1 elevators(1).serviceState='Up' elevators(2).serviceState='Up' cur1 > cur2
Expected Output	elevators(1).upService(i+1) = true upRequest() = false;
	Test Case T1.1.4.3
Coverage Item	Tcover1.1.4.3
Input	------

State	elevators(1).serviceState = 'Up';
	upRequest(i+1) = 1;
	elevators(1).y = 2;

Expected Output	elevators(1).upService(i+1) = true upRequest() = false;
	Test Case T1.1.4.4
Coverage Item	Tcover1.1.4.4
Input	------

State	elevators(2).serviceState = 'Up';
	upRequest(i+1) = 1;
	elevators(2).y = 2;

Expected Output	elevators(2).upService(i+1) = true upRequest() = false;

	Test Case T1.1.4.1
	Test Case T1.1.4.5
Coverage Item	Tcover1.1.4.5
Input	------
State	sum(obj.elevators(2).upService)=0 sum(obj.elevators(2).downService)=0

Expected Output	elevators(2).serviceState = 'Up';
	elevators(2).upService(i+1) = true;
	upRequest(i+1) = false;

	Test Case T1.1.4.6
Coverage Item	Tcover1.1.4.6
Input	------
State	sum(obj.elevators(1).upService)=0 sum(obj.elevators(1).downService)=0

Expected Output	elevators(1).serviceState = 'Up';
	elevators(1).upService() = true;
	upRequest() = false;

	Test Case T1.1.4.7
Coverage Item	Tcover1.1.4.7
Input	------
State	elevators(2).serviceState = 'Up'; upRequest() = 1;
Expected Output	elevators(2).upService() = true; upRequest() = false;

	Test Case T1.1.4.8
Coverage Item	Tcover1.1.4.8
Input	------
State	downRequest()!=0 elevator(1).y = 6 elevator(2).y = 5 elevators(1).serviceState='Down' elevators(2).serviceState='Down' cur1 >=cur2
Expected Output	elevators(2).downService(i+1) = true downRequest() = false;
	Test Case T1.1.4.9
Coverage Item	Tcover1.1.4.9
Input	------
State	downRequest()!=0 elevator(1).y = 5 elevator(2).y = 6 elevators(1).serviceState='Down' elevators(2).serviceState='Down' cur1 < cur2
Expected Output	elevators(1).downService(i+1) = true downRequest() = false;
	Test Case T1.1.4.10
Coverage Item	Tcover1.1.4.10
Input	------

State	elevators(1).serviceState = 'Down';
	downRequest(i+1) = 1;
	elevators(1).y = 6;

Expected Output	elevators(1).downService(i+1) = true downRequest() = false;
	Test Case T1.1.4.11
Coverage Item	Tcover1.1.4.11
Input	------

State	elevators(2).serviceState = 'Up';
	downRequest(i+1) = 1;
	elevators(2).y = 6;

Expected Output	elevators(2).downService(i+1) = true downRequest() = false;

	Test Case T1.1.4.8
	Test Case T1.1.4.12
Coverage Item	Tcover1.1.4.12
Input	------
State	sum(obj.elevators(2).upService)=0 sum(obj.elevators(2).downService)=0

Expected Output	elevators(2).serviceState = 'Down';
	elevators(2).downService(i+1) = true;
	downRequest(i+1) = false;

	Test Case T1.1.4.13
Coverage Item	Tcover1.1.4.13
Input	------
State	sum(obj.elevators(1).upService)=0 sum(obj.elevators(1).downService)=0

Expected Output	elevators(1).serviceState = 'Down';
	elevators(1).downService() = true;
	downRequest() = false;

	Test Case T1.1.4.14
Coverage Item	Tcover1.1.4.14
Input	------
State	elevators(2).serviceState = 'Down'; downRequest() = 1;
Expected Output	elevators(2).downService() = true; downRequest() = false;

- Test coverage: 14/14=100%
- Test Result: 14 passed

T1.1.5 Test getNextTarget()

```
function getNextTarget(obj, elevator)       % how to control the ele
            currentFloor = elevator.y / obj.floorHeight;
            if elevator.v == 0

                if strcmp(elevator.serviceState, 'Up') ||
strcmp(elevator.serviceState, 'Standby')
                    for i = 0 : 3
                        if elevator.upService(i + 1) && currentFloor <
i//T1.1.5.1
                            elevator.moveState = 'Start';
                            elevator.vdir = +1;
                            elevator.nextTarget = i;
```

```
                        return;
                    end
                end
                elevator.serviceState= 'Down';
                target = -1;
                for i = 3 :-1: 0
                    if elevator.downService(i + 1)
                        target = i;
                        break;
                    end
                end
                if target ~= -1
                    if currentFloor < target//T1.1.5.2
                        elevator.vdir = +1;
                        elevator.moveState = 'Start';
                        elevator.nextTarget = target;
                    elseif currentFloor > target//1.1.5.3
                        elevator.vdir = -1;
                        elevator.moveState = 'Start';
                        elevator.nextTarget = target;
                    else
                        % Open
                    end
                end
            elseif strcmp(elevator.serviceState, 'Down')
                for i = 3 :-1: 0
                    if elevator.downService(i + 1) && currentFloor >
i//T1.1.5.4
                        elevator.moveState = 'Start';
                        elevator.vdir = -1;
                        elevator.nextTarget = i;
                        return;
                    end
                end
                elevator.serviceState= 'Up';
                target = -1;
                for i = 0 : 3
                    if elevator.upService(i + 1)
                        target = i;
                        break;
                    end
                end
                if target ~= -1
                    if currentFloor < target//T1.1.5.5
                        elevator.vdir = +1;
                        elevator.moveState = 'Start';
                        elevator.nextTarget = target;
                    elseif currentFloor > target//T1.1.5.6
                        elevator.vdir = -1;
                        elevator.moveState = 'Start';
                        elevator.nextTarget = target;
                    else
                        % Open
                    end
                end
            end

        elseif elevator.v ~= 0
```

```
                if strcmp(elevator.serviceState, 'Up')
                    for i = 0 : 3
                        if elevator.upService(i + 1) && currentFloor <
i//T1.1.5.7
                            elevator.moveState = 'Start';
                            elevator.vdir = +1;
                            elevator.nextTarget = i;
                            return;
                        end
                    end
                elseif strcmp(elevator.serviceState, 'Down')
                    for i = 3 :-1: 0
                        if elevator.downService(i + 1) && currentFloor >
i//T1.1.5.8
                            elevator.moveState = 'Start';
                            elevator.vdir = -1;
                            elevator.nextTarget = i;
                            return;
                        end
                    end
                end
            end
        end
```

- Coverage Criteria: Branch Coverage
- Test case

	Test Case T1.1.5.1
Coverage Item	Tcover1.1.5.1
Input	elevator

State	elevators(1).v = 0;
	elevators(1).serviceState = 'Up';
	elevators(1).upService(2) = 1;
	elevators(1).y = 1;

Expected Output	elevator.moveState = 'Start';
	elevator.vdir = 1;
	elevator.nextTarget = 1;

	Test Case T1.1.5.2
Coverage Item	Tcover1.1.5.2
Input	elevator

State	elevators(1).v = 0;
	elevators(1).serviceState = 'Up';
	elevators(1).downService(2) = 1;
	elevators(1).y = 1;

Expected Output	elevator.vdir = 1;
	elevator.moveState = 'Start';
	elevator.nextTarget = 1;

	Test Case T1.1.5.3
Coverage Item	Tcover1.1.5.3
Input	elevator

State	elevators(1).v = 0;
	elevators(1).serviceState = 'Up';
	elevators(1).downService(2) = 1;
	elevators(1).y = 6;

Expected Output	elevator.vdir = -1;
	elevator.moveState = 'Start';
	elevator.nextTarget = 1;

	Test Case T1.1.5.4
Coverage Item	Tcover1.1.5.4
Input	elevator

State	elevators(1).v = 0;
	elevators(1).serviceState = 'Down';
	elevators(1).downService(2) = 1;
	elevators(1).y = 6;

	Test Case T1.1.5.1

Expected Output	elevator.moveState = 'Start';
	elevator.vdir = -1;
	elevator.nextTarget = 1;

	Test Case T1.1.5.5
Coverage Item	Tcover1.1.5.5
Input	elevator

State	elevators(1).v = 0;
	elevators(1).serviceState = 'Down';
	elevators(1).downService(2) = 1;
	elevators(1).y = 1;

Expected Output	elevator.vdir = 1;
	elevator.moveState = 'Start';
	elevator.nextTarget = 1;

	Test Case T1.1.5.6
Coverage Item	Tcover1.1.5.6
Input	elevator

State	elevators(1).v = 0;
	elevators(1).serviceState = 'Down';
	elevators(1).downService(2) = 6;
	elevators(1).y = 1;

Expected Output	elevator.vdir = -1;
	elevator.moveState = 'Start';
	elevator.nextTarget = 1;

	Test Case T1.1.5.7
Coverage Item	Tcover1.1.5.7
Input	elevator

State	elevators(1).v = 1;
	elevators(1).serviceState = 'Up';
	elevators(1).upService(2) = 1;
	elevators(1).y = 1;

Expected Output	elevator.moveState = 'Start';
	elevator.vdir = 1;
	elevator.nextTarget = 1;

	Test Case T1.1.5.8
Coverage Item	Tcover1.1.5.8
Input	elevator

	Test Case T1.1.5.1

State	elevators(1).v = 1;
	elevators(1).serviceState = 'Down';
	elevators(1).downService(2) = 1;
	elevators(1).y = 1;

Expected Output	elevator.moveState = 'Start';
	elevator.vdir = -1;
	elevator.nextTarget = 1;

- Test coverage: 8/8=100%
- Test Result: 8 passed

T1.1.6 Test goNextTarget()

```
function goNextTarget(obj, elevator)        % how to start and stop
            if elevator.v > 0 && (abs(elevator.nextTarget*3-elevator.y) <=
elevator.v*elevator.v)
                elevator.moveState = 'Stop';
                if abs(elevator.nextTarget*3-elevator.y) <= 0.01
                    if strcmp(elevator.serviceState, 'Down')//T1.1.6.1
                        elevator.downService(elevator.nextTarget+1) = false;
                        obj.downRequest(elevator.nextTarget+1) = false;
                    end
                    if strcmp(elevator.serviceState, 'Up')//T1.1.6.2
                        elevator.upService(elevator.nextTarget+1) = false;
                        obj.upRequest(elevator.nextTarget+1) = false;
                    end
                    switch elevator.nextTarget
                        case 0//T1.1.6.3
                            obj.FB.Up.BackgroundColor = [0.96,0.96,0.96];
                        case 3
                            obj.F3.Down.BackgroundColor = [0.96,0.96,0.96];
                            if strcmp(elevator.id, 'L')//T1.1.6.4
                                obj.F3.B.BackgroundColor = [0.96,0.96,0.96];
                            end
                        case 1
                            if strcmp(elevator.serviceState, 'Up')//T1.1.6.5
                                obj.F1.Up.BackgroundColor = [0.96,0.96,0.96];
                            elseif strcmp(elevator.id, 'L')//T1.1.6.6
                                obj.F1.B.BackgroundColor = [0.96,0.96,0.96];
                            end
                        case 2
                            if strcmp(elevator.serviceState, 'Up')//T1.1.6.7
                                obj.F2.Up.BackgroundColor = [0.96,0.96,0.96];
                            else
                                obj.F2.Down.BackgroundColor = [0.96,0.96,0.96];
                                if strcmp(elevator.id, 'L')//T1.1.6.8
                                    obj.F2.B.BackgroundColor = [0.96,0.96,0.96];
                                end
                            end
                    end
                    obj.lightPowerOff(elevator.id,elevator.nextTarget);
                    elevator.y = elevator.nextTarget*3;
                    elevator.moveState = 'Standby';
```

```
                    elevator.update;
                    obj.LoadUI;
                    obj.Version.LoadUI;
                    obj.getNextTarget(elevator);
                    elevator.doorState = 'Opening';
                end
            elseif elevator.v >= 1//T1.1.6.9
                elevator.moveState = 'Run';
            end
        end
```

- Coverage Criteria: Branch Coverage
- Test case

	Test Case T1.1.6.1
Coverage Item	Tcover1.1.6.1
Input	elevator

State	elevators(1).v = 1;
	elevators(1).nextTarget = 1;
	elevators(1).y = 2.99;
	elevators(1).serviceState = 'Down';

Expected Output	elevators(1).downService(2) = 0; ctrl.downRequest(2) = 0;
	Test Case T1.1.6.2
Coverage Item	Tcover1.1.6.2
Input	elevator

State	elevators(1).v = 1;
	elevators(1).nextTarget = 1;
	elevators(1).y = 2.99;
	elevators(1).serviceState = 'Up';

Expected Output	elevators(1).upService(2) = 0; ctrl.upRequest(2) = 0;
	Test Case T1.1.6.3
Coverage Item	Tcover1.1.6.3
Input	elevator

State	elevators(1).v = 1;
	elevators(1).y = 2.99;
	elevators(1).nextTarget = 0;

Expected Output	ctrl.FB.Up.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.6.4
Coverage Item	Tcover1.1.6.4
Input	elevator

State	elevators(1).v = 1;
	elevators(1).y = 2.99;
	elevators(1).nextTarget = 3;

Expected Output	ctrl.F3.Down.BackgroundColor = [0.96,0.96,0.96]; ctrl.F3.B.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.6.5
Coverage Item	Tcover1.1.6.5
Input	elevator

	Test Case T1.1.6.1

State	elevators(1).v = 1;
	elevators(1).nextTarget = 1;
	elevators(1).y = 2.99;
	elevators(1).serviceState = 'Up';

Expected Output	ctrl.F1.Up.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.6.6
Coverage Item	Tcover1.1.6.6
Input	elevator

State	elevators(1).v = 1;
	elevators(1).nextTarget = 1;
	elevators(1).y = 2.99;
	elevators(1).serviceState = 'Up';

Expected Output	ctrl.F1.B.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.6.7
Coverage Item	Tcover1.1.6.7
Input	elevator

State	elevators(1).v = 1;
	elevators(1).nextTarget = 2;
	elevators(1).y = 2.99;
	elevators(1).serviceState = 'Up';

Expected Output	ctrl.F2.Up.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.6.8
Coverage Item	Tcover1.1.6.8
Input	elevator

State	elevators(1).v = 1;
	elevators(1).nextTarget = 2;
	elevators(1).y = 2.99;
	elevators(1).serviceState = 'Down';

Expected Output	ctrl.F2.Down.BackgroundColor = [0.96,0.96,0.96]; ctrl.F2.B.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.6.9
Coverage Item	Tcover1.1.6.9
Input	elevator
State	elevators(1).v = 2;
Expected Output	elevators(1).moveState = 'Run';

- Test coverage: 9/9=100%
- Test Result: 9 passed

T1.1.7 Test BRequest()

```
function BRequest(obj,floor)                % B Button pushed
            currentFloor = obj.elevators(1).y / obj.floorHeight;
            if currentFloor ~= floor//T1.1.7.1
                obj.elevators(1).downService(floor+1) = true;
            else//T1.1.7.2
                obj.FloorLightoff(floor,0);
            end
        end
```

- Coverage Criteria: Branch Coverage
- Test case

	Test Case T1.1.7.1
Coverage Item	Tcover1.1.7.1
Input	floor
State	elevators(1).y = 1;
Expected Output	ctrl.elevators(1).downService(2) = true;
	Test Case T1.1.3.2
Coverage Item	Tcover1.1.3.2
Input	floor
State	elevators(1).y = 3;
Expected Output	ctrl.FB.Up.BackgroundColor = [0.96,0.96,0.96];

- Test coverage: 2/2=100%
- Test Result: 2 passed

T1.1.8 Test addFloorRequest()

```
function addFloorRequest(obj,requestFloor,state)% state = 1 means up,-1 means
down
            if obj.elevators(1).y/obj.floorHeight == requestFloor ||
obj.elevators(2).y/obj.floorHeight == requestFloor
                if strcmp(obj.elevators(1).serviceState,'Up') && state == 1 &&
obj.elevators(1).y/obj.floorHeight == requestFloor//T1.1.8.1
                    obj.FloorLightoff(requestFloor,1);
                    obj.elevators(1).doorState = 'Opening';
                    return;
                elseif strcmp(obj.elevators(2).serviceState,'Up') && state == 1
&& obj.elevators(2).y/obj.floorHeight == requestFloor//T1.1.8.2
                    obj.FloorLightoff(requestFloor,1);
                    obj.elevators(2).doorState = 'Opening';
                    return;
```

```
                elseif strcmp(obj.elevators(1).serviceState,'Down') && state ==
-1 && obj.elevators(1).y/obj.floorHeight == requestFloor//T1.1.8.3
                    obj.FloorLightoff(requestFloor,-1);
                    obj.elevators(1).doorState = 'Opening';
                    return;
                elseif strcmp(obj.elevators(2).serviceState,'Down') && state ==
-1 && obj.elevators(2).y/obj.floorHeight == requestFloor//T1.1.8.4
                    obj.FloorLightoff(requestFloor,-1);
                    obj.elevators(2).doorState = 'Opening';
                    return;
                elseif strcmp(obj.elevators(1).serviceState,'Up') && state == -1
&& obj.elevators(1).y/obj.floorHeight == requestFloor
                    if obj.elevators(1).nextTarget == -1//T1.1.8.5
                        obj.elevators(1).serviceState = 'Down';
                        obj.FloorLightoff(requestFloor,-1);
                        obj.elevators(1).doorState = 'Opening';
                        return;
                    elseif obj.elevators(2).nextTarget == -1//T1.1.8.6
                        obj.elevators(2).downService(requestFloor+1) = true;
                        return;
                    end
                elseif strcmp(obj.elevators(2).serviceState,'Up') && state == -1
&& obj.elevators(2).y/obj.floorHeight == requestFloor
                    if obj.elevators(2).nextTarget == -1//T1.1.8.7
                        obj.elevators(2).serviceState = 'Down';
                        obj.FloorLightoff(requestFloor,-1);
                        obj.elevators(2).doorState = 'Opening';
                        return;
                    elseif obj.elevators(1).nextTarget == -1//T1.1.8.8
                        obj.elevators(1).downService(requestFloor+1) = true;
                        return;
                    end
                elseif strcmp(obj.elevators(1).serviceState,'Down') && state ==
1 && obj.elevators(1).y/obj.floorHeight == requestFloor
                    if obj.elevators(1).nextTarget == -1//T1.1.8.9
                        obj.elevators(1).serviceState = 'Up';
                        obj.FloorLightoff(requestFloor,1);
                        obj.elevators(1).doorState = 'Opening';
                        return;
                    elseif obj.elevators(2).nextTarget == -1//T1.1.8.10
                        obj.elevators(2).upService(requestFloor+1) = true;
                        return;
                    end
                elseif strcmp(obj.elevators(2).serviceState,'Down') && state ==
1 && obj.elevators(2).y/obj.floorHeight == requestFloor
                    if obj.elevators(2).nextTarget == -1//T1.1.8.11
                        obj.elevators(2).serviceState = 'Up';
                        obj.FloorLightoff(requestFloor,1);
                        obj.elevators(2).doorState = 'Opening';
                        return;
                    elseif obj.elevators(1).nextTarget == -1//T1.1.8.12
                        obj.elevators(1).upService(requestFloor+1) = true;
                        return;
                    end
                end
            end
            if requestFloor == 0//T1.1.8.13
                obj.elevators(1).upService(1)=true;
```

```
                return;
            end
            if requestFloor == 3
                if obj.elevators(1).vdir >= 0 && obj.elevators(2).vdir >= 0
                    if obj.elevators(1).y<=obj.elevators(2).y//T1.1.8.14
                        obj.elevators(2).downService(4) = true;
                        return;
                    else//T1.1.8.15
                        obj.elevators(1).downService(4) = true;
                        return;
                    end
                elseif obj.elevators(1).vdir >= 0//T1.1.8.16
                    obj.elevators(1).downService(4) = true;
                    return;
                elseif obj.elevators(2).vdir >= 0//T1.1.8.17
                    obj.elevators(2).downService(4) = true;
                    return;
                else
                    if obj.elevators(1).y<=obj.elevators(2).y//T1.1.8.18
                        obj.elevators(2).downService(4) = true;
                        return;
                    else//T1.1.8.19
                        obj.elevators(1).downService(4) = true;
                        return;
                    end
                end
            end


            switch state
                case 1//T1.1.8.20
                    obj.upRequest(requestFloor+1) = true;
                case -1//T1.1.8.21
                    obj.downRequest(requestFloor+1) = true;
            end
        end
```

- Coverage Criteria: Branch Coverage
- Test case

	Test Case T1.1.8.1
Coverage Item	Tcover1.1.8.1
Input	requestFloor,state
State	elevators(1).y = 3; elevators(1).serviceState = 'Up';
Expected Output	elevators(1).doorState = 'Opening'; ctrl.F1.Up.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.8.2
Coverage Item	Tcover1.1.8.2
Input	requestFloor,state
State	elevators(2).y = 3; elevators(2).serviceState = 'Up';
Expected Output	elevators(2).doorState = 'Opening'; ctrl.F1.Up.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.8.3
Coverage Item	Tcover1.1.8.3
Input	requestFloor,state
State	elevators(1).y = 6; elevators(1).serviceState = 'Down';
Expected Output	ctrl.F2.Down.BackgroundColor = [0.96,0.96,0.96]; elevators(1).doorState = 'Opening';
	Test Case T1.1.8.4
Coverage Item	Tcover1.1.8.4
Input	requestFloor,state
State	elevators(2).y = 6; elevators(2).serviceState = 'Down';
Expected Output	ctrl.F2.Down.BackgroundColor = [0.96,0.96,0.96]; elevators(2).doorState = 'Opening';
	Test Case T1.1.8.5
Coverage Item	Tcover1.1.8.5
Input	requestFloor,state

State	elevators(1).y = 6;
	elevators(1).serviceState = 'Up';
	elevators(1).nextTarget = -1;

	Test Case T1.1.8.1
Expected Output	ctrl.F2.Down.BackgroundColor = [0.96,0.96,0.96]; elevators(1).serviceState = 'Down'; elevators(1).doorState = 'Opening';
	Test Case T1.1.8.6
Coverage Item	Tcover1.1.8.6
Input	requestFloor,state

State	elevators(1).y = 3;
	elevators(1).serviceState = 'Up';
	elevators(2).nextTarget = -1;

Expected Output	elevators(2).downService(2) = true;
	Test Case T1.1.8.7
Coverage Item	Tcover1.1.8.7
Input	requestFloor,state

State	elevators(2).y = 6;
	elevators(2).serviceState = 'Up';
	elevators(2).nextTarget = -1;

Expected Output	ctrl.F2.Down.BackgroundColor = [0.96,0.96,0.96]; elevators(2).serviceState = 'Down'; elevators(2).doorState = 'Opening';
	Test Case T1.1.8.8
Coverage Item	Tcover1.1.8.8
Input	requestFloor,state

State	elevators(2).y = 3;
	elevators(2).serviceState = 'Up';
	elevators(1).nextTarget = -1;

Expected Output	elevators(1).downService(2) = true;
	Test Case T1.1.8.9
Coverage Item	Tcover1.1.8.9
Input	requestFloor,state

State	elevators(1).y = 6;
	elevators(1).serviceState = 'Down';
	elevators(1).nextTarget = -1;

Expected Output	ctrl.F2.Down.BackgroundColor = [0.96,0.96,0.96]; elevators(1).serviceState = 'Up'; elevators(1).doorState = 'Opening';
	Test Case T1.1.8.10

	Test Case T1.1.8.1
Coverage Item	Tcover1.1.8.10
Input	requestFloor,state

State	elevators(1).y = 3;
	elevators(1).serviceState = 'Down';
	elevators(2).nextTarget = -1;

Expected Output	elevators(2).upService(2) = true;

	Test Case T1.1.8.11
Coverage Item	Tcover1.1.8.11
Input	requestFloor,state

State	elevators(2).y = 6;
	elevators(2).serviceState = 'Down';
	elevators(2).nextTarget = -1;

Expected Output	elevators(2).serviceState = 'Up'; ctrl.F2.Down.BackgroundColor = [0.96,0.96,0.96]; elevators(2).doorState = 'Opening';
	Test Case T1.1.8.12
Coverage Item	Tcover1.1.8.12
Input	requestFloor,state

State	elevators(2).y = 3;
	elevators(2).serviceState = 'Down';
	elevators(1).nextTarget = -1;

Expected Output	elevators(1).upService(2) = true;
	Test Case T1.1.8.13
Coverage Item	Tcover1.1.8.13
Input	requestFloor,state
State	elevators(1).y = 0;
Expected Output	elevators(1).upService(1) = true;
	Test Case T1.1.8.14
Coverage Item	Tcover1.1.8.14
Input	requestFloor,state

State	elevators(1).y = 9;
	elevators(1).vdir = 2;
	elevators(2).vdir = 3;

Expected Output	elevators(2).downService(4) = true;
	Test Case T1.1.8.15
Coverage Item	Tcover1.1.8.15
Input	requestFloor,state

State	elevators(1).y = 9;
	elevators(1).vdir = 3;
	elevators(2).vdir = 2;

Expected Output	elevators(1).downService(4) = true;

	Test Case T1.1.8.11
	Test Case T1.1.8.16
Coverage Item	Tcover1.1.8.16
Input	requestFloor,state

State	elevators(1).y = 9;
	elevators(1).vdir = 3;
	elevators(2).vdir = -1;

Expected Output	elevators(1).downService(4) = true;
	Test Case T1.1.8.17
Coverage Item	Tcover1.1.8.17
Input	requestFloor,state

State	elevators(1).y = 9;
	elevators(2).vdir = 3;
	elevators(1).vdir = -1;

Expected Output	elevators(2).downService(4) = true;
	Test Case T1.1.8.18
Coverage Item	Tcover1.1.8.18
Input	requestFloor,state

State	elevators(1).y = 6;
	elevators(2).y = 9;
	elevators(2).vdir = -1;
	elevators(1).vdir = -1;

Expected Output	elevators(2).downService(4) = true;
	Test Case T1.1.8.19
Coverage Item	Tcover1.1.8.19
Input	requestFloor,state

State	elevators(1).y = 9;
	elevators(2).y = 6;
	elevators(2).vdir = -1;
	elevators(1).vdir = -1;

Expected Output	elevators(1).downService(4) = true;
	Test Case T1.1.8.20
Coverage Item	Tcover1.1.8.20
Input	requestFloor,state
State	state = 1; requestFloor = 1;

	Test Case T1.1.8.11
Expected Output	upRequest(2) = true;
	Test Case T1.1.8.21
Coverage Item	Tcover1.1.8.21
Input	requestFloor,state
State	state = -1; requestFloor = 1;
Expected Output	downRequest(2) = true;

- Test Coverage: 21/21 = 100%
- Test Result: 21 passed

T1.1.9 Test lightPowerOff()

```
function lightPowerOff(obj,id,floor)        % turn the ele light off
            if strcmp(id,'L')
                switch floor
                    case 0//T1.1.9.1
                        obj.Lui.L_B.BackgroundColor = [0.96,0.96,0.96];
                    case 1//T1.1.9.2
                        obj.Lui.L_1.BackgroundColor = [0.96,0.96,0.96];
                    case 2//T1.1.9.3
                        obj.Lui.L_2.BackgroundColor = [0.96,0.96,0.96];
                    case 3//T1.1.9.4
                        obj.Lui.L_3.BackgroundColor = [0.96,0.96,0.96];
                end
            elseif strcmp(id,'R')
                switch floor
                    case 1//T1.1.9.5
                        obj.Rui.R_1.BackgroundColor = [0.96,0.96,0.96];
                    case 2//T1.1.9.6
                        obj.Rui.R_2.BackgroundColor = [0.96,0.96,0.96];
                    case 3//T1.1.9.7
                        obj.Rui.R_3.BackgroundColor = [0.96,0.96,0.96];
                end
            end
        end
```

- Coverage Criteria: Branch Coverage
- Test case

	Test Case T1.1.9.1
Coverage Item	Tcover1.1.91
Input	id,floor
State	id='L'; floor = 0;
Expected Output	ctrl.Lui.L_B.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.9.2
Coverage Item	Tcover1.1.92
Input	id,floor
State	id='L'; floor = 1;
Expected Output	ctrl.Lui.L_1.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.9.3
Coverage Item	Tcover1.1.9.3
Input	id,floor
State	id='L'; floor = 2;
Expected Output	ctrl.Lui.L_2.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.9.4
Coverage Item	Tcover1.1.9.4
Input	id,floor
State	id='L'; floor = 3;
Expected Output	ctrl.Lui.L_3.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.9.5
Coverage Item	Tcover1.1.9.5
Input	id,floor
State	id='R'; floor = 1;
Expected Output	ctrl.Rui.R_1.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.9.6
Coverage Item	Tcover1.1.9.6
Input	id,floor

	Test Case T1.1.9.1
State	id='R'; floor = 2;
Expected Output	ctrl.Rui.R_2.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.9.7
Coverage Item	Tcover1.1.9.7
Input	id,floor
State	id='R'; floor = 3;
Expected Output	ctrl.Rui.R_3.BackgroundColor = [0.96,0.96,0.96];

- Test Coverage: 7/7 = 100%
- Test Result: 7 passed

T1.1.10 Test FloorLightOff()

```
function FloorLightoff(obj,floor,state)     % turn the floor light off
            switch floor
                case 0//T1.1.10.1
                    obj.FB.Up.BackgroundColor = [0.96,0.96,0.96];
                case 1
                    if state == 1//T1.1.10.2
                        obj.F1.Up.BackgroundColor = [0.96,0.96,0.96];
                    elseif state == 0//T1.1.10.3
                        obj.F1.B.BackgroundColor = [0.96,0.96,0.96];
                    end
               case 2
                    if state == 1//T1.1.10.4
                        obj.F2.Up.BackgroundColor = [0.96,0.96,0.96];
                    elseif state == 0//T1.1.10.5
                        obj.F2.B.BackgroundColor = [0.96,0.96,0.96];
                    elseif state == -1//T1.1.10.6
                        obj.F2.Down.BackgroundColor = [0.96,0.96,0.96];
                    end
               case 3
                    if state == 0//T1.1.10.7
                        obj.F3.B.BackgroundColor = [0.96,0.96,0.96];
                    elseif state == -1//T1.1.10.8
                        obj.F3.Down.BackgroundColor = [0.96,0.96,0.96];
                    end
            end
        end
```

- Coverage Criteria: Branch Coverage
- Test case

	Test Case T1.1.10.1
Coverage Item	Tcover1.1.10.1
Input	floor,state
State	state = 1; floor = 0;
Expected Output	ctrl.FB.Up.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.10.2
Coverage Item	Tcover1.1.10.2
Input	floor,state
State	state = 1; floor = 1;
Expected Output	ctrl.F1.Up.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.10.3
Coverage Item	Tcover1.1.10.3
Input	floor,state
State	state = 0; floor = 1;
Expected Output	ctrl.F1.B.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.10.4
Coverage Item	Tcover1.1.10.4
Input	floor,state
State	state = 1; floor = 2;
Expected Output	ctrl.F2.Up.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.10.5
Coverage Item	Tcover1.1.10.5
Input	floor,state
State	state = 0; floor = 2;
Expected Output	ctrl.F2.B.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.10.6
Coverage Item	Tcover1.1.10.6
Input	floor,state

	Test Case T1.1.10.1
State	state = -1; floor = 2;
Expected Output	ctrl.F2.Down.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.10.7
Coverage Item	Tcover1.1.10.7
Input	floor,state
State	state = 0; floor = 3;
Expected Output	ctrl.F3.B.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.10.8
Coverage Item	Tcover1.1.10.8
Input	floor,state
State	state = -1; floor = 3;
Expected Output	ctrl.F3.Down.BackgroundColor = [0.96,0.96,0.96];

- Test Coverage: 8/8 = 100%
- Test Result: 8 passed

T1.1.11 Test addElevatorRequest()

```
function addElevatorRequest(obj, requestElevator, requestFloor) %requestElevator
1-L 2-R
            elevator = obj.elevators(requestElevator);
            if  requestFloor * obj.floorHeight == elevator.y//T1.1.11.1
                obj.lightPowerOff( elevator.id,requestFloor );
                return;
            end
            if  requestFloor * obj.floorHeight > elevator.y//T1.1.11.2
                elevator.upService(requestFloor+1) = true;
            elseif requestFloor * obj.floorHeight < elevator.y//T1.1.11.3
                elevator.downService(requestFloor+1) = true;
            end
        end
```

- Coverage Criteria: Branch Coverage
- Test case

	Test Case T1.1.11.1
Coverage Item	Tcover1.1.11.1
Input	requestelevator, requestfloor

State	requestelevator = 1;
	requestfloor = 1;
	elevators(1).y = 3;

Expected Output	ctrl.Lui.L_1.BackgroundColor = [0.96,0.96,0.96];
	Test Case T1.1.11.2
Coverage Item	Tcover1.1.11.2
Input	requestelevator, requestfloor

State	requestelevator = 1;
	requestfloor = 1;
	elevators(1).y = 2;

Expected Output	elevators(1).upService(2)=true;
	Test Case T1.1.11.3
Coverage Item	Tcover1.1.11.3
Input	requestelevator, requestfloor

State	requestelevator = 1;
	requestfloor = 1;
	elevators(1).y = 4;

Expected Output	elevators(1).downService(2)=true;

- Test Coverage: 3/3 = 100%
- Test Result: 3 passed

T1.1.12 Test OpenDoor()

```
function OpenDoor(~,x) % open the door
            if x.doortimer == 20//T1.1.12.1
                x.doorState = 'Closing';
                return;
            end
            if x.v == 0 && x.doorSize > 0 && strcmp(x.doorState,
'Opening')//T1.1.12.2
                x.doorSize = x.doorSize - 1;
            end
            if x.v == 0 && x.doorSize == 0//T1.1.12.3
                x.doorState = 'Opened';
                x.doortimer = x.doortimer + 1;
            end
        end
```

- Coverage Criteria: Branch Coverage
- Test case

	Test Case T1.1.12.1
Coverage Item	Tcover1.1.12.1
Input	elevator
State	elevators(1).doortimer = 20;
Expected Output	elevators(1).doorState = 'Closing';
	Test Case T1.1.12.2
Coverage Item	Tcover1.1.12.2
Input	elevator

State	elevators(1).doortimer = 10;
	elevators(1).v = 0;
	elevators(1).doorSize = 25;
	elevators(1).doorState = 'Opening';

Expected Output	elevators(1).doorSize -= 1;
	Test Case T1.1.12.3
Coverage Item	Tcover1.1.12.3
Input	elevator

State	elevators(1).doortimer = 10;
	elevators(1).v = 0;
	elevators(1).doorSize = 0;

Expected Output	elevators(1).doorState='Opened'' elevators(1).doortimer+=1;

- Test Coverage: 3/3 = 100%
- Test Result: 3 passed

T1.1.13 Test CloseDoor()

```
function CloseDoor(~,x) % close the door
            if x.v == 0 && x.doorSize < 45 && strcmp(x.doorState,
'Closing')//T1.1.13.1
                x.doorSize = x.doorSize + 1;
            end
            if x.doorSize == 45//T1.1.13.2
                x.doorState = 'Closed';
                x.doortimer = 0;
            end
        end
```

- Coverage Criteria: Branch Coverage
- Test case

	Test Case T1.1.12.1
Coverage Item	Tcover1.1.12.1
Input	elevator

State	elevators(1).doorState = 'Closing';
	elevators(1).v = 0;
	elevators(1).doorSize = 25;

Expected Output	elevators(1).doorSize += 1;
	Test Case T1.1.12.2
Coverage Item	Tcover1.1.12.2
Input	elevator
State	elevators(1).doorSize = 45;
Expected Output	elevators(1).doortimer = 0; elevators(1).doorState = 'Closed';

- Test Coverage: 2/2 = 100%
- Test Result: 2 passed

T1.1.14 Test LoadUI()

```
function LoadUI(obj)    % update the version
            if obj.elevators(1).v == 0 //T1.1.14.1
                obj.FB.State.Value ='Standby';
                obj.F1.L_State.Value ='Standby';
                obj.F2.L_State.Value ='Standby';
                obj.F3.L_State.Value ='Standby';
                obj.Lui.State.Value = 'Standby';
            elseif obj.elevators(1).vdir > 0 //T1.1.14.2
                obj.FB.State.Value ='Up';
                obj.F1.L_State.Value ='Up';
                obj.F2.L_State.Value ='Up';
                obj.F3.L_State.Value ='Up';
                obj.Lui.State.Value = 'Up';
            elseif obj.elevators(1).vdir < 0//T1.1.14.3
                obj.FB.State.Value ='Down';
                obj.F1.L_State.Value ='Down';
                obj.F2.L_State.Value ='Down';
                obj.F3.L_State.Value ='Down';
                obj.Lui.State.Value = 'Down';
            end
            if obj.elevators(2).v == 0 //T1.1.14.4
                obj.Rui.State.Value = 'Standby';
                obj.F1.R_State.Value ='Standby';
                obj.F2.R_State.Value ='Standby';
                obj.F3.R_State.Value ='Standby';
            elseif obj.elevators(2).vdir > 0 //T1.1.14.5
                obj.Rui.State.Value = 'Up';
                obj.F1.R_State.Value ='Up';
                obj.F2.R_State.Value ='Up';
                obj.F3.R_State.Value ='Up';
```

```
            elseif obj.elevators(2).vdir < 0//T1.1.14.6
                obj.Rui.State.Value = 'Down';
                obj.F1.R_State.Value ='Down';
                obj.F2.R_State.Value ='Down';
                obj.F3.R_State.Value ='Down';
            end
            if obj.elevators(1).y>=0 && obj.elevators(1).y < 1.5//T1.1.14.7
                obj.F3.LD.Value ='B';
                obj.F2.LD.Value ='B';
                obj.F1.LD.Value ='B';
                obj.FB.LD.Value ='B';
                obj.Lui.LeftDisplayer.Value = 'B';
            elseif obj.elevators(1).y>= 1.5 && obj.elevators(1).y <
4.5//T1.1.14.8
                obj.F3.LD.Value ='1';
                obj.F2.LD.Value ='1';
                obj.F1.LD.Value ='1';
                obj.FB.LD.Value ='1';
                obj.Lui.LeftDisplayer.Value = '1';
            elseif obj.elevators(1).y>= 4.5 && obj.elevators(1).y <
7.5//T1.1.14.9
                obj.F3.LD.Value ='2';
                obj.F2.LD.Value ='2';
                obj.F1.LD.Value ='2';
                obj.FB.LD.Value ='2';
                obj.Lui.LeftDisplayer.Value = '2';
            elseif obj.elevators(1).y>=7.5 && obj.elevators(1).y <=9//T1.1.14.10
                obj.F3.LD.Value ='3';
                obj.F2.LD.Value ='3';
                obj.F1.LD.Value ='3';
                obj.FB.LD.Value ='3';
                obj.Lui.LeftDisplayer.Value = '3';
            end
            if obj.elevators(2).y>= 3 && obj.elevators(2).y < 4.5//T1.1.14.11
                obj.F3.RD.Value ='1';
                obj.F2.RD.Value ='1';
                obj.F1.RD.Value ='1';
                obj.Rui.RightDisplayer.Value = '1';
            elseif obj.elevators(2).y>= 4.5 && obj.elevators(2).y <
7.5//T1.1.14.12
                obj.F3.RD.Value ='2';
                obj.F2.RD.Value ='2';
                obj.F1.RD.Value ='2';
                obj.Rui.RightDisplayer.Value = '2';
            elseif obj.elevators(2).y>=7.5 && obj.elevators(2).y <=9//T1.1.14.13
                obj.F3.RD.Value ='3';
                obj.F2.RD.Value ='3';
                obj.F1.RD.Value ='3';
                obj.Rui.RightDisplayer.Value = '3';
            end
        end
```

- Coverage Criteria: Branch Coverage
- Test case

	Test Case T1.1.14.1
Coverage Item	Tcover1.1.14.1
Input	------
State	elevators(1).v = 0;
Expected Output	ctrl.FB.State.Value='Standby'; ctrl.F1.L_State.Value='Standby'; ctrl.F2.L_State.Value='Standby'; ctrl.F3.L_State.Value='Standby'; ctrl.Lui.State.Value='Standby';
	Test Case T1.1.14.2
Coverage Item	Tcover1.1.14.2
Input	------
State	elevators(1).v = 1; elevators(1).vdir = 2;
Expected Output	ctrl.FB.State.Value='Up'; ctrl.F1.L_State.Value='Up'; ctrl.F2.L_State.Value='Up'; ctrl.F3.L_State.Value='Up'; ctrl.Lui.State.Value='Up';
	Test Case T1.1.14.3
Coverage Item	Tcover1.1.14.3
Input	------
State	elevators(1).v = 1; elevators(1).vdir = -2;
Expected Output	ctrl.FB.State.Value='Down' ctrl.F1.L_State.Value='Down'; ctrl.F2.L_State.Value='Down''; ctrl.F3.L_State.Value='Down'; ctrl.Lui.State.Value='Down';
	Test Case T1.1.14.4
Coverage Item	Tcover1.1.14.4
Input	------
State	elevators(2).v = 0;
Expected Output	ctrl.FB.State.Value='Standby'; ctrl.F1.R_State.Value='Standby'; ctrl.F2.R_State.Value='Standby'; ctrl.F3.R_State.Value='Standby'; ctrl.Rui.State.Value='Standby';

	Test Case T1.1.14.1
	Test Case T1.1.14.5
Coverage Item	Tcover1.1.14.5
Input	------
State	elevators(2).v = 1; elevators(2).vdir = 2;
Expected Output	ctrl.FB.State.Value='Up'; ctrl.F1.R_State.Value='Up'; ctrl.F2.R_State.Value='Up'; ctrl.F3.R_State.Value='Up'; ctrl.Rui.State.Value='Up';
	Test Case T1.1.14.6
Coverage Item	Tcover1.1.14.6
Input	------
State	elevators(2).v = 1; elevators(2).vdir = -2;
Expected Output	ctrl.FB.State.Value='Down' ctrl.F1.R_State.Value='Down'; ctrl.F2.R_State.Value='Down''; ctrl.F3.R_State.Value='Down'; ctrl.Rui.State.Value='Down';
	Test Case T1.1.14.7
Coverage Item	Tcover1.1.14.7
Input	------
State	elevators(1).y = 1;
Expected Output	ctrl.F3.LD.Value='B'; ctrl.F2.LD.Value='B'; ctrl.F1.LD.Value='B'; ctrl.FB.LD.Value='B'; ctrl.Lui.LeftDisplayer.Value='B';

	Test Case T1.1.14.8
Coverage Item	Tcover1.1.14.8
Input	------
State	elevators(1).y = 2;
Expected Output	ctrl.F3.LD.Value='1'; ctrl.F2.LD.Value='1'; ctrl.F1.LD.Value='1'; ctrl.FB.LD.Value='1'; ctrl.Lui.LeftDisplayer.Value='1';
	Test Case T1.1.14.9
Coverage Item	Tcover1.1.14.9
Input	------
State	elevators(1).y = 6;
Expected Output	ctrl.F3.LD.Value='2'; ctrl.F2.LD.Value='2'; ctrl.F1.LD.Value='2'; ctrl.FB.LD.Value='2'; ctrl.Lui.LeftDisplayer.Value='2';
	Test Case T1.1.14.10
Coverage Item	Tcover1.1.14.10
Input	------
State	elevators(1).y = 8;
Expected Output	ctrl.F3.LD.Value='3'; ctrl.F2.LD.Value='3'; ctrl.F1.LD.Value='3'; ctrl.FB.LD.Value='3'; ctrl.Lui.LeftDisplayer.Value='3';
	Test Case T1.1.14.11
Coverage Item	Tcover1.1.14.11
Input	------
State	elevators(2).y = 4;
Expected Output	ctrl.F3.RD.Value='1'; ctrl.F2.RD.Value='1'; ctrl.F1.RD.Value='1'; ctrl.Rui.RightDisplayer.Value='1';
	Test Case T1.1.14.12
Coverage Item	Tcover1.1.14.12

	Test Case T1.1.14.8
Input	------
State	elevators(2).y = 6;
Expected Output	ctrl.F3.RD.Value='2'; ctrl.F2.RD.Value='2'; ctrl.F1.RD.Value='2'; ctrl.Rui.RightDisplayer.Value='2';
	Test Case T1.1.14.13
Coverage Item	Tcover1.1.14.13
Input	------
State	elevators(2).y = 8;
Expected Output	ctrl.F3.RD.Value='3'; ctrl.F2.RD.Value='3'; ctrl.F1.RD.Value='3'; ctrl.Rui.RightDisplayer.Value='3';

- Test coverage: 13/13=100%
- Test Result: 13 passed

T1.2 Elevator Unit Test

T1.2.1 Test Elevator()

```
function obj = Elevator(id)
            obj.id = id;
            obj.y = 3; % at 1F initially
            obj.v = 0;
            obj.vdir = 0;
            obj.adir = 0;
            obj.a = 0;
            obj.floor = 0;
            obj.nextTarget = -1;
            obj.moveState = 'Standby';
            obj.serviceState = 'Up';
            obj.upService = [false false false false];
            obj.downService = [false false false false];
            obj.doorState = 'Closed';
            obj.doorSize = 45;
            obj.doortimer = 0;
        end
```

- Coverage Criteria: State Coverage
- Test case

	Test Case T1.2.1
Coverage Item	Tcover1.2.1
Input	----
State	-----

Expected Output	id = id;
	y = 3;
	v = 0;
	vdir = 0;
	adir = 0;
	a = 0;
	floor = 0;
	nextTarget = -1;
	moveState = 'Standby';
	serviceState = 'Up';
	upService = [false false false false];
	downService = [false false false false];
	doorState = 'Closed';
	doorSize = 45;
	doortimer = 0;

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.2.2 Test move()

```
function move(obj)
            obj.y = obj.y + obj.vdir * obj.v * obj.dt;
            obj.v = obj.v + obj.adir * obj.a * obj.dt;
        end
```

- Coverage Criteria: State Coverage
- Test case

	Test Case T1.2.2
Coverage Item	Tcover1.2.2
Input	----

State	elevators(2).y = 3;
	elevators(2).vdir = 1;
	elevators(2).v = 1;
	elevators(2).adir = 2;
	elevators(2).a = 0.5;

Expected Output	elevators(2).y = 5.91 elevators(2).v = 1

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.2.3 Test update()

```
function update(obj)
            switch obj.moveState
                case 'Start'//T1.2.3.1
                    obj.adir = obj.vdir;
                    obj.a = 0.5;
                    obj.adir = 1;
                case 'Stop'//T1.2.3.2
                    obj.adir = -obj.vdir;
                    obj.a = 0.5;
                    obj.adir = -1;
                case 'Run'//T1.2.3.3
                    obj.a = 0;
                    obj.v = 1;
                case 'Standby'//T1.2.3.4
                    obj.a = 0;
                    obj.v = 0;
            end
        end
```

- Coverage Criteria: Branch Coverage
- Test case

Test Case T1.2.3.1
Coverage Item
Input
State
Expected Output
Coverage Item
Input
State
Expected Output
Coverage Item
Input
State
Expected Output
Coverage Item
Input
State
Expected Output

- Test coverage: 4/4=100%
- Test Result: 4 passed

T1.3 EleVersion Unit Test

T1.3.1 Test LoadUI()

```
function LoadUI(app)
            app.LeftElevator.Position(2) = app.Ctrl.elevators(1).y*80;
            app.LLD.Position(2) = app.LeftElevator.Position(2)+12;
            app.LRD.Position(2) = app.LeftElevator.Position(2)+12;
            app.LLD.Position(3) = app.Ctrl.elevators(1).doorSize;
            app.LRD.Position(3) = app.Ctrl.elevators(1).doorSize;
            app.LRD.Position(1) = 385-app.Ctrl.elevators(1).doorSize;
            app.RightElevator.Position(2) = app.Ctrl.elevators(2).y*80;
            app.RLD.Position(2) = app.RightElevator.Position(2)+12;
            app.RRD.Position(2) = app.RightElevator.Position(2)+12;
            app.RLD.Position(3) = app.Ctrl.elevators(2).doorSize;
            app.RRD.Position(3) = app.Ctrl.elevators(2).doorSize;
            app.RRD.Position(1) = 689-app.Ctrl.elevators(2).doorSize;
```

```
            app.R_a.Value =
sprintf('%s',string(app.Ctrl.elevators(2).adir*app.Ctrl.elevators(2).a));
            app.R_v.Value = sprintf('%s',string(app.Ctrl.elevators(2).v));
            app.R_height.Value = sprintf('%s',string(app.Ctrl.elevators(2).y-
3));
            app.R_DoorState.Value =
sprintf('%s',string(app.Ctrl.elevators(2).doorState));
            app.L_a.Value =
sprintf('%s',string(app.Ctrl.elevators(1).adir*app.Ctrl.elevators(1).a));
            app.L_v.Value = sprintf('%s',string(app.Ctrl.elevators(1).v));
            app.L_height.Value = sprintf('%s',string(app.Ctrl.elevators(1).y-
3));
            app.L_DoorState.Value =
sprintf('%s',string(app.Ctrl.elevators(1).doorState));
            if app.Ctrl.elevators(1).y>=0 && app.Ctrl.elevators(1).y <
1.5//T1.3.1.1
                app.LeftDisplayer.Value = 'B';

            elseif app.Ctrl.elevators(1).y>= 1.5 && app.Ctrl.elevators(1).y <
4.5//T1.3.1.2
                app.LeftDisplayer.Value = '1';

            elseif app.Ctrl.elevators(1).y>= 4.5 && app.Ctrl.elevators(1).y <
7.5//T1.3.1.3
                app.LeftDisplayer.Value = '2';

            elseif app.Ctrl.elevators(1).y>=7.5 && app.Ctrl.elevators(1).y
<=9//T1.3.1.4
                app.LeftDisplayer.Value = '3';

            end
            if app.Ctrl.elevators(2).y>= 3 && app.Ctrl.elevators(2).y <
4.5//T1.3.1.5
                app.RightDisplayer.Value = '1';

            elseif app.Ctrl.elevators(2).y>= 4.5 && app.Ctrl.elevators(2).y <
7.5//T1.3.1.6
                app.RightDisplayer.Value = '2';

            elseif app.Ctrl.elevators(2).y>=7.5 && app.Ctrl.elevators(2).y
<=9//T1.3.1.7
                app.RightDisplayer.Value = '3';

            end
        end
```

- Coverage Criteria: Branch Coverage
- Test case

	Test Case T1.3.1.1
Coverage Item	Tcover1.3.1.1
Input	------
State	elevators(1).y = 1;
Expected Output	ctrl.Version.LeftDisplayer.Value = 'B'
	Test Case T1.3.1.2
Coverage Item	Tcover1.3.1.2
Input	------
State	ctrl.Version.LeftDisplayer.Value = '1'
Expected Output	elevators(1).y = 3;
	Test Case T1.3.1.3
Coverage Item	Tcover1.3.1.3
Input	------
State	elevators(1).y = 6;
Expected Output	ctrl.Version.LeftDisplayer.Value = '2'
	Test Case T1.3.1.4
Coverage Item	Tcover1.3.1.4
Input	------
State	elevators(1).y = 8;
Expected Output	ctrl.Version.LeftDisplayer.Value = '3'
	Test Case T1.3.1.5
Coverage Item	Tcover1.3.1.5
Input	------
State	elevators(2).y = 4;
Expected Output	ctrl.Version.RightDisplayer.Value = '1'
	Test Case T1.3.1.6
Coverage Item	Tcover1.3.1.6
Input	------
State	elevators(2).y = 6;
Expected Output	ctrl.Version.RightDisplayer.Value = '2'
	Test Case T1.3.1.7

	Test Case T1.3.1.1
Coverage Item	Tcover1.3.1.7
Input	------
State	elevators(2).y = 8;
Expected Output	ctrl.Version.RightDisplayer.Value = '3'

- Test Coverage: 7/7 = 100%
- Test Result: 7 passed

T1.3.2 Test UIFigureCloseRequest()

```
function UIFigureCloseRequest(app, event)
            app.Ctrl.delete();
            delete(app);

        end
```

- Coverage Criteria: State Coverage
- Test case

	Test Case T1.2.2
Coverage Item	Tcover1.2.2
Input	----
State	------
Expected Output	All apps closed

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.4 F1UI Unit Test

T1.4.1 Test BButtonPushed()

```
function BButtonPushed(app, event)
            app.B.BackgroundColor = [0.44,0.9,0.8];
            app.Ctrl.BRequest(1);
        end
```

- Coverage Criteria: State Coverage
- Test case

	Test Case T1.4.1
Coverage Item	Tcover1.4.1
Input	----
State	------
Expected Output	F1UI.B.BackgroundColor = [0.44,0.9,0.8];

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.4.2 Test UpButtonPushed()

```
function UpButtonPushed(app, event)
            app.Up.BackgroundColor = [0.44,0.9,0.8];
            app.Ctrl.addFloorRequest(1,1);
        end
```

- Coverage Criteria: State Coverage
- Test case

	Test Case T1.4.2
Coverage Item	Tcover1.4.2
Input	----
State	------
Expected Output	F1UI.Up.BackgroundColor = [0.44,0.9,0.8];

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.5 F2UI Unit Test

T1.5.1 Test BButtonPushed()

```
function BButtonPushed(app, event)
            app.B.BackgroundColor = [0.44,0.9,0.8];
            app.Ctrl.BRequest(2);
        end
```

- Coverage Criteria: State Coverage
- Test case

	Test Case T1.5.1
Coverage Item	Tcover1.5.1
Input	----
State	------
Expected Output	F2UI.B.BackgroundColor = [0.44,0.9,0.8];

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.5.2 Test UpButtonPushed()

```
function UpButtonPushed(app, event)
            app.Up.BackgroundColor = [0.44,0.9,0.8];
            app.Ctrl.addFloorRequest(2,1);
        end
```

- Coverage Criteria: State Coverage
- Test case

	Test Case T1.5.2
Coverage Item	Tcover1.5.2
Input	----
State	------
Expected Output	F2UI.Up.BackgroundColor = [0.44,0.9,0.8];

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.5.3 Test DownButtonPushed()

```
function DownButtonPushed(app, event)
            app.Down.BackgroundColor = [0.44,0.9,0.8];
            app.Ctrl.addFloorRequest(2,-1);
        end
```

- Coverage Criteria: State Coverage
- Test case

	Test Case T1.5.3
Coverage Item	Tcover1.5.3
Input	----
State	------
Expected Output	F2UI.Down.BackgroundColor = [0.44,0.9,0.8];

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.6 F3UI Unit Test

T1.6.1 Test BButtonPushed()

```
function BButtonPushed(app, event)
            app.B.BackgroundColor = [0.44,0.9,0.8];
            app.Ctrl.BRequest(3);
        end
```

- Coverage Criteria: State Coverage
- Test case

	Test Case T1.6.1
Coverage Item	Tcover1.6.1
Input	----
State	------
Expected Output	F3UI.B.BackgroundColor = [0.44,0.9,0.8];

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.6.2 Test DownButtonPushed()

```
function DownButtonPushed(app, event)
            app.Down.BackgroundColor = [0.44,0.9,0.8];
            app.Ctrl.addFloorRequest(3,-1);
        end
```

- Coverage Criteria: State Coverage
- Test case

	Test Case T1.6.2
Coverage Item	Tcover1.6.2
Input	----
State	------
Expected Output	F3UI.Down.BackgroundColor = [0.44,0.9,0.8];

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.7 FBUI Unit Test

T1.7.1 Test UpButtonPushed()

```
function UpButtonPushed(app, event)
            app.Up.BackgroundColor = [0.44,0.9,0.8];
            app.Ctrl.addFloorRequest(0,1);
        end
```

- Coverage Criteria: State Coverage
- Test case

	Test Case T1.7.1
Coverage Item	Tcover1.7.1
Input	----
State	------
Expected Output	FBUI.Up.BackgroundColor = [0.44,0.9,0.8];

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.8 LctrlUI Unit Test

T1.8.1 Test L_0ButtonPushed()

```
function L_0ButtonPushed(app, event)
            if app.Ctrl.elevators(1).v == 0
                app.Ctrl.elevators(1).doorState = 'Opening';
            end
        end
```

- Coverage Criteria: Branch Coverage
- Test case

	Test Case T1.8.1
Coverage Item	Tcover1.8.1
Input	----
State	elevators(1).v = 0;
Expected Output	elevators(1).doorState = 'Opening';

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.8.2 Test L_CButtonPushed()

```
function L_CButtonPushed(app, event)
            if strcmp(app.Ctrl.elevators(1).doorState,'Opened')
                app.Ctrl.elevators(1).doorState = 'Closing';
            end
        end
```

- Coverage Criteria: Branch Coverage
- Test case

	Test Case T1.8.2
Coverage Item	Tcover1.8.2
Input	----
State	elevators(1).doorState == 'Opened';
Expected Output	elevators(1).doorState = 'Closing';

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.8.3 Test L_1ButtonPushed()

```
function L_1ButtonPushed(app, event)
            app.L_1.BackgroundColor = [0.44,0.9,0.8];
            app.Ctrl.addElevatorRequest(1, 1);
        end
```

- Coverage Criteria: State Coverage
- Test case

	Test Case T1.8.3
Coverage Item	Tcover1.8.3
Input	----
State	----
Expected Output	LctrlUI.L_1.BackgroundColor = [0.44,0.9,0.8];

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.8.4 Test L_2ButtonPushed()

```
function L_2ButtonPushed(app, event)
            app.L_2.BackgroundColor = [0.44,0.9,0.8];
            app.Ctrl.addElevatorRequest(1, 2);
        end
```

- Coverage Criteria: State Coverage

- Test case

	Test Case T1.8.4
Coverage Item	Tcover1.8.4
Input	----
State	----
Expected Output	LctrlUI.L_2.BackgroundColor = [0.44,0.9,0.8];

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.8.5 Test L_3ButtonPushed()

```
function L_3ButtonPushed(app, event)
            app.L_3.BackgroundColor = [0.44,0.9,0.8];
             app.Ctrl.addElevatorRequest(1, 3);
        end
```

- Coverage Criteria: State Coverage
- Test case

	Test Case T1.8.5
Coverage Item	Tcover1.8.5
Input	----
State	----
Expected Output	LctrlUI.L_3.BackgroundColor = [0.44,0.9,0.8];

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.8.6 Test L_BButtonPushed()

```
function L_BButtonPushed(app, event)
            app.L_B.BackgroundColor = [0.44,0.9,0.8];
            app.Ctrl.addElevatorRequest(1, 0);
        end
```

- Coverage Criteria: State Coverage
- Test case

	Test Case T1.8.6
Coverage Item	Tcover1.8.6
Input	----
State	----
Expected Output	LctrlUI.L_B.BackgroundColor = [0.44,0.9,0.8];

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.9 RctrlUI Unit Test

T1.9.1 Test R_3ButtonPushed()

```
function R_3ButtonPushed(app, event)
            app.R_3.BackgroundColor = [0.44,0.9,0.8];
            app.Ctrl.addElevatorRequest(2, 3);
        end
```

- Coverage Criteria: State Coverage
- Test case

	Test Case T1.9.1
Coverage Item	Tcover1.9.1
Input	----
State	----
Expected Output	RctrlUI.R_3.BackgroundColor = [0.44,0.9,0.8];

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.9.2 Test R_2ButtonPushed()

```
function R_2ButtonPushed(app, event)
            app.R_2.BackgroundColor = [0.44,0.9,0.8];
            app.Ctrl.addElevatorRequest(2, 2);
        end
```

- Coverage Criteria: State Coverage
- Test case

	Test Case T1.9.2
Coverage Item	Tcover1.9.2
Input	----
State	----
Expected Output	RctrlUI.R_2.BackgroundColor = [0.44,0.9,0.8];

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.9.3 Test R_1ButtonPushed()

```
function R_1ButtonPushed(app, event)
            app.R_1.BackgroundColor = [0.44,0.9,0.8];
            app.Ctrl.addElevatorRequest(2, 1);
        end
```

- Coverage Criteria: State Coverage
- Test case

	Test Case T1.9.3
Coverage Item	Tcover1.9.3
Input	----
State	----
Expected Output	RctrlUI.R_1.BackgroundColor = [0.44,0.9,0.8];

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.9.4 Test R_0ButtonPushed()

```
function R_0ButtonPushed(app, event)
           if app.Ctrl.elevators(2).v == 0
                app.Ctrl.elevators(2).doorState = 'Opening';
           end
        end
```

- Coverage Criteria: Branch Coverage
- Test case

	Test Case T1.9.4
Coverage Item	Tcover1.9.4
Input	----
State	elevators(2).v == 0';
Expected Output	elevators(2).doorState = 'Closing';

- Test coverage: 1/1=100%
- Test Result: 1 passed

T1.9.5 Test R_CButtonPushed()

```
function R_CButtonPushed(app, event)
           if strcmp(app.Ctrl.elevators(2).doorState,'Opened')
                app.Ctrl.elevators(2).doorState = 'Closing';
           end
       end
```

- Coverage Criteria: Branch Coverage
- Test case

	Test Case T1.9.5
Coverage Item	Tcover1.9.5
Input	----
State	elevators(2).doorState == 'Opened';
Expected Output	elevators(2).doorState = 'Closing';

- Test coverage: 1/1=100%
- Test Result: 1 passed

T2 Integration Test

T2.1 Manual Control Test

- FloorG press ‘up’ -> Floor3 press ‘down ’ -> Floor1 press ‘up’ and ‘down’ -> Floor2 press ‘up’
- Test case

	Test Case T2.1
Coverage Item	Tcover2.1
Input	press ctrl.FB.Up press ctrl.F3.Down press ctrl.F1.Down and Up press ctrl.F2.Up
State	------
Expected Output	F1 Left and Right door open-> Left to B and Right to F2 ->Left B and Right F2 door open -> Right to F3 door open

- Test coverage: 1/1=100%
- Test Result: 1 passed

T3 Function Test

T3.1 Use Case "Check current elevator status"

- Test case

	Test Case T3.1
Coverage Item	Tcover3.1
Input	------
State	------
Expected Output	Elevator left and right status showed

- Test coverage: 1/1=100%
- Test Result: 1 passed

T3.2 Use Case "Request target direction"

- Test case

	Test Case T3.2.1
Coverage Item	Tcover3.2.1
Input	press ctrl.F2UI.B
State	------
Expected Output	B Button flash and elevator left comes
	Test Case T3.2.2
Coverage Item	Tcover3.2.2
Input	press ctrl.F2UI.Up
State	------
Expected Output	Up Button flash and elevator right comes
	Test Case T3.2.3
Coverage Item	Tcover3.2.3
Input	press ctrl.F2UI.Down
State	------
Expected Output	Down Button flash and elevator right comes

- Test coverage: 3/3=100%
- Test Result: 3 passed

T3.3 Use Case "Request target floor"

- Test case

	Test Case T3.3.1
Coverage Item	Tcover3.3.1
Input	press ctrl.Lui.B
State	------
Expected Output	take passenger to B floor
	Test Case T3.3.2
Coverage Item	Tcover3.3.2
Input	press ctrl.Lui.L_1 elevator(1).y = 6;
State	------
Expected Output	take passenger to 1 floor
	Test Case T3.3.3
Coverage Item	Tcover3.3.3
Input	press ctrl.Lui.L_2
State	------
Expected Output	take passenger to 2 floor
	Test Case T3.3.4
Coverage Item	Tcover3.3.4
Input	press ctrl.Lui.L_3
State	------
Expected Output	take passenger to 3 floor

- Test coverage: 4/4=100%
- Test Result: 4 passed

T3.4 Use Case "Open Door"

- Test case

	Test Case T3.4
Coverage Item	Tcover3.4
Input	press ctrl.Lui.L_O
State	------
Expected Output	Elevator left door open

- Test coverage: 1/1=100%
- Test Result: 1 passed

T3.5 Use Case "Close Door"

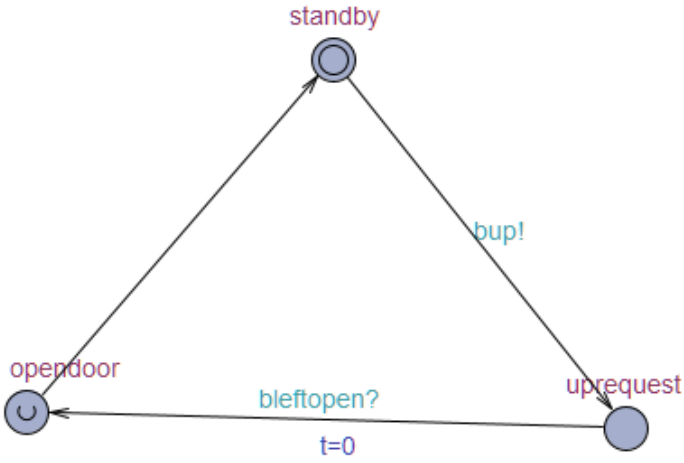
- Test case

	Test Case T3.4
Coverage Item	Tcover3.4
Input	press ctrl.Lui.L_O press ctrl.Lui.L_C
State	------
Expected Output	Elevator left door close

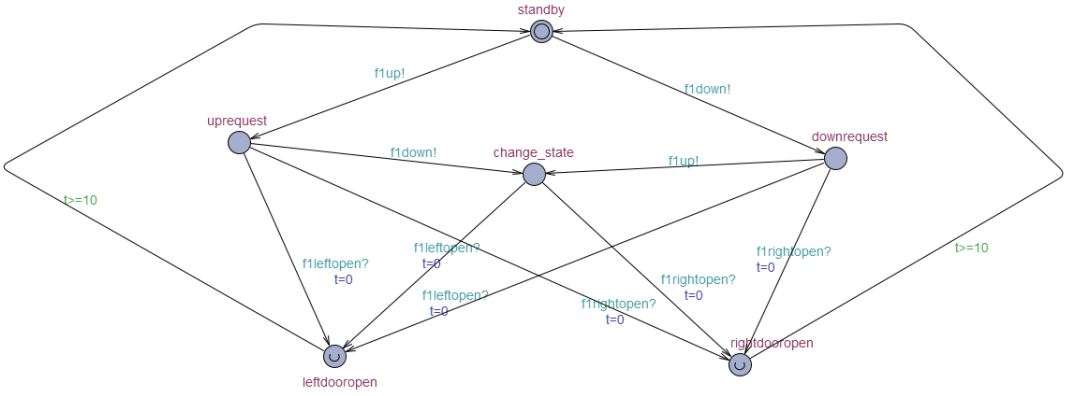
- Test coverage: 1/1=100%
- Test Result: 1 passed

T4 Uppaal Model

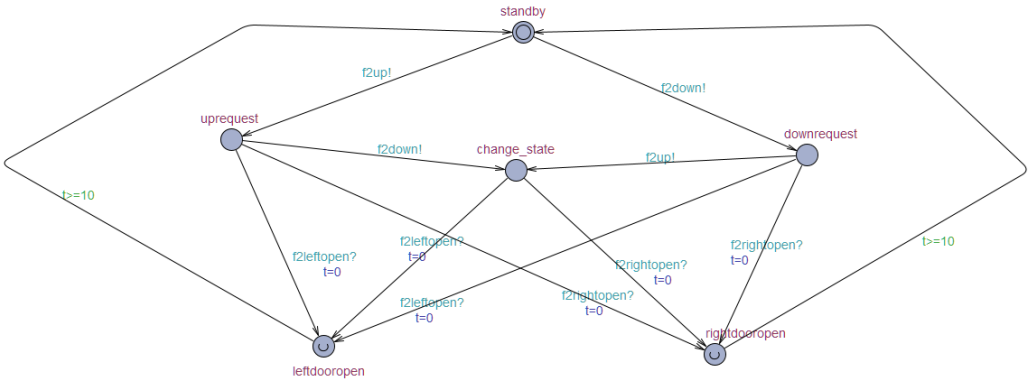
- FB Floor Model:



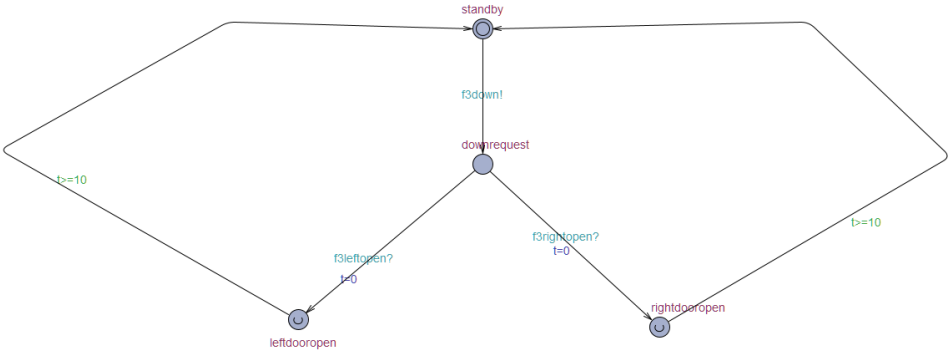
- F1 Floor Model:



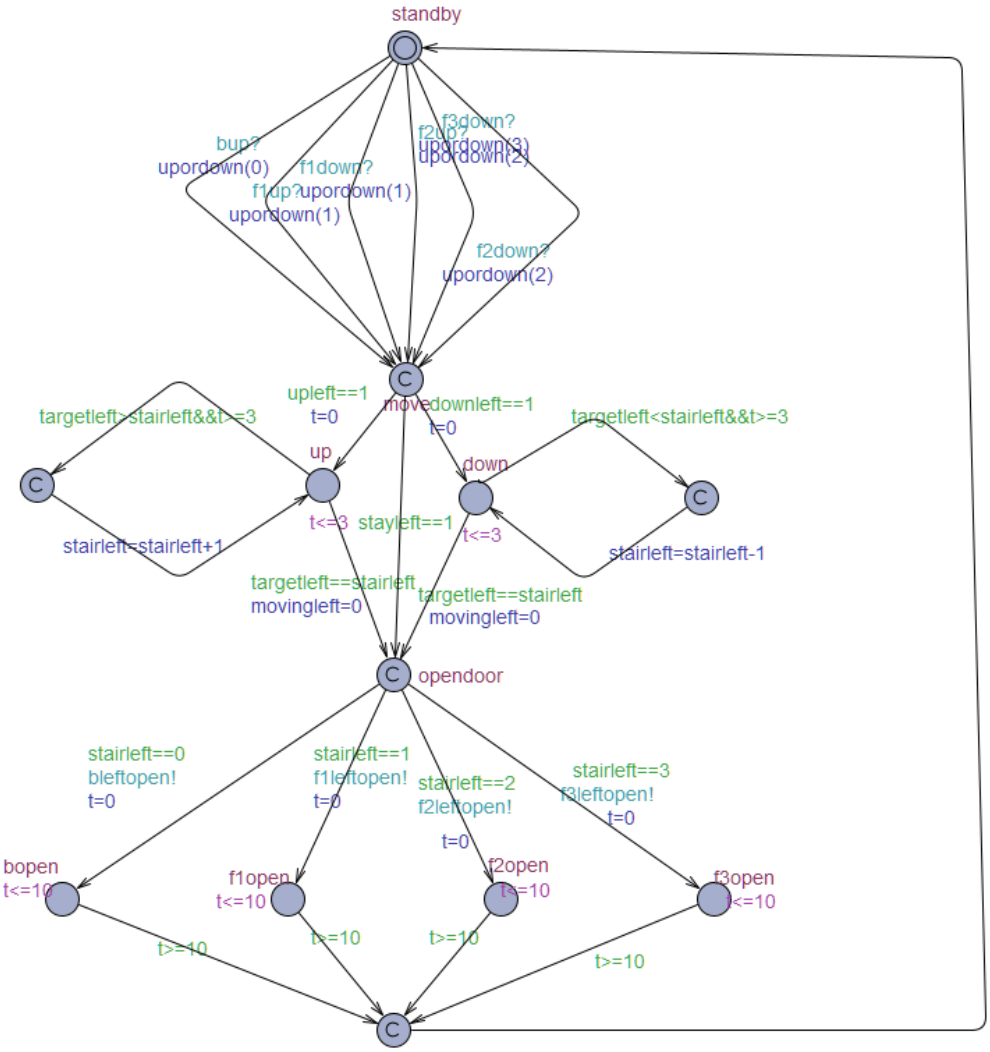
- F2 Floor Model:



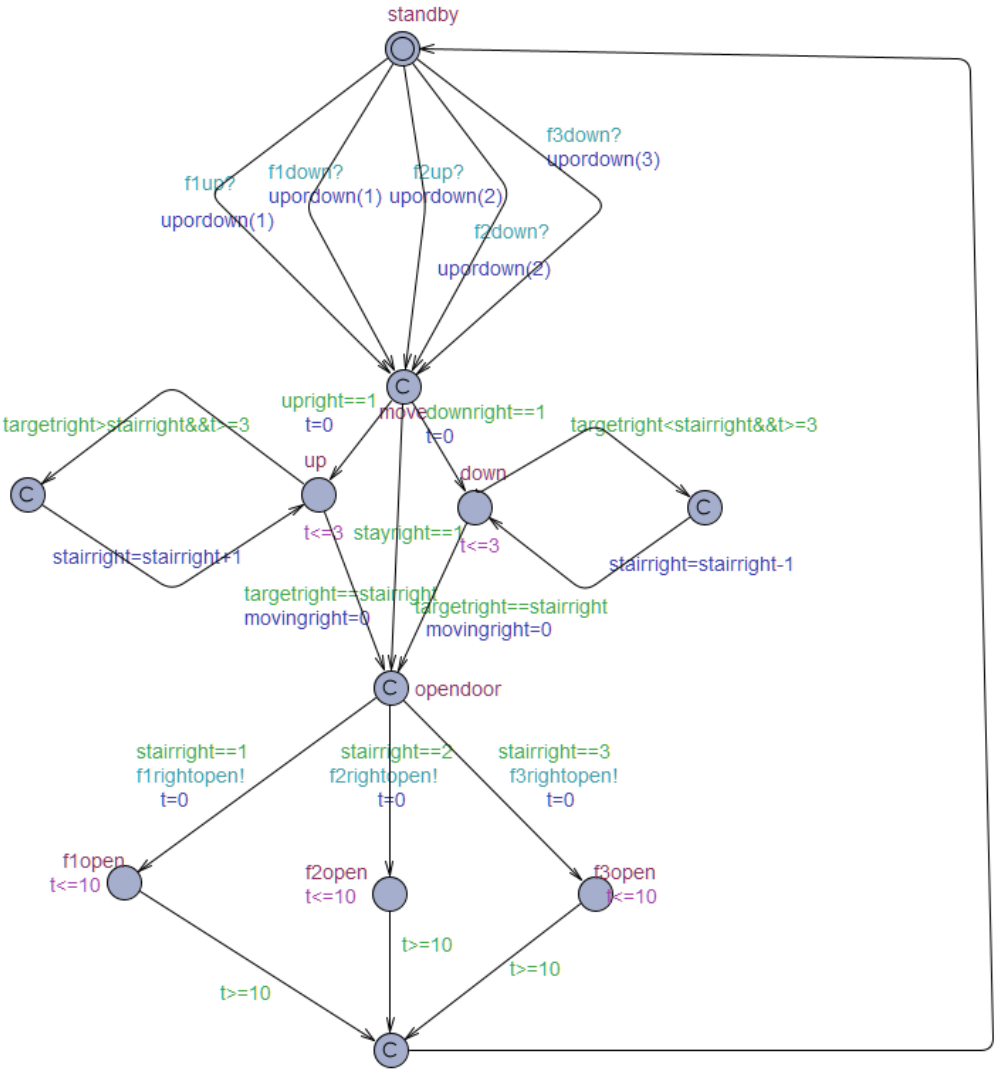
- F3 Floor Model:



- Left Elevator Model:



- Right Elevator Model:



- Property Test
  - Elevator 1 can arrive Floor 0,1,2,3.
  - Elevator 2 can arrive Floor 1,2,3.
  - Elevator 1 cannot arrive Floor 4(out of range).
  - Elevator 2 cannot arrive Floor 0 and 4.
  - When Elevator1 is in mode "up", it cannot be in "standby" or "down".
  - When Elevator1 is in mode "down", it cannot be in "standby" or "up".
  - When Elevator1 is in mode "standby", it cannot be in "up" or "down".
  - When Elevator2 is in mode "up", it cannot be in "standby" or "down".
  - When Elevator2 is in mode "down", it cannot be in "standby" or "up".
  - When Elevator2 is in mode "standby", it cannot be in "up" or "down".
  - When Floor B left door opens, other floors' left floor cannot open.
  - When Floor 1 left door opens, other floors' left floor cannot open.
  - When Floor 2 left door opens, other floors' left floor cannot open.
  - When Floor 3 left door opens, other floors' left floor cannot open.
  - When Floor 1 right door opens, other floors' left floor cannot open.
  - When Floor 2 right door opens, other floors' left floor cannot open.
  - When Floor 3 right door opens, other floors' left floor cannot open.