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Spring Quarter 2019

CSCD 350

Part 2 Testing

1. **CREATIONAL**

**TEST.A.1**

Create a rudder rudder1 with limit 45, speed 10, and acceleration 0.1.

CREATE RUDDER rudder1 WITH LIMIT 45 SPEED 10 ACCELERATION 0.1

**TEST.B.1**

Create elevators elevator1 and elevator2 with limit 30, speed 10, and acceleration 0.1.

CREATE ELEVATOR elevator1 WITH LIMIT 30 SPEED 10 ACCELERATION 0.1

CREATE ELEVATOR elevator2 WITH LIMIT 30 SPEED 10 ACCELERATION 0.1

**TEST.B.2**

Create an elevator elevator3 with limit 30, speed 10, and acceleration 0.15.

CREATE ELEVATOR elevator3 WITH LIMIT 30 SPEED 10 ACCELERATION 0.15

**TEST.C.1**

Create ailerons aileron1 and aileron2 with respective up and down limits 90 and 40, speed 5, and acceleration 0.1.

CREATE AILERON aileron1 WITH LIMIT UP 90 DOWN 40 SPEED 5 ACCELERATION 0.1

CREATE AILERON aileron2 WITH LIMIT UP 90 DOWN 40 SPEED 5 ACCELERATION 0.1

**TEST.C.2**

Create ailerons aileron3 and aileron4 with respective up and down limits 90 and 30, speed 5, and acceleration 0.15.

CREATE AILERON aileron3 WITH LIMIT UP 90 DOWN 30 SPEED 5 ACCELERATION 0.15

CREATE AILERON aileron4 WITH LIMIT UP 90 DOWN 30 SPEED 5 ACCELERATION 0.15

**TEST.C.3**

Create ailerons aileron5 and aileron6 with respective up and down limits 90 and 35, speed 5, and acceleration 0.2.

CREATE AILERON aileron5 WITH LIMIT UP 90 DOWN 35 SPEED 5 ACCELERATION 0.2

CREATE AILERON aileron6 WITH LIMIT UP 90 DOWN 35 SPEED 5 ACCELERATION 0.2

**TEST.C.4**

Create ailerons aileron7 and aileron8 with respective up and down limits 90 and 45, speed 6, and acceleration 0.25.

CREATE AILERON aileron7 WITH LIMIT UP 90 DOWN 45 SPEED 5 ACCELERATION 0.25

CREATE AILERON aileron8 WITH LIMIT UP 90 DOWN 45 SPEED 5 ACCELERATION 0.25

**TEST.D.1**

Create split flaps flap\_split1 and flap\_split2 with limit 50, speed 5, and acceleration 0.15.

CREATE SPLIT FLAP flap\_split1 WITH LIMIT 50 SPEED 5 ACCELERATION 0.15

CREATE SPLIT FLAP flap\_split2 WITH LIMIT 50 SPEED 5 ACCELERATION 0.15

**TEST.D.2**

Create a split flap flap\_split3 with limit 50, speed 4, and acceleration 0.15.

CREATE SPLIT FLAP flap\_split3 WITH LIMIT 50 SPEED 4 ACCELERATION 0.15

**TEST.D.3**

Create Fowler flaps flap\_fowler1 and flap\_fowler2 with limit 55, speed 4, and acceleration 0.1.

CREATE FOWLER FLAP flap\_fowler1 WITH LIMIT 55 SPEED 4 ACCELERATION 0.1

CREATE FOWLER FLAP flap\_fowler2 WITH LIMIT 55 SPEED 4 ACCELERATION 0.1

**TEST.D.4**

Create a Fowler flap flap\_fowler3 with limit 50, speed 4, and acceleration 0.1.

CREATE FOWLER FLAP flap\_fowler3 WITH LIMIT 50 SPEED 4 ACCELERATION 0.1

**TEST.E.1**

Create engines engine1, engine2, and engine3 with speed 10 and acceleration 0.2.

CREATE ENGINE engine1 WITH SPEED 10 ACCELERATION 0.2

CREATE ENGINE engine2 WITH SPEED 10 ACCELERATION 0.2

CREATE ENGINE engine3 WITH SPEED 10 ACCELERATION 0.2

**TEST.E.2**

Create an engine engine4 with speed 10 and acceleration 0.25.

CREATE ENGINE engine4 WITH SPEED 10 ACCELERATION 0.25

**TEST.F.1**

Create a nose gear gear\_nose1 with speed 10 and acceleration 0.1.

CREATE NOSE GEAR gear\_nose1 WITH SPEED 10 ACCELERATION 0.1

**TEST.F.2**

Create a nose gear gear\_nose2 with speed 10 and acceleration 0.15.

CREATE NOSE GEAR gear\_nose2 WITH SPEED 10 ACCELERATION 0.15

**TEST.F.3**

Create main gear gear\_main1 and gear\_main2 with speed 10 and acceleration 0.1.

CREATE MAIN GEAR gear\_main1 WITH SPEED 10 ACCELERATION 0.1

CREATE MAIN GEAR gear\_main2 WITH SPEED 10 ACCELERATION 0.1

**TEST.F.4**

Create a main gear gear\_main3 with speed 10 and acceleration 0.2.

CREATE MAIN GEAR gear\_main3 WITH SPEED 10 ACCELERATION 0.2

1. **STRUCTURAL**

**TEST.A.1**

Declare a rudder controller rudder\_controller1 with rudder1.

DECLARE RUDDER CONTROLLER rudder\_controller1 WITH RUDDER rudder1

**TEST.B.1**

Declare an elevator controller elevator\_controller1 with elevator1 and elevator2.

DECLARE ELEVATOR CONTROLLER elevator\_controller1 WITH ELEVATORS elevator1 elevator2

**TEST.B.2**

Declare an invalid elevator controller elevator\_controller2 with elevator1 and elevator3.

DECLARE ELEVATOR CONTROLLER elevator\_controller2 WITH ELEVATORS elevator1 elevator3

**TEST.C.1**

Declare an aileron controller aileron\_controller1 with ailerons aileron1 (primary) and aileron2.

DECLARE AILERON CONTROLLER aileron\_controller1 WITH AILERONS aileron1 aileron2 PRIMARY aileron1

**TEST.C.2**

Declare an aileron controller aileron\_controller2 with ailerons aileron1 (primary), 3, 5, 7, then 8, 6, 4, 2.

DECLARE AILERON CONTROLLER aileron\_controller2 WITH AILERONS aileron1 aileron3 aileron5 aileron7 aileron8 aileron6 aileron4 aileron2 PRIMARY aileron1

**TEST.C.3**

Declare an aileron controller aileron\_controller4 with ailerons aileron1, 3 (primary), 5, 7, then 8, 6, 4, 2, with 7 mixed at 80% of 3, 5 at 50% of 7, and 1 at 75% of 5.

DECLARE AILERON CONTROLLER aileron\_controller4 WITH AILERONS aileron1 aileron3 aileron5 aileron7 aileron8 aileron6 aileron4 aileron2 PRIMARY aileron3 SLAVE aileron7 TO aileron3 BY 80 PERCENT SLAVE aileron5 TO aileron7 BY 50 PERCENT SLAVE aileron1 TO aileron5 BY 75 PERCENT

**TEST.C.5**

Declare an invalid (?) aileron controller aileron\_controller5 with ailerons aileron1 and aileron2 (primary).

DECLARE AILERON CONTROLLER aileron\_controller5 WITH AILERONS aileron1 aileron2 PRIMARY aileron2

**TEST.C.6**

Declare an invalid aileron controller aileron\_controller6 with ailerons aileron1 (primary) and 3, then 2 and 5

DECLARE AILERON CONTROLLER aileron\_controller6 WITH AILERONS aileron1 aileron3 aileron2 aileron5 PRIMARY aileron1

**TEST.D.1**

Declare a flap controller flap\_controller1 with flap\_split1 and flap\_split2.

DECLARE FLAP CONTROLLER flap\_controller1 WITH FLAPS flap\_split1 flap\_split2

**TEST.D.2**

Declare an invalid flap controller flap\_controller2 with flap\_split1 and flap\_split3.

DECLARE FLAP CONTROLLER flap\_controller2 WITH FLAPS flap\_split1 flap\_split3

**TEST.D.4**

Declare a flap controller flap\_controller4 with flap\_fowler1 and flap\_fowler2 inboard and flap\_split1 and flap\_split2 outboard.

DECLARE FLAP CONTROLLER flap\_controller4 WITH FLAPS flap\_fowler1 flap\_fowler2 flap\_split1 flap\_split2

**TEST.D.5**

Declare an invalid flap controller flap\_controller5 with flap\_fowler1 and flap\_split2 inboard and flap\_split1 and flap\_fowler2 outboard.

DECLARE FLAP CONTROLLER flap\_controller5 WITH FLAPS flap\_fowler1 flap\_split2 flap\_split1 flap\_fowler2

**TEST.E.1**

Declare an engine controller engine\_controller1 with engine1.

DECLARE ENGINE CONTROLLER engine\_controller1 WITH ENGINES engine1

**TEST.E.2**

Declare an engine controller engine\_controller2 with engine1 and engine2.

DECLARE ENGINE CONTROLLER engine\_controller2 WITH ENGINES engine1 engine2

**TEST.E.3**

Declare an engine controller engine\_controller3 with engine1, engine2, and engine3.

DECLARE ENGINE CONTROLLER engine\_controller3 WITH ENGINES engine1 engine2 engine3

**TEST.F.1**

Declare a gear controller gear\_controller1 with nose gear gear\_nose2 and main gear gear\_main1 and gear\_main2.

DECLARE GEAR CONTROLLER gear\_controller1 WITH GEAR NOSE gear\_nose2 MAIN gear\_main1 gear\_main2

1. BEHAVIORAL

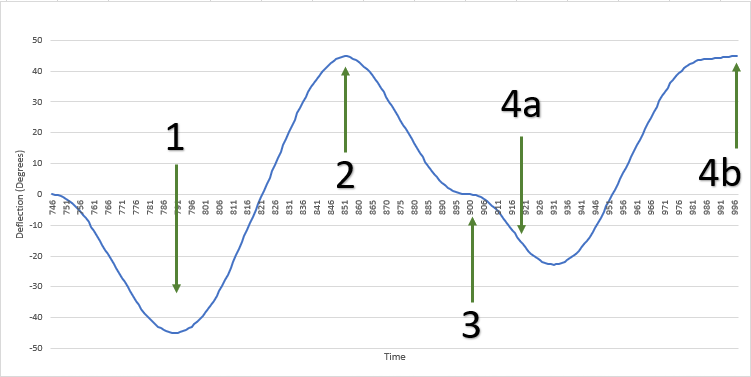
**A. Rudder**

1. Deflect rudder\_controller1 left full.

2. Deflect rudder\_controller1 right full.

3. Deflect rudder\_controller1 neutral.

4. (a) Deflect rudder\_controller1 left 30, but at close to –15 degrees, (b) deflect right full.  
COMMIT  
@CLOCK 1  
DO rudder\_controller1 DEFLECT RUDDER 45 LEFT  
@WAIT 43  
DO rudder\_controller1 DEFLECT RUDDER 45 RIGHT  
@WAIT 65  
DO rudder\_controller1 DEFLECT RUDDER 0 LEFT  
@WAIT 45  
DO rudder\_controller1 DEFLECT RUDDER 30 LEFT  
@WAIT 17  
DO rudder\_controller1 DEFLECT RUDDER 45 RIGHT  
@WAIT 80  
@EXIT



**B. Elevator 1**

1. Deflect elevator\_controller1 up full.

2. Deflect elevator\_controller1 down full.

COMMIT

@CLOCK 0.5

DO elevator\_controller1 DEFLECT ELEVATOR 30 UP

@WAIT 40

DO elevator\_controller1 DEFLECT ELEVATOR 30 DOWN

@WAIT 60

@EXIT

**C. Elevator 2**

1. Deflect elevator\_controller2 up full.

2. Deflect elevator\_controller2 down full.

COMMIT  
@CLOCK 0.5  
DO elevator\_controller2 DEFLECT ELEVATOR 30 UP  
@WAIT 40  
DO elevator\_controller2 DEFLECT ELEVATOR 30 DOWN  
@WAIT 60  
@EXIT

**D. Aileron 1**

1. Deflect aileron\_controller2 up 45.

2. Deflect aileron\_controller2 down 30.

COMMIT  
@CLOCK 0.5  
DO aileron\_controller2 DEFLECT AILERONS 45 UP  
@WAIT 45  
DO aileron\_controller2 DEFLECT AILERONS 30 DOWN  
@WAIT 65  
@EXIT

**F. Aileron 3**

1. Deflect aileron\_controller4 up 45.

2. Deflect aileron\_controller4 down 30.

COMMIT  
@CLOCK 0.5  
DO aileron\_controller4 DEFLECT AILERONS 45 UP  
@WAIT 37  
DO aileron\_controller4 DEFLECT AILERONS 30 DOWN  
@WAIT 50  
@EXIT

**G. Aileron 4**

1. Deflect aileron\_controller5 up 45.

2. Deflect aileron\_controller5 down 30.

3. Deflect aileron\_controller5 to 0.

COMMIT  
@CLOCK 0.5  
DO aileron\_controller5 DEFLECT AILERONS 45 UP  
@WAIT 45  
DO aileron\_controller5 DEFLECT AILERONS 30 DOWN  
@WAIT 65  
DO aileron\_controller5 DEFLECT AILERONS 0 UP  
@WAIT 40  
@EXIT

**H. Aileron 5**

1. Deflect aileron\_controller6 up 45.

2. Deflect aileron\_controller6 down 30.

3. Deflect aileron\_controller6 to 0.

COMMIT  
@CLOCK 0.5  
DO aileron\_controller6 DEFLECT AILERONS 45 UP  
@WAIT 45  
DO aileron\_controller6 DEFLECT AILERONS 30 DOWN  
@WAIT 65  
DO aileron\_controller6 DEFLECT AILERONS 0 UP  
@WAIT 36  
@EXIT

**I. Speed Brake**

1. Extend the speed brakes on aileron\_controller4.

2. Deflect aileron\_controller4 down 0.

COMMIT  
@CLOCK 0.5  
DO aileron\_controller4 SPEED BRAKE ON  
@WAIT 61  
DO aileron\_controller4 DEFLECT AILERONS 0 DOWN  
@WAIT 60  
@EXIT

**J. Flap 1**

1. Deflect flap\_controller4 position 4.

2. Deflect flap\_controller4 position 3.

3. Deflect flap\_controller4 position up.

COMMIT  
@CLOCK 0.5  
DO flap\_controller4 DEFLECT FLAP 4  
@WAIT 45  
DO flap\_controller4 DEFLECT FLAP 3  
@WAIT 18  
DO flap\_controller4 DEFLECT FLAP UP  
@WAIT 37  
@EXIT

**K. Flap 2**

1. Deflect flap\_controller2 position 3.

2. Deflect flap\_controller2 position up.

COMMIT  
@CLOCK 0.5  
DO flap\_controller2 DEFLECT FLAP 3  
@WAIT 32  
DO flap\_controller2 DEFLECT FLAP UP  
@WAIT 31  
@EXIT

**L. Flap 3**

1. Deflect flap\_controller5 position 4.

2. Deflect flap\_controller5 position up.

COMMIT  
@CLOCK 0.5  
DO flap\_controller5 DEFLECT FLAP 4  
@WAIT 45  
DO flap\_controller5 DEFLECT FLAP UP  
@WAIT 43  
@EXIT

**M. Engine**

1. Set engine\_controller3 all engines to 70% power.

2. Set engine\_controller3 only engine2 to 40% power.

3. Set engine\_controller3 to 100% power.

COMMIT  
@CLOCK 0.5  
DO engine\_controller3 SET POWER 70  
@WAIT 38  
DO engine\_controller3 SET POWER 40 ENGINE engine2  
@WAIT 23  
DO engine\_controller3 SET POWER 100  
@WAIT 35  
@EXIT

**N. Gear**

1. Lower gear\_controller1.

2. (a) Raise gear\_controller1, but at close to 50% on the main gear, (b) submit a halt.

COMMIT  
@CLOCK 0.5  
DO gear\_controller1 GEAR DOWN  
@WAIT 77  
DO gear\_controller1 GEAR UP  
@WAIT 20  
HALT gear\_controller1  
@WAIT 20  
@EXIT