**‘Darwin Board’ microcomputer programming (pseudo-code)**

Note, the following runs as a loop on each processing cycle of the microcomputer (cycle time was faster than the read frequency of the RFID reader, which was 250ms).

1. Get IDs of tags currently on each antenna. If no tag present, then BLANK.
2. For the first antenna (left), is the current tag different to the previous tag? If it is then:
   1. If the current tag is BLANK, then an individual has DEPARTED, else if the current tag is not BLANK, then an individual has ARRIVED. Record arrivals and departures in the LOG file.
   2. If there has been an arrival, check the treatment group of the individual. If the other antenna is also occupied, compare the treatment groups of the two individuals. If the individuals belong to the same treatment group, then change the task state to ALL DOORS OPEN if a lockout period is not currently in effect (see Fig: state transition 3) or ONLY HIGH DOORS OPEN if lockout conditions currently apply (Fig: state transition 5), then record details of the event in the LOG file. If the individuals belong to different treatment groups, then change the task state to ALL DOORS CLOSED if lockout conditions do not currently apply (Fig: state transition 1), or keep the task state as ALL DOORS CLOSED if a lockout is currently in effect. If the other antenna is unoccupied and the current task state is ALL DOORS CLOSED, then update the current task state to also be ALL DOORS CLOSED. If the other antenna is unoccupied and the current task state is LOW DOORS OPEN, HIGH DOORS CLOSED, then update the current task state to also be LOW DOORS OPEN, HIGH DOORS CLOSED.
3. If the current tag does not differ from the previous tag (either an individual has not left or the antenna is unoccupied):
   1. If the current task state is ALL DOORS CLOSED and at least 120 seconds have elapsed since the task state transitioned to ALL DOORS CLOSED, then change task state to LOW DOORS OPEN, HIGH DOORS CLOSED (Fig: state transition 2).
   2. If an individual has just departed from the other antenna and the task state is ALL DOORS OPEN or ONLY HIGH DOORS OPEN, then a successful association event has ended. Record this in the LOG file. If the event duration has surpassed 15 seconds, then change the task state to ALL DOORS CLOSED if a lockout period is in effect (Fig: state transition 6) or change the task state to LOW DOORS OPEN, HIGH DOORS CLOSED if a lockout period is not in effect (Fig: state transition 4).
4. Repeat steps 2 and 3, but for the other antenna.
5. Control the motions of servos (and hence doors) according to the current task state (see Extended Data Fig. 1)