Dance Lab Goals

- Choreograph a dance sequence on PG-13 song
- Time limit is 60 sec
  - 5 sec margin of over limit is fine
- No more than 300 moves per leg
  - Don’t go physically count, you can easily keep track using counter variable
- Methods you write should not be more than 15-20 lines
  - Enforce the use of control structure constructs

EduBot Leg Numbering

moveLeg(legnum, direction, angle, time)

- Legnum – leg #
- Direction
  - 1 – forward
  - -1 – backward
  - 0 – shortest path from current position to commanded position
- Angle (0 – 2PI)
- Time (in seconds)
  - Time it takes to move the leg in the desired position
**moveLeg(..) Example**

- Move Leg Example
  ```java
  moveLeg(0, 1, Math.PI/2, 4);
  moveLeg(1, 1, Math.PI, 2);
  moveLeg(5, 1, 0, 4);
  moveLeg(0, 1, 2*Math.PI, 6);
  ```

- Commands to different legs are executed in parallel.
- Commands to the same leg are queued - i.e. executed in order.
- At all times all the legs should be commanded.
- If you want a leg to be in the last position it is in then use direction 0.

**Timing Diagram**

- Timing Diagram Example
  ```java
  moveLeg(0, 1, Math.PI/2, 4)
  moveLeg(0, 1, 2*Math.PI, 6)
  ```

**Go 2Pi in two steps**

- Light beam that is modulated by the holes on the encoder plate triggers a counter device.
- As the encoder turns the relative change in rotational position is measured by the number of holes that have passed.
- Since position is relative, there may be small error which could cause problems in moving the leg complete 360 in one rotation.

**DanceLab.java**

- All work needs to go in here.
- Make all methods/global variables static.
- This should not be OOP.

- `moveleg` is file `edubotGui.java` hence
  ```java
  edubotGUI.moveleg(..)
  ```

- There are some other methods that must be called in particular order.
In DanceLab.java

public static void dance() {
edubotGUI.calibrate();
edubotGUI.postureMode();
edubotGUI.danceMode();
/* call your methods here*/
edubotGUI.start();
edubotGUI.finish();
}

- Note: Ensure that last method sends all legs to same position (kind of stop)