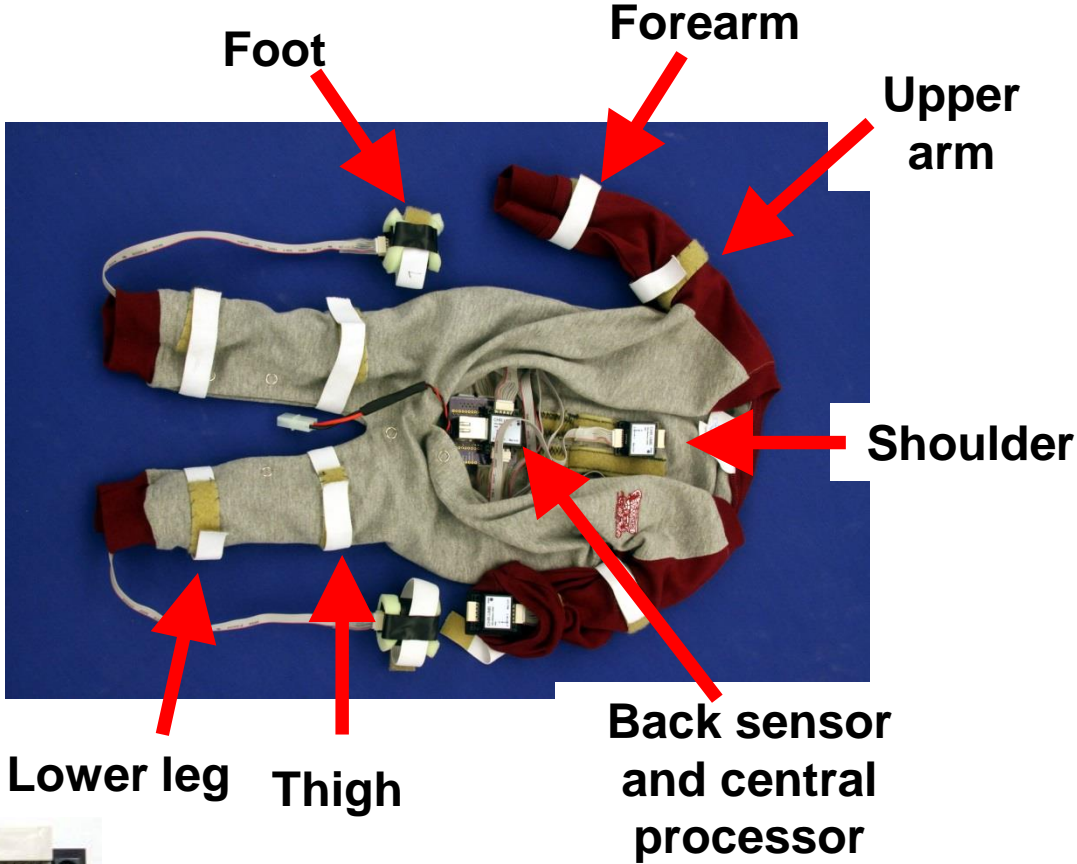


CS 2334: Project 1

Reading Data from Files

Self-Initiated Prone Progression Crawler



Kinematic capture suit: trunk and limb position at 50 Hz



Southerland (2012)

Project 1

- Read in and organize data from individual trials into a Java data structure
- Compute simple statistics over the trial



Project 1

Our focus:

- Load in single trial
- Each row of the data file consists of a single snapshot of the State of the infant
- For now, that State consists of the 3D position of the left and right wrists.
- 50Hz x 5 minutes = 15,000 samples of State

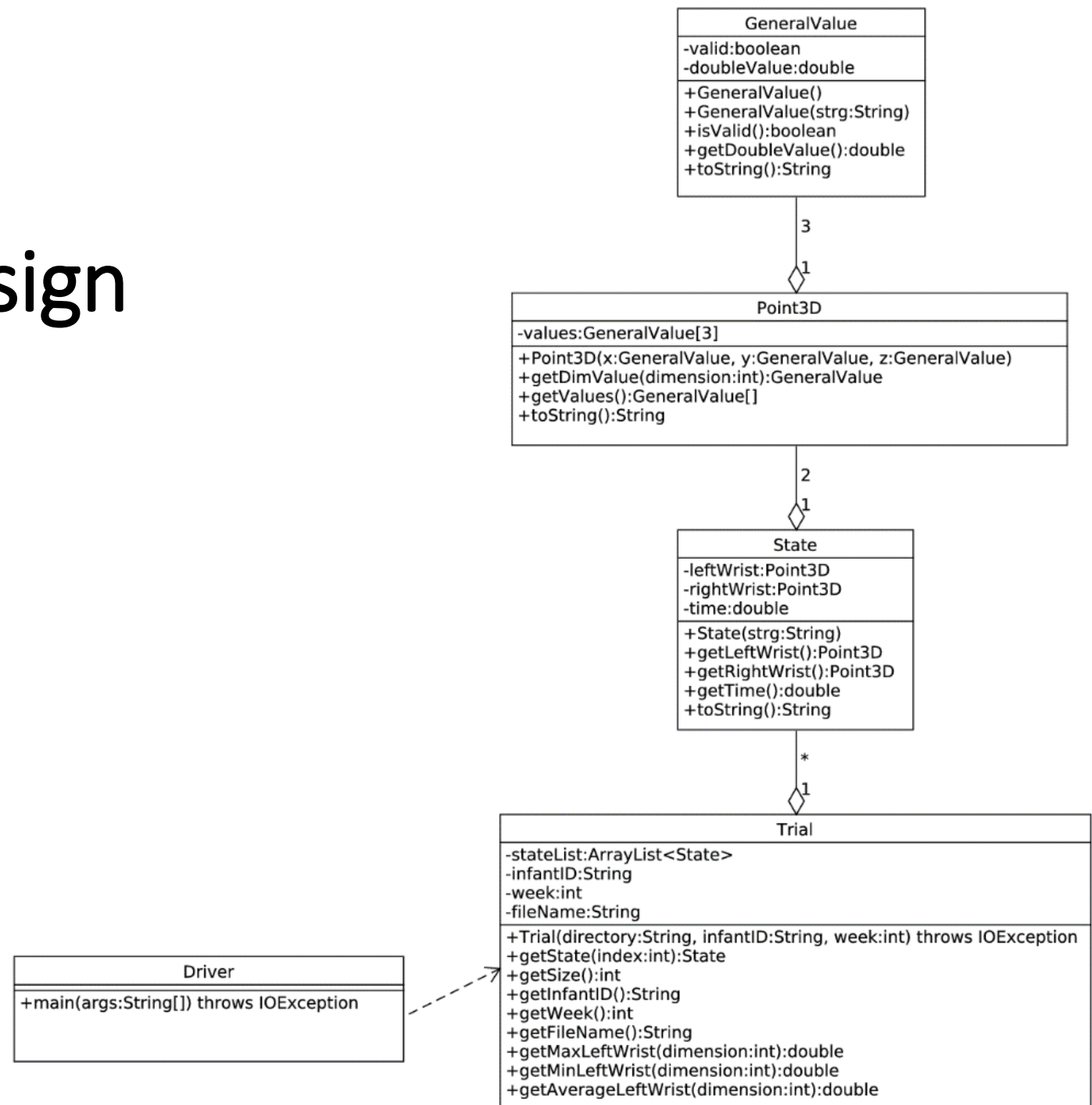
Data Format

CSV Format

- One file per trial
- Each row: data for one instant in time
- Some values are invalid
- All CSV files have the same format

time	left_wrist_x	left_wrist_y	left_wrist_z	right_wrist_x	right_wrist_y	right_wrist_z
1.16	0.171148	0.290173	-0.12378	0.317962	-0.24333	-0.16704
1.18	0.171715	0.290036	-0.12423	0.31971	-0.24132	-0.16809
1.2	0.172315	0.290075	-0.12454	0.320938	-0.23966	-0.16913
1.22	0.172912	0.290134	-0.12502	0.321905	-0.2382	-0.17004
1.24	0.173715	0.290296	-0.12552	0.322622	-0.23678	-0.17103
1.26	0.174727	0.290514	-0.12599	NaN	NaN	NaN
1.28	0.175587	0.290816	-0.12638	0.324435	-0.23407	-0.17185
1.3	0.176138	0.291139	-0.12661	0.325562	-0.23263	-0.17182
1.32	0.176425	0.291356	-0.12685	0.326628	-0.23147	-0.17124
1.34	0.176407	0.291538	-0.12693	0.327646	-0.23003	-0.17042
1.36	NaN	NaN	NaN	0.328245	-0.22878	-0.16944
1.38	0.176374	0.291932	-0.1275	0.328722	-0.22769	-0.16834
1.4	0.176417	0.292156	-0.12779	0.329146	-0.22695	-0.16705
1.42	0.176195	0.292609	-0.1277	NaN	NaN	NaN
1.44	0.176462	0.293069	-0.12728	0.329501	-0.22585	-0.16401
1.46	0.176843	0.293717	-0.12661	0.329438	-0.22538	-0.16245

Solution Design

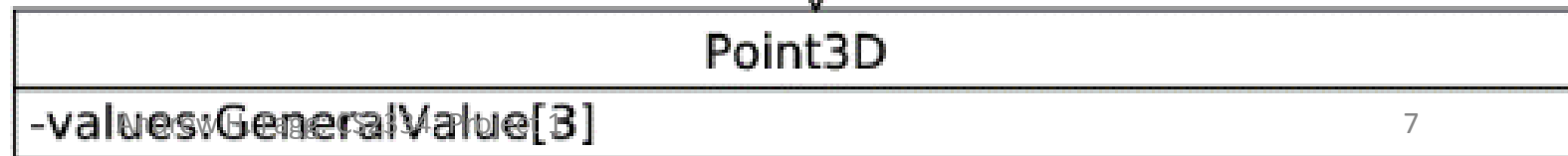
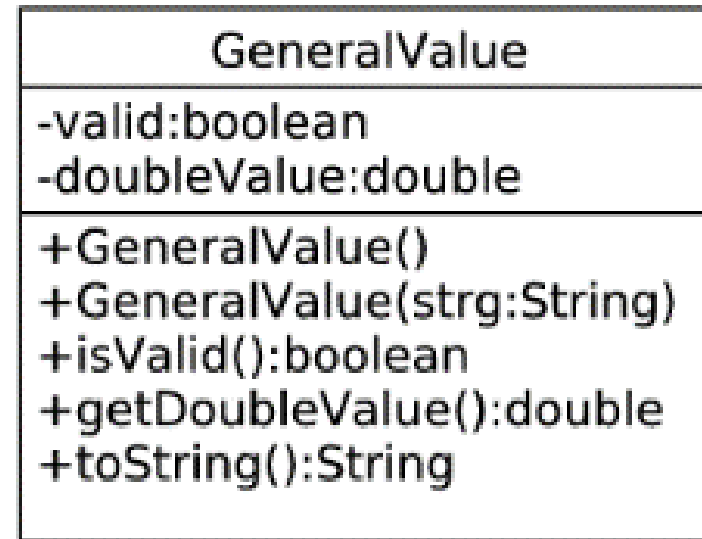


GeneralValue Class

Two instance variables:

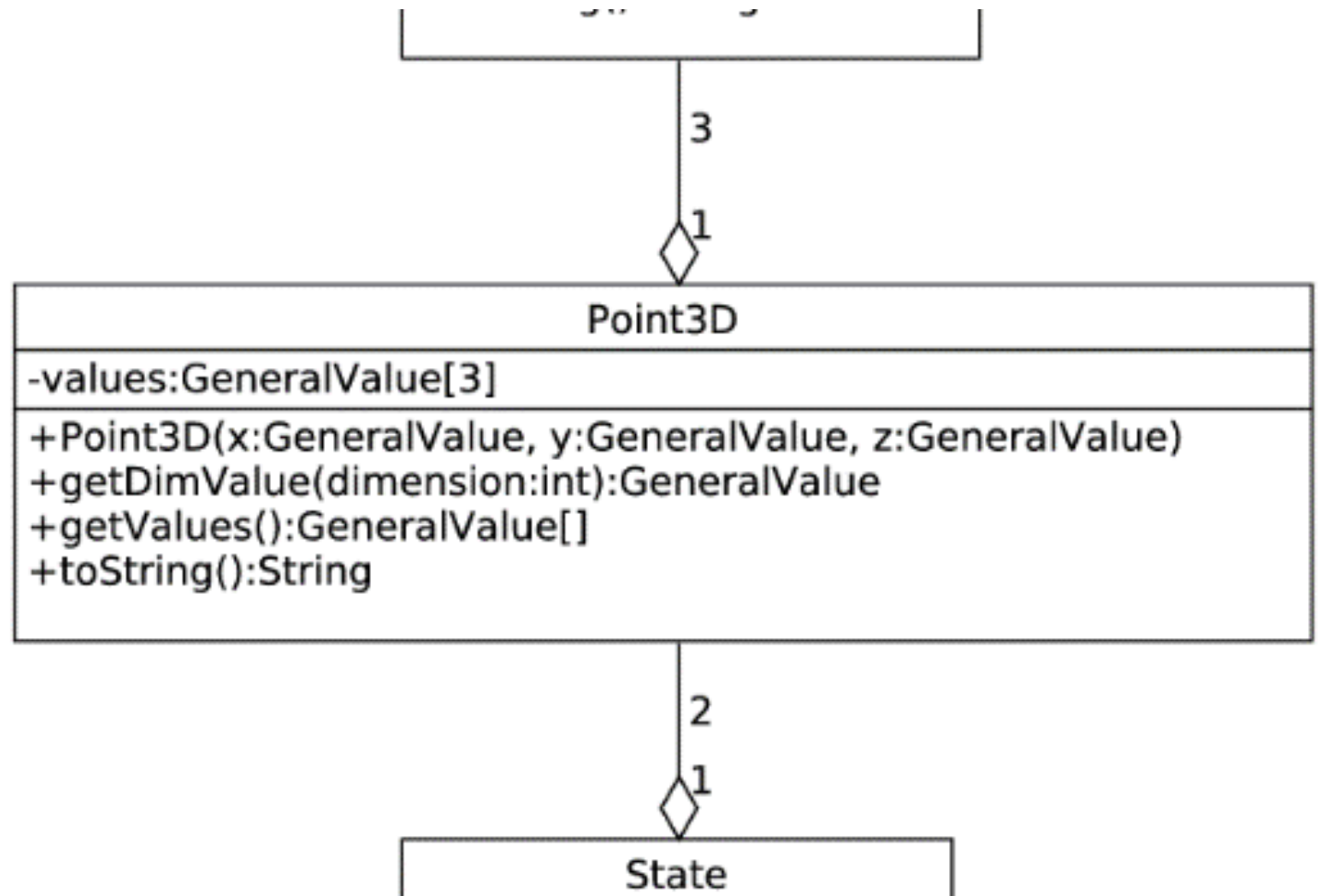
- value (double): value to be represented (e.g., position of wrist along the X dimension)
- valid (boolean): indicates whether the value is valid or not

Class is immutable



Point3D Class

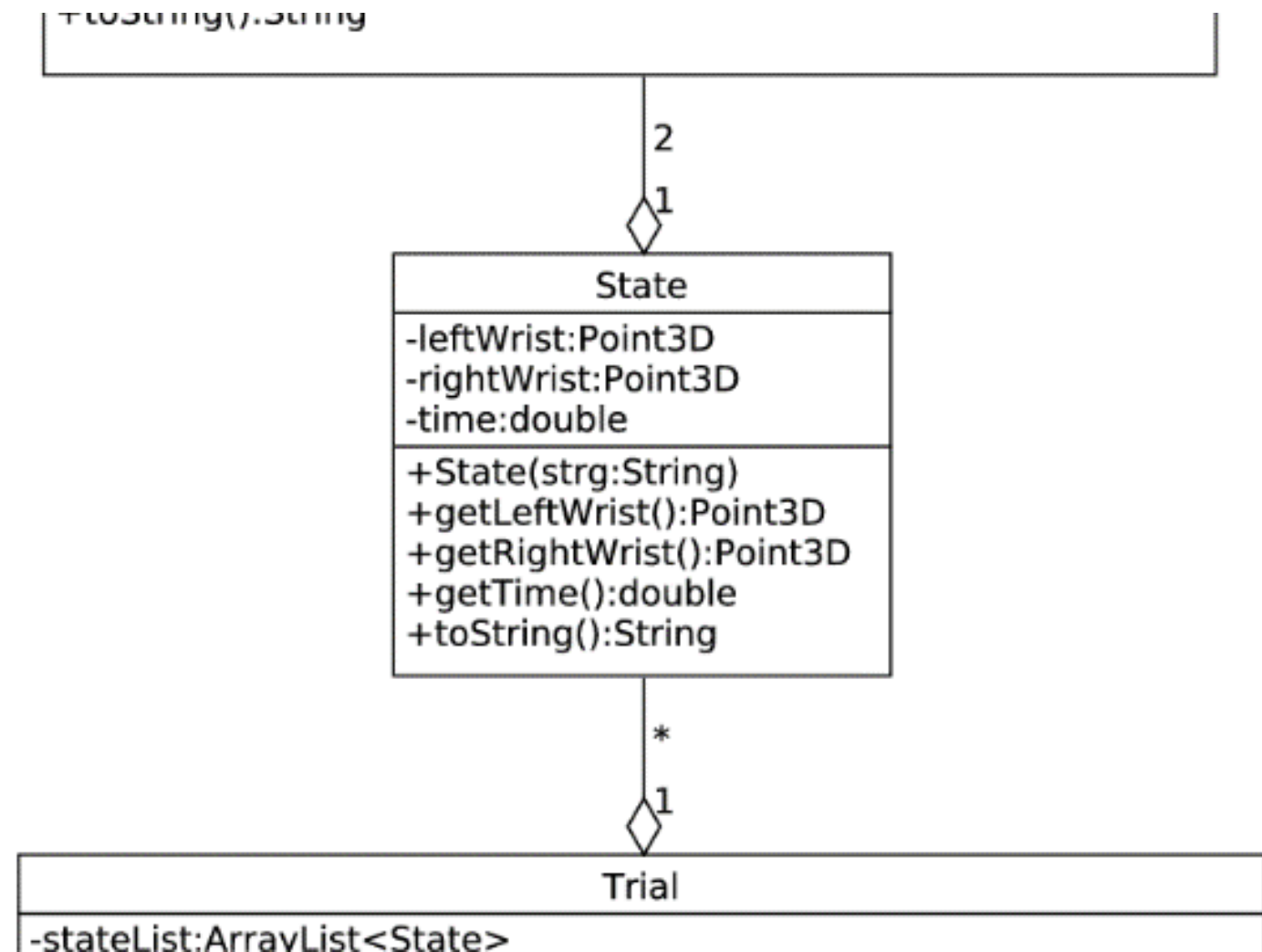
- Represent a location in 3-space
- Accessors for individual dimensions or all three at once



State Class

Describe the state of the suit at one instant in time

- Timestamp
- Positions for both the left and right wrists

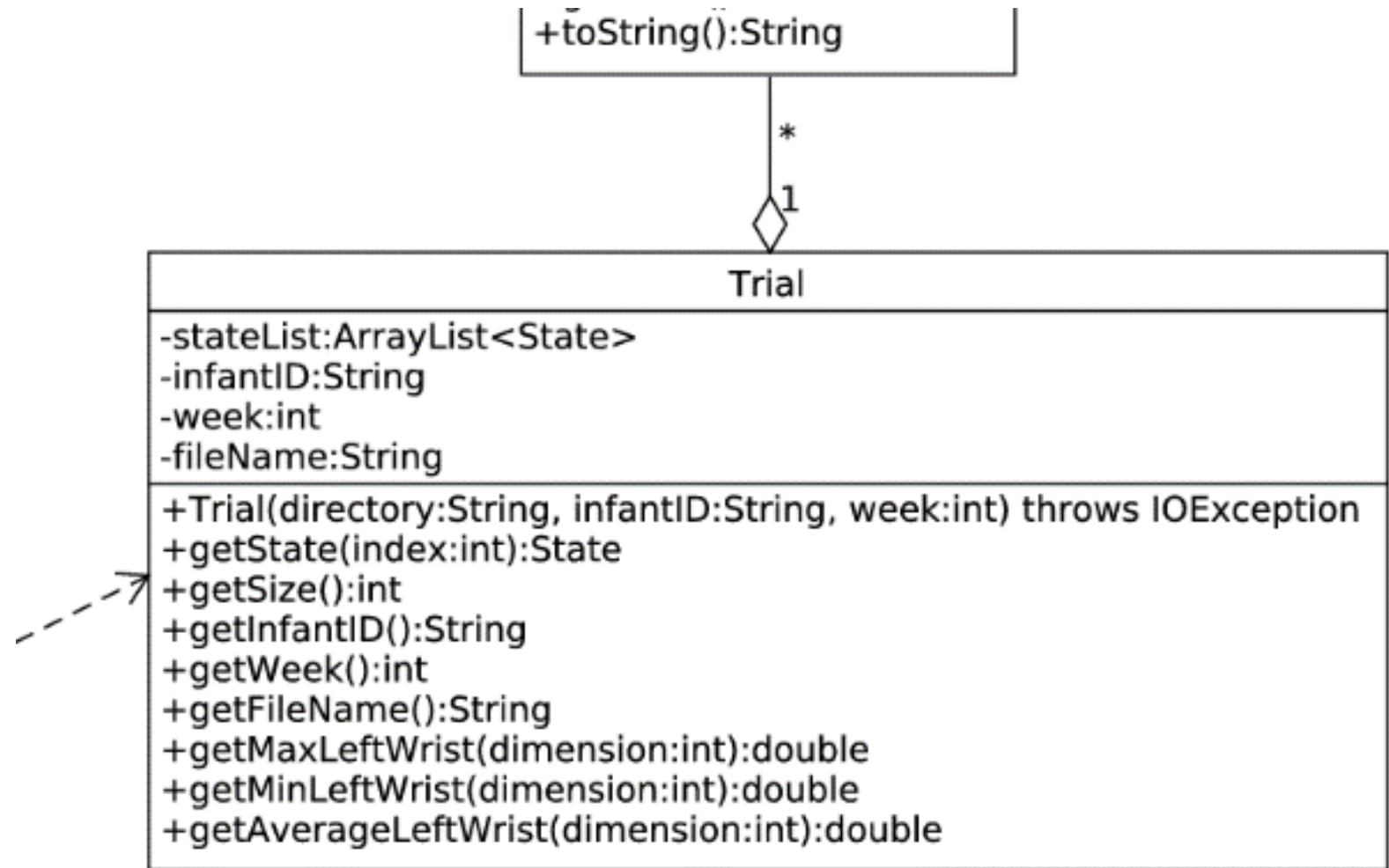


time	left_wrist_x	left_wrist_y	left_wrist_z	right_wrist_x	right_wrist_y	right_wrist_z
1.16	0.171148	0.290173	-0.12378	0.317962	-0.24333	-0.16704

Trial Class

Trial-related data:

- Infant ID
- Study week
- File name
- Array of States
(typically 15,000 of them)
- Statistics computations



Provided Materials

- Two CSV files
- Project specification
 - Details of the requirements, including the expected toString() values for the classes
 - Don't deviate from the specification – we won't be able to compile our tests against your code
- We provide a partial implementation of some of the required classes

Testing

Implement your own JUnit tests for all key classes:

- GeneralValue
 - Point3D
 - State
 - Trial
-
- Be thorough in your testing: for full credit, your tests must touch all of your lines of code (except for the Driver)
 - Derive test data from the provided CSV files or create your own

CSV Files

- Data files located in your project: `project1/data/`
- To prevent maintaining many copies of these large files, Web-Cat will automatically not upload the data directory
 - But: it will be there when your code executes
 - For those submitting directly: make sure that you do not include the data directory
- If you need to include your own, custom CSV files, then place them in `project1/mydata/`

Strategies for Success

- Work with project partner in person
- Start early
- Implement and test incrementally
- Don't deviate from our design
- Write documentation as you go

Submission

- Due date: Wednesday, September 20th @1:29pm (before class!)
- Submit to the Web-Cat server

Grading

- Grading criteria will be similar to what we are using in the labs
- Except ...

Code Review

Each group must come in for a code review with me or one of the TAs

- 15-minutes
- Discuss documentation, implementation and performance on tests
- Both group members must be able to answer questions about all aspects of the code
- Reserve a time or walk-in
- If you complete your code review before the deadline, you may resubmit to address issues
- Code reviews must be completed by Wednesday, September 27th. Don't wait!

Carrots and Sticks

- Bonus: 1 point for every 12 hours submitted early (up to 5)
- Penalties:
 - 0-48 hours late: 5 points every 12 hours late
 - 48 hours late: no credit
 - 1 point for every submission beyond 30 submissions
- Hints about solving test failures:
 - Your unit tests must cover at least 90% of your code before the Web-Cat server will give you any hints
 - 24 hours before the deadline, the Web-Cat server will stop giving hints