Code Assignment

A medical team is conducting a trial to gauge pre/post operation patient performance of a simple task.

- Patents are given a ball with a sensor inside and asked to throw it as hard as they can.
- The x and y coordinates of the balls are saved at 100 millisecond intervals to a data file.
- A ball throw is considered complete at the first instance the y coordinate measures zero.

Your job is to parse the output files and display some simple metrics about the patients:

1) Print the average lateral distance all patients pre and post operation threw the ball.
2) Print which patient threw the ball the shortest lateral distance and whether that patient was pre or post op.
3) Print which patient threw the ball the longest lateral distance and whether that patient was pre or post op.
4) Print which male patient threw the ball the highest.
5) Print which female patient threw the ball the highest.
6) Print (one list) all post op patients sorted ascending by age and lateral throwing distance.
7) Print the patient with the largest absolute difference in their lateral throwing distance.

Input files come in formats with different delimiters: pipe "|", comma "," and colon ";". The first line is the patient ID followed by age and gender. All other lines are timestamp followed by x coordinate and then y coordinate. For example:

```
02afc5d1-9129-46c8-812b-63f9cf408399,33, female
462374000, 0, 45
462374100, 10, 55
```

A set of 8 files are given for four patients. Each filename ends with `PREOP` or `POSTOP` corresponding to the recording type. For each patient there are two files, one `PREOP` and one `POSTOP`. The correct output is on the next page.

Your code will be graded on the following:

1) Correct Answer – Does the code solve the problem and work as instructed?
2) Clarity – is the code simple, easy to read and understand?
3) Reusability – will the code be easily reusable?
4) Testing – Is the code unit tested?

Your answer should provide a zip file of all source code along with a README.txt file describing how to run your code. You may code your solution in Java (7 or 8) or Scala. You may use no external libraries **except** for unit testing libraries (such as JUnit and ScalaTest).

Correct Output

```
Average distance: 63.125
Patient 02afc5d1-9129-46c8-812b-63f9cf408399 PREOP threw the shortest with 40.0
Patient 801408de-c828-49b2-bdf4-da51fee5cc89 PREOP threw the longest with 100.0
Male patient dd36dd00-ca2f-4e46-816a-aa4c14f3a40b threw the ball the highest
Female patient 4776da07-75e0-45ef-b9ce-6fb83169b074 threw the ball the highest

Post op by age and throw:
4776da07-75e0-45ef-b9ce-6fb83169b074 22 50.0
dd36dd00-ca2f-4e46-816a-aa4c14f3a40b 22 90.0
02afc5d1-9129-46c8-812b-63f9cf408399 33 70.0
801408de-c828-49b2-bdf4-da51fee5cc89 58 60.0

Patient dd36dd00-ca2f-4e46-816a-aa4c14f3a40b had the largest difference of 45.0
```