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Stage 1 Problem 3

For this experimental task, I added MomentEngine.java in layers, which besides moment, central moment, computes Eccentricity and Orientation. The problem is investigating head rotations and smile. Let's start with investigating head rotations for which I'll mainly use orientations. I will be doing on images of Jack and Tommy since their images maintain Standard behavior.

On Jack

I used Binary Layer 2 and all the rotational images … I was doing with the bounding box of face. (You can see all the logs and generated files … logs - *Stage1/failed_attempt_head_orientation_logs_jack* … files - *Stage1/failed_attempt/head_orientation_files_jack*)

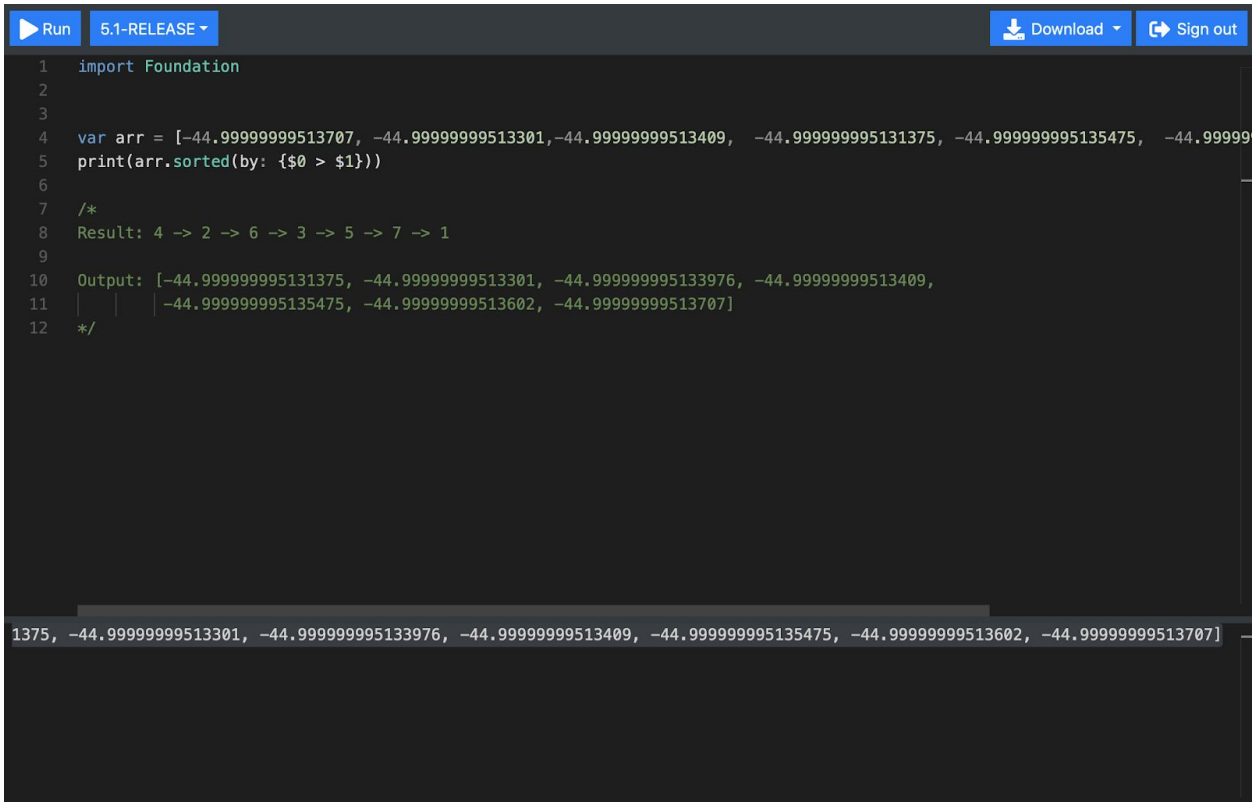
I started with _11, _01, _3, _8 and _10
I got the eccentricity values and wrote a quick swift program to sort them.

```swift
import Foundation


var arr = [-44.99999999513707, -44.99999999513301, -44.999999995131375, -44.999999995133976, -44.99999999513602]
print(arr.sorted(by: {$0 > $1}))

/*
3 -> 2 -> 4 -> 5 -> 1
*/
```

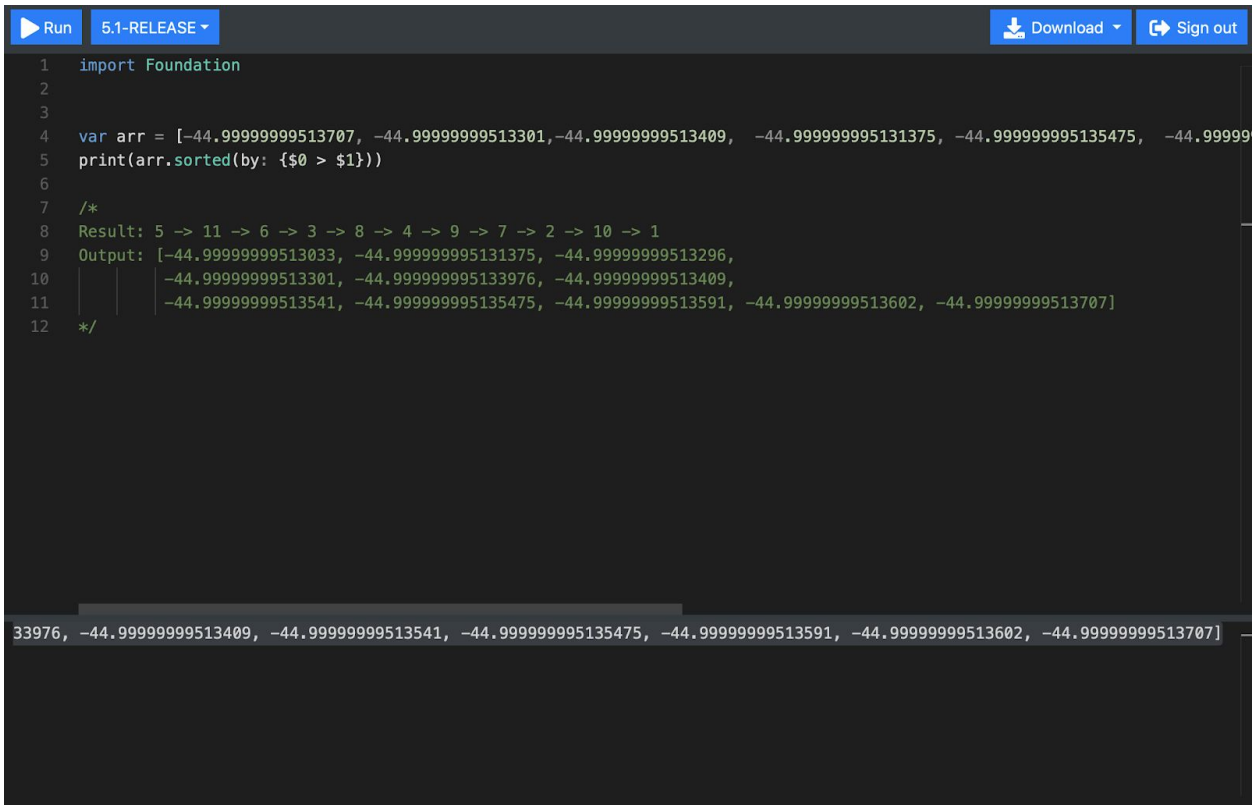
```
[-44.999999995131375, -44.99999999513301, -44.999999995133976, -44.99999999513602, -44.99999999513707]
```

Result got me to believe that there may be a possibility that the normal pic (_11) has the biggest orientation value among the rotations, then it was a pattern showing the next biggest is at a small direction to right, then at a small direction to left, then the last two got swapped and I don't know why 🤦‍♀️.

Whatever, I added _04 and _07 to the game.



This too, shows the same… Everything goes alright, then the last two are swapped.
But then I added the remaining images and guess what!



Out of comments! A huge failure!!! I can’t explain why the things went like this. I later saw at the book, that it didn’t need bounding box for the face and saw that I wasn't using the coordinates, which was to be alright but symmetricity was not found in the example that I did above.

So for now, I just forget the failure and try on *Tommy’s smile* using the eccentricity.

Used Binary Layer 2

Since Tommy is not smiling with teeth, eccentricity values are too near to each other (1.777271936275483 and 1.7772991190123395… difference is ~0.00002)

Let’s also do for *Jack*

The difference between eccentricity values is ~0.001 … which is much much bigger than in the case of Tommy. I think this is because Jack smiles with teeth and even braces are seen. That is the mouth upper and lower parts have much much distance.

Directories: *Stage1/tommy_smile* and *Stage1/jack_smile*