**Question 2**

The solution to our problem involves a **greedy algorithm.**

We know that opponent will throw Rock in rounds, Scissors in rounds and Paper in rounds.

We know that:

* ***Paper*** *beats* ***Rock***
* ***Rock*** beats ***Scissors***
* ***Scissors*** beats***Paper***

Since we can throw our rock times, scissors times and paper times in whichever order we like, knowing ***when***, ***what*** and ***how many*** our opponents will throw, we will attempt to assign the maximum amount of ‘wins’ we can achieve to our opponents throw.

If we have excess or throws of that ‘win’, we assign it to the throw which would result in a draw. Alternatively, if we have insufficient throws, we assign the remaining throws which would result in a draw.

Let’s take an example to portray this idea

* Our opponents’ throws are , and (we know when this will be)
* Our throws are , and

1. For each rock throw of our opponent, = 5, we assign paper throws during those rounds.

We have matching exactly, so we assign it to those rounds and win **5 points**.

2. For each scissor throw of our opponent, , we assign rock throws during those rounds.

We have throws, so we assign these, winning **3 points**, and the remaining throws to what would result in a draw, i.e. of our throws and so **0 points**

*(In the above case our only choice of extra throws were the scissor, but if this occurs in the case where we have 2 kinds of throws to choose from, we choose the throws which would result in a draw)*

3. And finally, we assign the remaining throws we have to our opponents paper throws, which is the remaining 5 of our throws (, resulting in **5 points.**

And so, by this **greedy** **method** of playing we will **maximise** the number of points achievable.