**Scale of Transactions (Worst Case)**

* Number of users: According to surveys, 95% of the UK uses a mobile phone. The population of the UK is approx. 66 million. In the worst case, according to spec we need to deal with 80% of mobile phone users. So our scale is 0.8 x 0.95 x 66M = **50.16M users**. So if we have 10,000 bytes per user record (assume), this gives 50.16 x 10^10 bytes or **501.6 GB** to store all users.
* Self-Report: **500, 000 self-reports** a day (in worst case – as provided in spec)
* Test Result: **500, 000 test results** a day (in worst case – as provided in spec)
* Interactions per User (Phone Storage): We can assume that the most interactions a user will have in a day is 500 (will probably be much less if social distancing is followed). Only interactions within the last 14 days are relevant. So, at any time, we store 14 x 500 = 7000 interactions at most. If each interaction is represented by 1024 bytes (from spec, page 4), at most each phone will store 7000 x 1024 = 716800 bytes or **716.8 KB**.
* Storing Self-Report Information: We need to store information on max 500,000 self-reports a day for 4 weeks (spec, page 6). So 28 x 500,000 = 14,000,000 entries. Assume we have 10,000 bytes per entry (taken a large number for worst case). So we get 14 x 10^10 bytes or **140 GB**.
* Storing confirmed cases: There are currently approx. 8 million cases of COVID in the world. It is unlikely that the number of cases in the UK will cross this number. So if we allow for storing 8 million confirmed cases, with 10,000 bytes per record, this gives **80GB.** As of 13th June, there are 292,950 confirmed cases in the UK.
* Processing Interactions: Information on all interactions needs to be sent to data stores. From above, phones accumulate at most 500 interactions each per day. We are dealing with 50.16 M users. So at most, we have to process 50.16M x 500 = **25,080,000,000** interactions a day or on average, **290,000 interactions per second**.