Scalability of Web Systems:

Assignment 1 Answers

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1. Images are stored in “buckets”, under which they are grouped into various MGRS tile identifiers. Following this, various GUID-like paths are used, under which both the actual images are stored in the “IMG_DATA” folder, and meta-data about the images are stored in the other folders; “AUX_DATA”, “QI_DATA” and in the file “MTD_TL.xml”. E.g. the angles of which the photos were taken in are stored here, amongst other things.
2. See attached “**sentinel2.go**” file.

   Development notes:
   We have used the BigQuery client library to contact the Sentinel 2 Cloud DB, as a means of using our given latitude and longitude parameters directly into the query to BigQuery. To make sure that some results are found (since direct equality-comparisons would require extreme precision from users supplying the parameters), we automatically apply +/- 0.5 accuracy-enhancements to the query parameters, and if multiple MGRS grids are found, we pick a single, arbitrary one of these, since we get multiple ones within the ranges that the accuracy-modifications define.

   After fetching “base URLs” from the BigQuery table, we then move on to using the API for navigating the image data directories, from the base-point that the base-URL provides.

3. We believe we were mostly in more trouble due to using Go than any other language, but we suppose that the ResponseWriter was very neat to work with, when using fmt.Fprintf to write directly to an abstracted away response body. This was of course particularly good for testing.

   As a particular downside, we saw very little understandability gained by splitting our implementation into different methods, because that involved many more handlers of potential errors, which of course all needed their own unique error-name. Basically, an underlying error-structure would be gold for Go. The lack of user-managed exception-handling is quite terrible, in our eyes.

   To be fair though, Go wasn’t the main problem with the assignment - the setup of prerequisites appeared to be, in terms of gaining access to the BigQuery client library and small things like the fact that the regular http-library isn’t allowed once you start using an appengine-context instead of a standard one.

4. Don’t really feel like it…- The main assignment was time-consuming enough ;)