PERSONAL TRAINER MANAGER APP

CLOUD STORAGE SOLUTIONS ANALYSIS

# Introduction

Jay Kirkham

Jak77

Software Engineering (G600)

Supervised by Chris Loftus (CWL)

Version 1.0 (RELEASE)

The purpose of this document is to analyse the possible cloud storage solutions available that would be compatible with the project.

## Requirements

* **MUST be free**As this is a project not initially intended to be marketed publicly, and as there is no initial source of finance for this project, the demand for storage and API solutions will be very small, and as such the solution must be free of any charges, up front or otherwise.
* **MUST provide suitable storage capacity**The capacity required for this application is yet to be determined, so having a large enough capacity for data will be beneficial in the development and testing of the project.
* **MUST be fast and responsive**A storage solution that is slow and inconsistent with its responses may cause major problems with the app performance and may lead to issues with development.
* **SHOULD be backed up**If the solution backs up its data, it is far more secure and the risks of clients losing data due to a corruption or other error are far slimmer.
* **CAN provide authentication services**Being able to integrate authentication with data access could simplify development exponentially, allowing development time to be focused on other areas.

## Candidates

* Azure (Microsoft) [1]
* Amazon Web Services/AWS (Amazon) [2]
* Cloudflare [3]
* Firebase (Google) [4]
* Wasabi [5[

# Analysis

## Analysis Table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Azure | AWS | Cloudflare | Firebase | Wasabi |
| Storage Option | Cosmos DB [6] | SimpleDB [7] | R2 Object Storage [8] | Cloud Firestore [9] | Hot Cloud Storage [10] |
| Storage Type | NoSQL or PostgreSQL | NoSQL | Object Buckets | NoSQL | Object Buckets |
| Price | Free [11] | Free [12] | Free [13] | Free [14] | Free (30 day trial) [15] |
| Storage Capacity | 25GB | 1GB/month | 10GB/Month | 1GiB | 1TB |
| Rate Limits | 1,000 calls per second | 25 hours of usage per month | 1 million calls/month (modifying)  10 million calls/month  (reading) | 50,000 reads, 20,000 writes, 20,000 deletes per day | 1,000 GET  100 PUT  100 POST  10 DELETE  Per minute |
| Backed Up | Yes | Yes | No | Paid (charged per GiB/month) | Yes |
| Account Integration | - | - | - | Google | - |
| App Development tools | Few | Yes | No | Yes | No |
| Have I used it before? | No | Yes – Year in Industry | No | No | No |

# Conclusion

In conclusion, Firebase will be used as it provides the most support with Google integration. With this, I can incorporate it with Firebase authentication for the most efficient and effective solutions to both problems, without having to spend any funds. The fact that the backups are a paid feature is not detrimental to the decision as there will only be limited amounts of data stored and very small amounts of it, if any, will be critical to the app’s operation.

# Annotated Biography

[1] Microsoft, “Azure. Limitless innovation”, 2024. [Online]. Available: <https://azure.microsoft.com/en-gb/> [Accessed 09/02/2024]

Offers a wide range of services for AI, machine learning and data containers such as Kubernetes (AKS) and a wide range of storage solutions for different storage types.

[2] Amazon, “Start Building on AWS Today”, 2024. [Online]. Available: <https://aws.amazon.com> [Accessed 09/02/2024]

Offers free and pay-as-you-go cloud storage solutions for a wide range of different storage types, such as Windows file servers or the S3 (Simple Storage Service) for object storage.

[3] Cloudflare, “Discover the connectivity cloud”, 2024. [Online]. Available: <https://www.cloudflare.com/en-gb/> [Accessed 09/02/2024]

Provides many different IT services and solutions, such as site security against attacks and SaaS applications for enterprises.

[4] Google, “Make your app the best it can be”, 2024. [Online]. Available: <https://firebase.google.com> [Accessed 09/02/2024]

A storage solution and app development platform specifically designed to be partnered with Android applications. Also provides authentication services alongside other services.

[5] Wasabi, “Storing the World’s Data”, 2024. [Online]. Available: <https://wasabi.com> [Accessed 09/02/2024]

A cloud storage business that provides many data-focused services such as backup and recovery, archiving, and video surveillance storage for security.

[6] Microsoft, “Azure Cosmos DB”, 2024. [Online]. Available: <https://azure.microsoft.com/en-gb/products/cosmos-db> [Accessed 09/02/2024]

A cloud storage solution for multiple storage types, such as PostgreSQL, NoSQL or MongoDB hosted by Microsoft Azure.

[7] Amazon, “Amazon SimpleDB”, 2024. [Online]. Available: <https://aws.amazon.com/simpledb/> [Accessed 09/02/2024]

Amazon’s NoSQL cloud storage solution that aims to provide high availability and flexibility with data backed up across the globe.

[8] Cloudflare, “Zero egress fee object storage”, 2024. [Online]. Available: <https://www.cloudflare.com/en-gb/developer-platform/r2/> [Accessed 09/02/2024]

An object storage solution designed to be compatible with Amazon’s S3 buckets. Guarantees no egress charges on data access.

[9] Google, “Cloud Firestore”, 2024. [Online]. Available: <https://firebase.google.com/docs/firestore> [Accessed 09/02/2024]

A NoSQL storage solution to work in conjunction with other Firebase services.

[10] Wasabi, “Wasabi Hot Cloud Storage”, 2024. [Online]. Available: <https://wasabi.com/hot-cloud-storage/> [Accessed 11/02/2024]

“simple, fast, and affordable cloud object storage” that prioritises cost compared to other providers. Has no free solution, but does have a 30-day trial.

[11] Microsoft, “Build cloud-native apps with a fast NoSQL database and an Azure free account”, 2024. [Online]. Available: <https://azure.microsoft.com/en-gb/free/cosmos-db/> [Accessed 22/02/2024]

A collection of services that are either permanently free, or free for the first twelve months, including Cosmos DB, Azure SQL Database, Azure Blob Storage and Azure Virtual Machines in both Linux and Windows.

[12] Amazon, “Amazon SimpleDB Pricing”, 2024. [Online]. Available: <https://aws.amazon.com/simpledb/pricing/> [Accessed 22/02/2024]

Shows the free and paid prices for the SimpleDB storage service, establishing storage and data transfer fees.

[13] Cloudflare, “Pricing”, 2024. [Online]. Available: <https://developers.cloudflare.com/r2/pricing/> [Accessed 22/02/2024]

Lists the free and paid rates for class A and B operations. Class A refers to the majority of operations, whereas class B represents more extreme operations.

[14] Google, “Understand Cloud Firestore Billing”, 2024. [Online]. Available: <https://firebase.google.com/docs/firestore/pricing> [Accessed 22/02/2024]

Gives free tier limits and follow-up pricings for different operations, such as reading, writing and deleting documents.

[15] Wasabi, “Start a 30-day free trial or buy now”, 2024. [Online]. Available: <https://billing-service.wasabisys.com/CommunitiesSelfReg?pid=WOS> [Accessed 22/02/2024]

Gives shortlist of free trial features, such as the storage limits.