# Justification for Selected Architecture Pattern

Software architecture patterns are used to design the top (system) level. Web-applications use multi-tier architecture (web server, application server and database), whilst client/server applications use two tier architecture (client and database). Our team has selected web-based architecture and will be using Python with the Django web framework. The server will send the files to the browser, then the browser executes the files and shows them (on a page) to the user. The user is then able to interact with the website (Stringfellow, 2018). This creates an efficient architecture pattern that supports future growth and future organisational requirements.

The reason our group selected a web-based application over a client/server application is for several reasons. Firstly, web-based architecture is accessed using a browser, whilst a client/server application is run locally and needs to be installed on a machine. For the current situation (a Car Rental Company), it is not reasonable that every potential customer must first download an application to browse and book vehicles online. This could in fact, deter customers. Therefore, it is more reasonable for customers to be able to access the site through a browser.

It is easier to test scripting errors in web-based applications. A client/server-based application lacks robustness, the server can get overloaded and fail (as the number of requests increases). This may result in low performance. To change the interface of a client/server app, the software must be upgraded. Different testing is performed. On a client/server application, the tests performed would include [sourced from SoftwareTestingHelp, 2018]:

* User interface testing
* Manual support testing
* Functionality testing
* Compatibility testing & configuration testing
* Intersystem testing

On a web application, tests performed would include:

* User interface testing
* Functionality testing
* Security testing
* Browser compatibility testing
* Load/stress testing
* Interoperability testing/intersystem testing
* Storage and data volume testing

For a Car Rental Company, users main aim is to book and hire vehicles. Staff’s main aim is to store data, develop reports and make recommendations. It is therefore more suitable to test: security, browser compatibility and functionality, rather than manual support testing and configuration. By using a web application, all users will have access to the data and the most recent software.

According to Patient Account Services, a web-based system saves $30 000 - $100 000 per year on initial costs, and $2 000 – $6 000 per year in service fees. In a web-based system, third-party licenses are included. Using web-based software keeps clients up-to-date with current releases and backs up data. A client-server system requires more onsite set-up than a web-based system. In today’s market, web-based systems provide the most value for money (Patient Account Services, 2018). Overall, our group has chosen the most appropriate architecture for a Car Rental Company.

# References

Patient Account Services. (2018). Web-based vs Client/Server Comparison. Retrieved from <http://www.patientaccountservices.com/articles/5/Web-based-vs-Client-Server-Comparison>

SoftwareTestingHelp. (2018). What is client-server and web-based testing and how to test these applications. Retrieved from <https://www.softwaretestinghelp.com/what-is-client-server-and-web-based-testing-and-how-to-test-these-applications/>

Stringfellow, A. (2018). What is Web Application Architecture? How It Works, Trends, Best Practices and More. Retrieved from <https://stackify.com/web-application-architecture/>