INFORMATICS INSTITUTE OF TECHNOLOGY

In Collaboration with

UNIVERSITY OF WESTMINSTER

Astron: Cloud Framework to Adopt BFF Pattern

A Dissertation by

Mr. Kushan Shamika

W1715093/2018136

Supervised by

Mr. Saman Hettiarachchi

Submitted in partial fulfilment of the requirements for the BEng (Hons) Software Engineering degree at the University of Westminster.

May 2022

Abstract

Microservices is a modern architectural approach that has exploded in popularity. Various business operations in business microservices do not neatly map to the channel-specific requirements of client applications, such as web and mobile applications. Due to the lack of channel-specific backends, microservices have under fetching and over fetching issues. The Backend for Frontend (BFF) pattern was created to provide appropriate solutions to the challenges listed above. Leading businesses have developed many open-source frameworks to incorporate BFF patterns using a variety of methodologies. Microservices applications, on the other hand, miss the BFF pattern due to a lack of suitable training, advice, and documentation.

Analysing previous works related to the BFF pattern, the author has identified several gaps in the current BFF implementation. Most identified gaps are related to the API query language used to implement the BFF service. Furthermore, the research project has successfully identified architectural problems related to the BFF pattern. Previous researchers discussed the application of the BFF pattern, but non-of the past research suggests a framework approach for implementing BFF service.

This research was going to implement, evaluate and test a novel framework with RESTful capabilities to implement BFF service. The developed framework would allow developers to build BFF services with zero coding. To analyse the Astron framework, both quantitative and qualitative evaluations were done.

Key Words: Microservices, Backend for Frontend, REST, API Query Language