QNO 1

A fashion retailer that sells women's clothing has created an IoT-enabled store. This store has Bluetooth Low Energy (BLE) beacons installed on the ceiling. This way the retailer can track the customers’ in-store movements for specific store areas (i.e. areas 1-26) as these are noted in Figure 1. These movements are recorded as customers move in the store using a mobile app. As such, using this infrastructure, the retailer has gathered a beacon dataset. In more detail this dataset contains the following fields: Customer id, visit id, date, time, area (ranging from 1-26), area name (e.g. socks, blouses, pants etc.), duration (i.e. time spent at each area)

re 1: Store layout Apart from the beacons on the celling, the retailer has also placed RFID tags on each garment. Based on different RFID antennas placed in the store (i.e. Backroom RFID antenna, Replenishment RFID gates, Entrance/Exit RFID gates, Cashier RFID antennas – see also Figure 1), the retailer is able to gather RFID data and track the garment in-store movements. Be careful, using this infrastructure the retailer is not able to track which customer carries which garment, or which garments are in each store area; but, it is able to track the garments solely in the areas having RFID antennas as described above (i.e. backroom, replenishment, entrance, cashiers). Based on the above you are asked to answer the following questions:

 (A) Formulate one interesting data-driven question based on the beacon dataset and shortly describe how you would answer it reflecting on the phases of the “analytics lifecycle”. Regarding the last phase of the analytics lifecycle (i.e. operationalisation), present one example showcasing a data-driven decision your analysis results may support. (15 Marks)

 (B) How would you leverage the given RFID data that retailer gathers to support the company in the decision making? Use examples, to explain your answer. (8 Marks)

(C) What additional internal (i.e. owned by the retailer) and external (i.e. third party) data sources would you exploit to assist the retailer in creating more value for its customers and how? Use examples, to explain your answer. (7 Marks) PLEASE ANSWER ALL THE QUESTIONS B

QNO 2

Aggora is an e-commerce company with very successful online store. The company processes lots of data about their sales, compares prices of products across multiple shopping sites so that they come up with innovative promotions and good pricing strategy in order to beat the competitors. With ever increasing amount of data and demand for efficient data processing, Aggora’s management are seriously considering moving to big data technologies. They also believe that mining big data is the way forward.

 Based on your knowledge in big data technologies, you have been asked to consult the Aggora’s management by writing a report on the following issues: • Aggora don’t understand how to build a platform for big data processing. They have heard words, such as clusters, clouds, Hadoop, Spark, but they do not understand what to do and how to do it. They are also concerned about the cost and complexity of the big data processing. You are required to advise them by outlining possible solutions and comparing alternatives.

• Traditionally, the data they process are mostly structured and the technologies they used so far were mostly traditional databases and SQL. Aggora don’t have expertise in programming and they ask you to advise what would be the easiest and straightforward big data technologies they can adopt in order to rely on their current expertise, yet adding value to the company. Outline possible solutions and compare their features, strengths, and limitations. Clearly state any assumptions that you have made in your report.