

## ***CDS513 Predictive Business Analytics Function: Product Affinity Exercise***

Ever since Amazon went online in 1995, the e-commerce powerful force has undergone a slew of changes, despite being led by the same man, Jeff Bezos, during the ensuing two-plus decades. When the Seattle-based company first launched its website, all it sold was books.

But Amazon never really stopped changing the inventory it sold. Bezos said he wanted his store to become the world's largest, so he worked hard toward meeting that goal, whether that meant offering new products, launching Amazon Prime and launching Amazon Instant Video. The list goes on and on. Today, Amazon sells more than 200 million products to customers all over the world.

During the year end sale of 2019, Amazon came out with an analysis on the association rules of sales transactions occurs. The analysis was done to help them to improve their business for next year. A snapshot of 9 transactions is shown in Table 1.

Table 1: Sales transactions

Transaction ID	Items bought
1001	Backpack, air purifier, t-shirt
1038	Air purifier, cup
1040	Air purifier, socks
1024	Backpack, air purifier, cup
1033	Backpack, socks
1034	Air purifier, socks
1042	Backpack, socks
1052	Backpack, air purifier, socks, t-shirt
1051	Backpack, air purifier, socks

- (i) Based on the information in Table 1, by showing the steps, construct FP-Tree (of FP-Growth algorithm).
- (ii) Compute the support, confidence, and lift values for item sets {backpack, socks}. Show your workings.