NAME: Daniyal Saeed

SAP ID: 53937

SECTION: BS Data Science

COURSE: Advance Statistics

ASSIGNMENT NO 1

1.1 List 20 situations involving uncertainty that happened with you yesterday.

1. Whether I wake up on time.
2. My bike ride would take longer than usual.
3. If my phone battery would last the whole day.
4. Whether the weather would stay clear.
5. If my internet connection would drop during class.
6. Whether I would be called on to answer a question.
7. If my laptop would update automatically.
8. Whether I would get traffic on the way home.
9. If my friend would reply to my message.
10. Whether the cafeteria would have my favorite meal.
11. If my teacher would announce a surprise quiz.
12. Whether I would forget to bring my notebook.
13. If my assignment would be graded today.
14. Whether my favorite shop would still have the item in stock.
15. If I meet someone I know on the street.
16. Whether my pen would run out of ink.
17. If I have extra homework.
18. Whether my internet bill payment would go through smoothly.
19. If I would feel tired in the evening.

1.2 Name 10 random variables that you observed or dealt with yesterday.

1. Time, I woke up.
2. Temperature outside.
3. Number of WhatsApp messages received.
4. Number of emails received.
5. Time it took to travel to school.
6. Number of people in the bus.
7. Number of questions asked in class.
8. Time, I spent on my phone.
9. Number of cups of tea/coffee.
10. Time, I went to bed.

1.3 Name 5 stochastic processes that played a role in your actions yesterday.

1. The weather changes throughout the day.
2. Internet speed fluctuates.
3. Phone notifications arrive randomly.
4. Traffic flow on the road.
5. Electricity power fluctuations.

1.4 Lazy student coin toss joke.

(a)

- Probability = 0 → Coin stands on its edge, coin hangs in the air (impossible events).
- Probability = 1 → Either heads or tails occurs (certain that one of them will happen).
- Probability strictly between 0 and 1 → Heads, Tails (both have positive but not guaranteed probability).

(b)

- Probability of “watch a video” = 0.5 (if the coin is fair).
- This helps define a fair coin as one where both heads and tails occur with equal probability (0.5 each).

1.5 Software package defects.

- It is not possible to predict the exact number of defects per day, but it is possible to model the expected trend.
- Data to collect number of defects found each day, severity of defects, number of testers working, time spent testing.
- Predict: time (day of testing).
- Response: number of defects found per day.

1.6 Mr. Cheap’s computer store.

- Data to collect monthly sales of similar stores, types of hardware sold, prices, number of customers, store location, advertising costs, competition.
- Predictor: number and type of products stocked, store location, and prices.
- Response: monthly profit.