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**Course:** Data Analysis

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## SECTION A

### QUESTION 1

*Thinking about my daily routine. Here are the ways am producing or using data, knowingly or unknowingly Reflecting on three specific activities and describing the type of data involved:*

#### 1. Scrolling Through Social Media or Messaging Apps

I regularly use platforms like WhatsApp, Facebook, Instagram, and Telegram to chat, share updates, and manage content for my blog, *PeaceMind.blog*.

##### Types of Data Involved:

- **Personal Data:** name, profile information, contact details.
- **Behavioral Data:** likes, shares, clicks, time spent on posts.
- **Location Data:** IP address, GPS data when sharing updates or using checkins.
- **Content Data:** messages, voice notes, images, videos.

##### Reflection:

These platforms collect data based on my activities and interactions to personalize content and improve user experience. While I may not always be conscious of it, every message, comment, or story I post contributes to a growing dataset.

#### 2. Researching for Blog or Tech Projects

I spend time researching topics related to mental health, coding tutorials, data analysis etc This includes using search engines, downloading resources, and watching educational videos.

**Types of Data Involved:**

- **Search Data:** keywords entered, queries made.
- **Usage Data:** time spent on pages, interaction patterns.
- **Download Data:** files and resources I save to my device.
- **Technical Data:** device type, browser, screen resolution, IP address.

**Reflection:**

Every search I perform or article I read contributes to my digital footprint. In return, platforms use this data to recommend more relevant results, which helps streamline my work and learning process.

### 3. Using Productivity or Mental Health Apps

I use Google Calendar for scheduling, meditation apps for relaxation, and journaling tools to track my thoughts and mental health progress.

**Types of Data Involved:**

- **Activity Data:** daily check-ins, task completion, app usage frequency.
- **Emotional Data:** mood entries, journal reflections, stress level

**Reflection:**

These tools improve my productivity and well-being, but they also collect sensitive personal and emotional data. It's a powerful reminder of how even private self-care practices involve data sharing.

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#### QUESTION 4

***Imagining a situation where my personal data such as my location or private messages is being shared without my knowledge or consent, Here are the ethical principles being violated and three ethical rules that should guide data usage:***

## **Ethical Principles Being Violated:**

- **Privacy:**

Because individual has a right to keep their personal life private. Sharing sensitive data like messages or location without consent violates this fundamental right.

- **Consent and Autonomy:**

Ethical data practices require that individuals give informed consent before their data is collected or shared, so unauthorized sharing of my data disregards my autonomy and control over my own information.

- **Transparency and Accountability:**

Organizations or individuals handling data have a duty to be transparent about how data is used. Sharing my data secretly or without disclosure is dishonest and undermines trust.

## **Three Ethical Rules That Should Guide Data Usage:**

1. **Informed Consent Must Be Obtained:**

- Data should only be collected, stored, or shared when the individual has been clearly informed and has given permission. Consent should be specific, voluntary, and revocable

2. **Data Should Be Used Only for Its Intended Purpose:**

Personal data must not be used in ways that go beyond the purpose for which it was collected unless the individual agrees. This prevents misuse and respects the boundaries of trust.

3. **Ensure Data Security and Confidentiality:**

Strong measures must be taken to protect data from unauthorized access, leaks, or abuse. Those handling data must be held accountable for safeguarding it.

## SECTION B – DATA ANALYSIS BASICS

### Question 9

#### HEALTHCARE; MENTAL HEALTH AND WELLNESS

##### How Data Is Transforming Mental Health:

Data is revolutionizing the mental health field in ways that are both innovative and life-changing. With the rise of digital health tools, mental health professionals and researchers can now collect and analyze data from apps, social media behavior, wearable devices, and self-reports. This helps them:

- Track emotional and behavioral patterns over time
- Identify early warning signs of depression, anxiety, or burnout
- Personalize treatment plans based on data trends
- Improve mental health services using feedback and usage metrics

For example, apps and websites like **peacemind.blog**, *Headspace* or *Moodpath* use data to monitor mood, sleep, and activity levels, offering timely interventions or recommendations.

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##### A Creative Way I Could Use Data in Mental Health:

If I were working in this field professionally, I would create a “**Mood + Word Journal App**” that collects anonymous user entries and uses **natural language processing** to detect emotional trends based on language.

### Features:

- Users log their thoughts or feelings daily.
- The app analyzes word choice, tone, and frequency of emotion-related words.
- It visualizes emotional patterns through graphs and gives gentle prompts like:
  - “You’ve been using words related to sadness more often—how are you feeling today?”
  - “Last week, your tone improved after journaling. Keep going!”
  - This tool would empower people to reflect on their emotional well-being through their own words, while also contributing anonymized data to help researchers understand mental health trends across different populations.

### Question 10

*Apart from the different types of data taught in class, we also have:*

#### 1. Text Analysis

##### **This type of analysis**

Analyzes written words, such as blog posts, tweets, emails, or survey responses to uncover patterns, emotions, or key topics.

##### **Example:**

A mental health blog like ***PeaceMind.blog*** can use text analysis to identify the most common emotions expressed by readers in comments or messages.

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#### 2. Sentiment Analysis

This Determines the emotional tone behind a piece of text—whether it's positive, negative, or neutral.

**Example:**

Businesses use it to analyze product reviews, while I could use it to study how people feel about mental health topics discussed online.

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### 3. Cohort Analysis

This type of analysis Groups people with shared characteristics (like those who signed up in the same week) and tracks how their behavior changes over time.

**Example:**

If I run a mental health campaign, I can compare how different age groups engage with it over time to see which demographic responds best.

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### 4. Time Series Analysis

This type of analysis Examines data points collected over a period of time to identify trends, cycles, or seasonality.

**Example:**

Analyzing how many visitors my blog gets each month and spotting trends (like higher visits during mental health awareness month).

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### 5. Spatial Analysis

This type of analysis Uses data related to geographic locations to understand patterns in space often visualized using maps.

**Example:**

Healthcare planners use it to track the spread of diseases in different regions. I could use it to identify areas with low access to mental health support.

## Additional one (1) from section A

### QUESTION 3

Yes, I agree with the saying that “**data is the new oil**,” and here’s why: just like oil powered the industrial revolution, **data powers the digital revolution**. In today’s world, data is a valuable resource because it drives innovation, decision-making, and business growth across almost every sector.

But just like oil, data must be **collected, refined (analyzed), and applied** to become truly useful.

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#### **How Data Is a Valuable Resource Today:**

##### **1. In Healthcare:**

Data is used to improve patient care and predict disease outbreaks.

- **Example:** Hospitals use patient data to create personalized treatment plans and predict high-risk conditions before they become severe.
- **Value:** This saves lives, reduces costs, and improves overall healthcare efficiency.

##### **2. In Business and Marketing:**

Companies collect customer data to understand buying behavior and improve their services.

- **Example:** E-commerce platforms like Jumia or Amazon analyze your browsing and purchase history to recommend products you’re likely

to buy.

- **Value:** This increases customer satisfaction and boosts sales.



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