Assignment for IT :Summary of the first 6 topics

1. Introduction to IT and Computing

Role of IT: Supports data analysis, decision-making, and research.

Data vs Information: Data = raw facts; Information = processed, meaningful data.

Applications: Biostatistics & financial engineering use computing for modeling, simulations, and predictions.

High-performance & Cloud Computing: Enables fast, large-scale computations and remote data storage/processing.

2. Fundamentals of Computer Operations

CPU Components: ALU (calculations), Control Unit (instructions), Registers (temporary storage), System Clock (timing).

Machine Cycles: Fetch → Decode → Execute → Store.

Parallel Processing: Multiple tasks run simultaneously for faster computation.

Performance Evaluation: Important for handling statistical computations efficiently.

3. Computer Hardware (Input/Output Devices)

Input: Keyboards, mice, scanners, audio/video devices.

Output: Displays, printers, speakers, projectors.

High-throughput devices: Capture large datasets quickly for analysis.

4. Computer Hardware 2 (Memory & Storage)

Memory: Primary (RAM) vs Secondary (HDD, SSD, RAID, Cloud).

Cache: Fast temporary storage for quick CPU access.

Disk Storage: Organized in tracks, sectors, clusters, surfaces.

Implications: Efficient storage and retrieval essential for large datasets in biostatistics & finance.

5. Computer Software

System Software: OS, compilers, utilities.

Application Software: Word, Excel, PowerPoint.

Use: Streamlines statistical analysis and workforce productivity.

6. Data Files and File Management

File Types: Random, sequential, structured, unstructured.

Operations: Creation, indexing, retrieval, optimization.

Databases: Relational databases and normalization improve storage efficiency and data integrity.