# Smart Inventory: Mobile & Laptop Store Management

**Group Number**: 81

**Group Members**:

- EG/2022/5412 - Wicramasingha N.G.A.W.R.O.
- EG/2022/5242 - Perera W.T.D.
- EG/2022/4923 - Akalanka H.C.

**Objective**:

This project is to develop an efficient Inventory Management System for laptops and mobile phones, which will have two user phases: Admin and User. The system will allow efficient insertion, searching, deletion, removal, display, and sorting of inventory items.

# Features:

❑ User-friendly interface

❑ Sorting functionality

Laptop
1. Name sorting
2. Price sorting
3. processor sorting

Phone
1. Name sorting
2. Price sorting

❑ Search functionality

In Laptop
1.By Linked List
2.By BST Tree

In Phone
Link List

❑ Used Data structures
Linked list
Tree(Searching purpose)

# Sorting Algorithms: Implementation and Efficiency

## Bubble Sort

Simple algorithm for smaller datasets. It's ideal for initial data entry. Use case: <50 items.

## Merge Sort

Efficient for medium to large datasets. Ensures scalability and reliable sorting. Use case: 50-500 items.

## Quick Sort

Fast and effective for large-scale data. Provides optimized performance for large datasets. Use case: 500+ items.

# **Performance** Execution time analysis

- Consider only Price sorting of Laptop

1. Bubble Sort

```
Bubble Sort Time: 3750500 ns
```

2. Merge Sort

```
Merge Sort Time: 804700 ns
```

3. Quick Sort

```
Quick Sort Time: 961700 ns
```

- Consider Time Complexity for search function

1. By Tree

```
Search  Time of Link list: 519700 ns
```

2.By Link List

```
Search  Time of Tree: 411200 ns
```

Thank You!