Experiment No.3:

Sorting Algorithms

An online store wants to sort its product prices to help customers compare them easily.Choose suitable sorting techniques for small to medium datasets.

Implement bubble sort, selection sort, and insertion sort to reorder product prices

```
#include <stdio.h>
#define SIZE 5
// Bubble Sort
void bubbleSort(float prices[], int n) {
    int i, j;
    float temp;
    for(i = 0; i < n - 1; i++) {
        for(j = 0; j < n - 1 - i; j++) {
            if(prices[j] > prices[j + 1]) {
                temp = prices[j];
                prices[j] = prices[j + 1];
                prices[j + 1] = temp;
            }
        }
    }
}

// Selection Sort
void selectionSort(float prices[], int n) {
    int i, j, minIndex;
    float temp;
    for(i = 0; i < n - 1; i++) {
        minIndex = i;
        for(j = i + 1; j < n; j++) {
            if(prices[j] < prices[minIndex]) {
                minIndex = j;
            }
        }
        temp = prices[i];
        prices[i] = prices[minIndex];
        prices[minIndex] = temp;
    }
}

// Insertion Sort
void insertionSort(float prices[], int n) {
    int i, j;
    float key;
```

```
    for(i = 1; i < n; i++) {
        key = prices[i];
        j = i - 1;
        while(j >= 0 && prices[j] > key) {
            prices[j + 1] = prices[j];
            j--;
        }
        prices[j + 1] = key;
    }
}

// Display array
void display(float prices[], int n) {
    int i;
    for(i = 0; i < n; i++) {
        printf("%.2f ", prices[i]);
    }
    printf("\n");
}

int main() {
    float prices[SIZE] = {199.99, 49.50, 89.90, 299.00, 150.00};
    int choice;

    printf("Original Prices: ");
    display(prices, SIZE);

    printf("\nChoose sorting method:\n");
    printf("1. Bubble Sort\n");
    printf("2. Selection Sort\n");
    printf("3. Insertion Sort\n");
    printf("Enter your choice (1-3): ");
    scanf("%d", &choice);

    if(choice == 1) {
        bubbleSort(prices, SIZE);
        printf("\nPrices after Bubble Sort: ");
    } else if(choice == 2) {
        selectionSort(prices, SIZE);
        printf("\nPrices after Selection Sort: ");
    } else if(choice == 3) {
        insertionSort(prices, SIZE);
        printf("\nPrices after Insertion Sort: ");
    } else {
```

```
        printf("Invalid choice.\n");
        return 0;
    }

    display(prices, SIZE);

    return 0;
}
```