INVENTORY MANAGEMENT FOR A SMALL SHOP

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#include <stdio.h>
#include <stdlib.h>
#include <string.h>

#define DB_FILE "inventory.dat"

typedef struct {
    int id;
    char name[30];
    int quantity;
    float price;
} Item;

void clearInputBuffer(void) {
    int c;
    while ((c = getchar()) != '\n' && c != EOF) {}
}

int readLine(char *buf, size_t size) {
    if (fgets(buf, (int)size, stdin) == NULL) return 0;
    buf[strcspn(buf, "\n")] = '\0';
    return 1;
}
```

```
void addItem(void) {
    FILE *fp = fopen(DB_FILE, "ab");
    if (!fp) {
        printf("Error: Cannot open database file.\n");
        return;
    }

    Item item;
    printf("Enter Item ID: ");
    if (scanf("%d", &item.id) != 1) { clearInputBuffer(); fclose(fp); return; }
    clearInputBuffer();

    printf("Enter Item Name: ");
    if (!readLine(item.name, sizeof(item.name))) { fclose(fp); return; }

    printf("Enter Quantity: ");
    if (scanf("%d", &item.quantity) != 1) { clearInputBuffer(); fclose(fp); return; }

    printf("Enter Price: ");
    if (scanf("%f", &item.price) != 1) { clearInputBuffer(); fclose(fp); return; }

    fwrite(&item, sizeof(Item), 1, fp);
    fclose(fp);

    printf("Item added successfully.\n");
}
```

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void displayItems(void) {
    FILE *fp = fopen(DB_FILE, "rb");
    if (!fp) {
        printf("No inventory file found. Add items first.\n");
        return;
    }

    Item item;
    int any = 0;

    printf("\n%-6s %-30s %-10s %-10s\n", "ID", "NAME", "QTY", "PRICE");
    printf("-----------------------------------------------------------------\n");

    while (fread(&item, sizeof(Item), 1, fp) == 1) {
        any = 1;
        printf("%-6d %-30s %-10d %-10.2f\n", item.id, item.name, item.quantity, item.price);
    }

    if (!any) printf("(No items found)\n");

    fclose(fp);
}

void searchItem(void) {
    FILE *fp = fopen(DB_FILE, "rb");
    if (!fp) {
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        printf("No inventory file found.\n");
        return;
    }

    int id, found = 0;
    printf("Enter Item ID to search: ");
    if (scanf("%d", &id) != 1) { clearInputBuffer(); fclose(fp); return; }

    Item item;
    while (fread(&item, sizeof(Item), 1, fp) == 1) {
        if (item.id == id) {
            found = 1;
            printf("\nFound:\nID: %d\nName: %s\nQuantity: %d\nPrice: %.2f\n",
                item.id, item.name, item.quantity, item.price);
            break;
        }
    }

    if (!found) printf("Item not found.\n");
    fclose(fp);
}

void updateItem(void) {
    FILE *fp = fopen(DB_FILE, "rb+");
    if (!fp) {
        printf("No inventory file found.\n");
        return;
```

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}

int id, found = 0;
printf("Enter Item ID to update: ");
if (scanf("%d", &id) != 1) { clearInputBuffer(); fclose(fp); return; }
clearInputBuffer();

Item item;
while (fread(&item, sizeof(Item), 1, fp) == 1) {
   if (item.id == id) {
      found = 1;

      printf("Current Name: %s\n", item.name);
      printf("Enter new name (press Enter to keep same): ");
      char newName[30];
      if (!readLine(newName, sizeof(newName))) { fclose(fp); return; }
      if (strlen(newName) > 0) strncpy(item.name, newName, sizeof(item.name) - 1);

      printf("Current Quantity: %d\n", item.quantity);
      printf("Enter new quantity: ");
      if (scanf("%d", &item.quantity) != 1) { clearInputBuffer(); fclose(fp); return; }

      printf("Current Price: %.2f\n", item.price);
      printf("Enter new price: ");
      if (scanf("%f", &item.price) != 1) { clearInputBuffer(); fclose(fp); return; }

      fseek(fp, -(long)sizeof(Item), SEEK_CUR);
```

```
            fwrite(&item, sizeof(Item), 1, fp);

            printf("Item updated successfully.\n");
            break;
        }
    }

    if (!found) printf("Item not found.\n");
    fclose(fp);
}

void deleteItem(void) {
    FILE *fp = fopen(DB_FILE, "rb");
    if (!fp) {
        printf("No inventory file found.\n");
        return;
    }

    FILE *temp = fopen("temp.dat", "wb");
    if (!temp) {
        printf("Error: Cannot create temp file.\n");
        fclose(fp);
        return;
    }

    int id, found = 0;
    printf("Enter Item ID to delete: ");
```

```
    if (scanf("%d", &id) != 1) { clearInputBuffer(); fclose(fp); fclose(temp); return; }

    Item item;
    while (fread(&item, sizeof(Item), 1, fp) == 1) {
        if (item.id == id) {
            found = 1; // skip writing this record
        } else {
            fwrite(&item, sizeof(Item), 1, temp);
        }
    }

    fclose(fp);
    fclose(temp);

    remove(DB_FILE);
    rename("temp.dat", DB_FILE);

    if (found) printf("Item deleted successfully.\n");
    else printf("Item not found.\n");
}

int main(void) {
    int choice;

    while (1) {
        printf("\n===== SMALL SHOP INVENTORY (C) =====\n");
        printf("1. Add Item\n");
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        printf("2. View All Items\n");
        printf("3. Search Item (by ID)\n");
        printf("4. Update Item\n");
        printf("5. Delete Item\n");
        printf("0. Exit\n");
        printf("Enter choice: ");

        if (scanf("%d", &choice) != 1) {
            clearInputBuffer();
            printf("Invalid input.\n");
            continue;
        }

        switch (choice) {
            case 1: addItem(); break;
            case 2: displayItems(); break;
            case 3: searchItem(); break;
            case 4: updateItem(); break;
            case 5: deleteItem(); break;
            case 0: printf("Exiting...\n"); return 0;
            default: printf("Invalid choice.\n");
        }
    }
}
```