

## Problem 1:

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#include <stdio.h>

void removeSpecialCharacters(char str[]) {
    for (int i = 0; str[i] != '\0'; i++) {
        if (!(str[i] >= 'A' && str[i] <= 'Z') && !(str[i] >= 'a' && str[i] <= 'z')) {
            str[i] = ' ';
        }
    }
}

char changeAlphabet(char alphabet) {
    if (alphabet >= 'A' && alphabet <= 'Z') {
        return 'Z' - (alphabet - 'A');
    } else if (alphabet >= 'a' && alphabet <= 'z') {
        return 'z' - (alphabet - 'a');
    } else {
        return alphabet;
    }
}

void encoder(char *p) {
    removeSpecialCharacters(p);
    for (int i = 0; p[i] != '\0'; i++) {
        p[i] = changeAlphabet(p[i]);
    }
}

int main() {
    char input[256];
    printf("Enter the string: ");
    fgets(input, 256, stdin);
    encoder(input);
    printf("Encoded string: %s\n", input);
    return 0;
}
```

## Problem 2

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

#define MAX_TRAINS 100

// Define the Train structure
struct Train {
    char name[50];
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    int totalTickets;
    float ratings;
};

// Function prototypes
void addTrain(struct Train listOfTrains[], int *numOfTrains);
void mostPopularTrain(struct Train listOfTrains[], int numOfTrains);
void displayAllTrains(struct Train listOfTrains[], int numOfTrains);

int main() {
    struct Train listOfTrains[MAX_TRAINS];
    int numOfTrains = 0;
    int choice;

    while (1) {
        printf("\n--- Bangladesh Railway Ticket Management System ---\n");
        printf("1. Add Train\n");
        printf("2. Find Most Popular Train\n");
        printf("3. Display All Trains\n");
        printf("4. Exit\n");
        printf("Enter your choice: ");
        scanf("%d", &choice);

        switch (choice) {
            case 1:
                addTrain(listOfTrains, &numOfTrains);
                break;
            case 2:
                mostPopularTrain(listOfTrains, numOfTrains);
                break;
            case 3:
                displayAllTrains(listOfTrains, numOfTrains);
                break;
            case 4:
                printf("Exiting the program. Goodbye!\n");
                return 0;
            default:
                printf("Invalid choice. Please try again.\n");
        }
    }

    return 0;
}

// Function to add a new train
void addTrain(struct Train listOfTrains[], int *numOfTrains) {
    if (*numOfTrains >= MAX_TRAINS) {
        printf("Cannot add more trains. Maximum limit reached.\n");
        return;
    }
}

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    struct Train newTrain;
    printf("Enter train name: ");
    scanf("%s", newTrain.name);
    printf("Enter total tickets: ");
    scanf("%d", &newTrain.totalTickets);
    printf("Enter ratings: ");
    scanf("%f", &newTrain.ratings);

    listOfTrains[*numOfTrains] = newTrain;
    (*numOfTrains)++;

    printf("Train added successfully!\n");
}

// Function to find the most popular train
void mostPopularTrain(struct Train listOfTrains[], int numOfTrains) {
    if (numOfTrains == 0) {
        printf("No trains available to analyze.\n");
        return;
    }

    int maxTickets = listOfTrains[0].totalTickets;
    int index = 0;

    for (int i = 1; i < numOfTrains; i++) {
        if (listOfTrains[i].totalTickets > maxTickets) {
            maxTickets = listOfTrains[i].totalTickets;
            index = i;
        }
    }

    printf("The Most Popular Train: %s\n", listOfTrains[index].name);
}

// Function to display all trains
void displayAllTrains(struct Train listOfTrains[], int numOfTrains) {
    if (numOfTrains == 0) {
        printf("No trains available to display.\n");
        return;
    }

    printf("\n--- List of Trains ---\n");
    for (int i = 0; i < numOfTrains; i++) {
        printf("Train %d:\n", i + 1);
        printf("  Name: %s\n", listOfTrains[i].name);
        printf("  Total Tickets: %d\n", listOfTrains[i].totalTickets);
        printf("  Ratings: %.2f\n", listOfTrains[i].ratings);
    }
}

```

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