Run-Length Encoding (RLE) Compression in C

```c
#include <stdio.h>

#include <stdlib.h>

#include <string.h>


// Function to perform Run-Length Encoding (RLE) compression

void compressFile(const char *inputFile, const char *outputFile) {

    FILE *in = fopen(inputFile, "r");

    FILE *out = fopen(outputFile, "w");


    if (!in || !out) {

        perror("Error opening file");

        exit(1);

    }


    char ch, prev;

    int count = 0;


    prev = fgetc(in);

    if (prev == EOF) {

        printf("Input file is empty.\n");

        fclose(in);

        fclose(out);

        return;

    }
```

```c
    while ((ch = fgetc(in)) != EOF) {

        if (ch == prev) {

            count++;

        } else {

            fprintf(out, "%c%d", prev, count + 1);

            prev = ch;

            count = 0;

        }

    }

    fprintf(out, "%c%d", prev, count + 1);


    fclose(in);

    fclose(out);

    printf("File compressed successfully to '%s'.\n", outputFile);

}


// Function to decompress a Run-Length Encoded (RLE) file

void decompressFile(const char *inputFile, const char *outputFile) {

    FILE *in = fopen(inputFile, "r");

    FILE *out = fopen(outputFile, "w");


    if (!in || !out) {

        perror("Error opening file");

        exit(1);

    }
```

```c
    char ch;

    int count;


    while (fscanf(in, "%c%d", &ch, &count) == 2) {

        for (int i = 0; i < count; i++) {

            fputc(ch, out);

        }

    }


    fclose(in);

    fclose(out);

    printf("File decompressed successfully to '%s'.\n", outputFile);

}


// Main function to demonstrate RLE compression and decompression

int main() {

    const char *inputFile = "input.txt";

    const char *compressedFile = "compressed.txt";

    const char *decompressedFile = "decompressed.txt";


    // Compress the file

    compressFile(inputFile, compressedFile);


    // Decompress the file

    decompressFile(compressedFile, decompressedFile);


    return 0;
```

}