Zigzag Conversion

Program:

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

// Function to perform the zigzag conversion
char* convert(char* s, int numRows) {
    if (numRows == 1) {
        return s;
    }

    int len = strlen(s);
    char** rows = (char**)malloc(numRows * sizeof(char*));
    int* rowLengths = (int*)malloc(numRows * sizeof(int));
    for (int i = 0; i < numRows; i++) {
        rows[i] = (char*)malloc((len + 1) * sizeof(char));
        rowLengths[i] = 0;
    }

    int currentRow = 0;
    int direction = 1;  // 1 for down, -1 for up
    for (int i = 0; i < len; i++) {
        rows[currentRow][rowLengths[currentRow]++] = s[i];
        if (currentRow == 0) {
            direction = 1;
        } else if (currentRow == numRows - 1) {
            direction = -1;
        }
```

```
        currentRow += direction;
    }

    char* result = (char*)malloc((len + 1) * sizeof(char));
    int pos = 0;
    for (int i = 0; i < numRows; i++) {
        for (int j = 0; j < rowLengths[i]; j++) {
            result[pos++] = rows[i][j];
        }
        free(rows[i]);
    }
    result[pos] = '\0';

    free(rows);
    free(rowLengths);

    return result;
}

int main() {
    char s[] = "PAYPALISHIRING";
    int numRows = 3;
    char* result = convert(s, numRows);
    printf("Converted string: %s\n", result);
    free(result);

    return 0;
}
```