ECE 368: Project 2 Report

Names of team members: _____

_____

INSTRUCTIONS:

- *Questions (3, 4, 5) marked with * are for bonus credit. You do not have to implement these features or answer these questions if you do not want the bonus credit.*
- *DO NOT write in anything other than the names of the team members on this front page. This page is for grading purposes only.*

A. **(10 points)** Compression and decompression programs compile without error (to be filled by TA)

B. **(50 points)** Both compression and decompression work correctly. Use the Linux command 'diff' to check this for large input files (to be filled by TA)

C. **(30 points)**

(a) Running time for compression (to be filled by TA)

(b) Running time for decompression (to be filled by TA)

GRADING COMMENTS (to be filled in by TA)**:**

1. **(5 points) Running times and Complexity**

1(a) Fill in the table below with the run times for the files in column one.

Input file	Compression time (sec)	Decompression time (sec)
small1.txt		
small2.txt		
medium1.txt		
medium2.txt		
big1.txt		
big2.txt		

1(b) Estimate the time complexity of the compression and decompression algorithms. Give reasons.

2. **(5 points) Algorithm description.**

2(a) Write the pseudo-code for the compression algorithm.

2(b) Write the pseudo code for the decompression algorithm.

3. ***(5 points)** In order to make the application robust, incorporate a feature that ensures that a compressed file will be decompressed by your application only if it was compressed using your corresponding compression application. If a user tries to decompress a file that was not compressed using your application, it should return an error "Error: Not compressed using corresponding program". Describe how your feature works.

4. ***(5 points)** There may be cases when the size of a file cannot be decreased using Hoffman coding. Give an example of such an input. In such a case can you ensure that the file size does not increase after using the compression algorithm? If yes then, incorporate that in your application and describe it here.

5. ***(20 points)** Extend the application to compress and decompress any file (i.e., not just ASCII text files). What additional steps do you need to achieve this? Implement these in your code and describe the changes below.