Digital Design Verification

C Module Project

Data Compression Algorithm using Huffman Tree Encoder in C

Submitted by:

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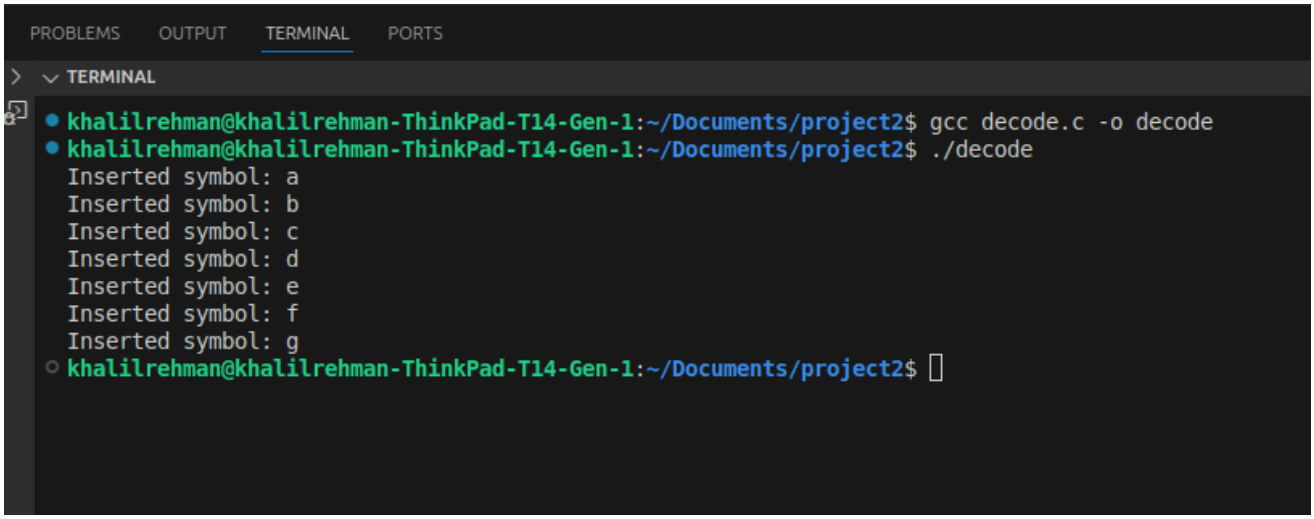
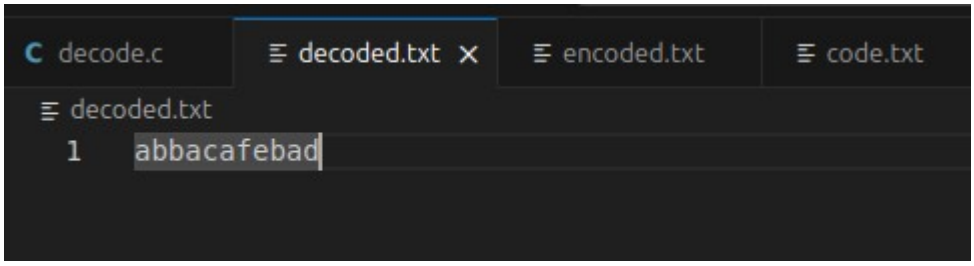
TASK # 01:



decoded.txt



TASK#02

```
khalilrehman@khalilrehman-ThinkPad-T14-Gen-1:~/Documents/C project Huffman/Lab8_huffman/Lab 8 files (huffman)$ ./encode
inserting:a,0.100000
inserting:b,0.200000
inserting:c,0.150000
making sure it pops in the right order
popped:a,0.100000
popped:c,0.150000
popped:b,0.200000
inserting:a,0.010000
inserting:b,0.040000
inserting:c,0.050000
inserting:d,0.110000
inserting:e,0.190000
inserting:f,0.200000
inserting:g,0.400000
popped:a,0.010000
popped:b,0.040000
inserting:,0.050000
popped:,0.050000
popped:c,0.050000
inserting:,0.100000
popped:,0.100000
popped:d,0.110000
inserting:,0.210000
popped:e,0.190000
popped:f,0.200000
inserting:,0.390000
popped:,0.210000
popped:,0.390000
inserting:,0.600000
popped:g,0.400000
popped:,0.600000
inserting:,1.000000
popped:,1.000000
built code:g,0
built code:a,10000
built code:b,10001
built code:c,1001
built code:d,101
built code:e,110
built code:f,111
code:
a 10000
b 10001
c 1001
d 101
```

```
built code:g,0
built code:a,10000
built code:b,10001
built code:c,1001
built code:d,101
built code:e,110
built code:f,111
code:
a 10000
b 10001
c 1001
d 101
e 110
f 111
g 0
original:abbacafebad
10000100011000110000100110000111110100011000010 1
```

TASK # 3:

```
khalilrehman@khalilrehman-ThinkPad-T14-Gen-1:~/Documents/C project Huffman/Lab8_huffman/Lab 8 files (huffman)$ gcc encode1.c -o encode1
khalilrehman@khalilrehman-ThinkPad-T14-Gen-1:~/Documents/C project Huffman/Lab8_huffman/Lab 8 files (huffman)$ ./encode1
inserting:
,12645.000000
,12645.000000
inserting: ,94697.000000
inserting:!,345.000000
inserting:",5093.000000
inserting:&,5.000000
inserting:',1494.000000
inserting:(,5.000000
inserting:),5.000000
inserting:,,7634.000000
inserting:-,1143.000000
inserting:.,6212.000000
inserting:/,1.000000
inserting:0,82.000000
inserting:1,63.000000
inserting:2,35.000000
inserting:3,15.000000
inserting:4,22.000000
inserting:5,16.000000
inserting:6,14.000000
inserting:7,18.000000
inserting:8,37.000000
inserting:9,13.000000
inserting::,60.000000
inserting:;,202.000000
inserting:?,737.000000
inserting:A,761.000000
inserting:B,479.000000
inserting:C,327.000000
inserting:D,214.000000
inserting:E,235.000000
inserting:F,190.000000
inserting:G,154.000000
inserting:H,1244.000000
inserting:I,3774.000000
inserting:J,114.000000
inserting:K,78.000000
inserting:L,291.000000
inserting:M,732.000000
inserting:N,304.000000
inserting:O,312.000000
inserting:P,183.000000
inserting:Q,20.000000
inserting:R,204.000000
inserting:S,762.000000
inserting:T,1139.000000
inserting:U,46.000000
inserting:V,85.000000
inserting:W,758.000000
inserting:X,8.000000
```

```
inserting:E,235.000000
inserting:F,190.000000
inserting:G,154.000000
inserting:H,1244.000000
inserting:I,3774.000000
inserting:J,114.000000
inserting:K,78.000000
inserting:L,291.000000
inserting:M,732.000000
inserting:N,304.000000
inserting:O,312.000000
inserting:P,183.000000
inserting:Q,20.000000
inserting:R,204.000000
inserting:S,762.000000
inserting:T,1139.000000
inserting:U,46.000000
inserting:V,85.000000
inserting:W,758.000000
inserting:X,8.000000
inserting:Y,455.000000
inserting:Z,2.000000
inserting:a,34374.000000
inserting:b,5883.000000
inserting:c,10172.000000
inserting:d,18349.000000
inserting:e,52863.000000
inserting:f,8785.000000
inserting:g,7733.000000
inserting:h,27803.000000
inserting:i,26366.000000
inserting:j,338.000000
inserting:k,3465.000000
inserting:l,16854.000000
inserting:m,11055.000000
inserting:n,28378.000000
inserting:o,33200.000000
inserting:p,6652.000000
inserting:q,406.000000
inserting:r,24304.000000
inserting:s,26432.000000
inserting:t,37842.000000
inserting:u,13070.000000
inserting:v,4367.000000
inserting:w,10508.000000
inserting:x,541.000000
inserting:y,8976.000000
inserting:z,147.000000
popped:/,1.000000
built code:/,
Encoding complete. Files generated:
  -> code.txt (symbol-to-code map)
  -> encoded.txt (Huffman-encoded binary stream)
khalilrehman@khalilrehman-ThinkPad-T14-Gen-1:~/Documents/C project Huffman/Lab8_huffman/La
```