

HW2 李晨 计72 2017011466

1. 解:

$$\begin{aligned} \text{理想值 } H = & -(0.44 \log 0.44 + 0.14 \log 0.14 \\ & + 0.07 \log 0.07 + 0.06 \log 0.06 + 0.04 \log 0.04 \\ & + 0.01 \log 0.01 + 0.02 \log 0.02 + 0.21 \log 0.21 \\ & + 0.01 \log 0.01) = 1.62 \end{aligned}$$

定长编码: ADD: 0000, SUB: 0001

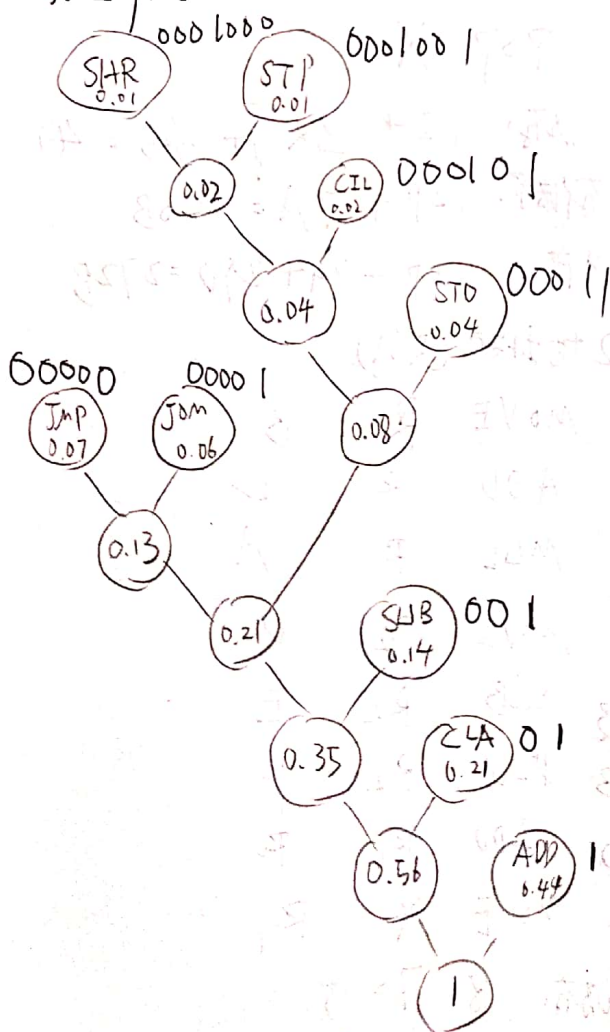
JMP: 0010 JOM: 0011 STD: 0100

SHR: 0101 CIL: 0110 CLA: 0111

STP: 1000

$$R = 1 - \frac{H}{4} = 59.5\%$$

哈夫曼编码:



$$\begin{aligned} R = & 1 - \frac{H}{0.01 \times 7 \times 2 + 6 \times 0.02 + 5 \times (0.04 + 0.06 + 0.07) + 3 \times 0.14 + 2 \times 0.21 + 1 \times 0.44} \\ = & 32.2\% \end{aligned}$$

3-3-3 扩展编码:

ADD: 00 CLA: 01 SUB: 10

JMP: 1100 JOM: 1101 STD: 1110

CIL: 111100 SHR: 111101 STP: 111110

$$\begin{aligned} R = & 1 - \frac{H}{2 \times (0.44 + 0.21 + 0.14) + 4 \times (0.07 + 0.06 + 0.04) + 6 \times (0.01 + 0.01 + 0.01)} \\ = & 35.2\% \end{aligned}$$

2. 解: 取 $D=2A=8P=16R=8B$

3 地址码:

ADD X B C

MUL X A X

SUB Y D E

DIV Y Y F

ADD X X Y

访存: $5 + 15 = 20$ 次

存储量: $5P + 15A = 65B$

速度: $5P + 15A + 15D = 185B$



扫描全能王 创建

- 2地址码:
- MOVE X B
- ADD X C
- MUL X A
- MOVE Y D
- SUB Y E
- DIV Y F
- ADI X Y
- 访存: $7 + 2 \times 2 + 3 \times 5 = 26$
- 存储量: $7P + 14A = 63B$
- 速度: $7P + 14A + 19D = 215B$

- 1地址码:
- LOAD B
- ADD C
- MUL D
- STORE X
- LOAD D
- SUB E
- DIV F
- ADD X
- STORE X
- 访存: $9 + 9 = 18$

- 存储量: $9P + 9A = 45B$
- 速度: $9P + 9A + 9D = 117B$
- 0地址码
- PUSH B
- PUSH C
- ADD
- PUSH A
- MUL
- PUSH D
- PUSH E
- SUB
- PUSH Y
- DIV
- ADD
- POP X

- 访存: $12 + 2 \times 7 + 3 \times 5 = 41$
- 存储量: $12P + 7A = 40B$
- 速度: $12P + 7A + 29D = 272B$

2地址码 (RM):

- MOVE R₁ B
- ADD R₁ C
- MUL R₁ A
- MOVE R₂ D
- SUB R₂ E
- DIV R₂ F
- ADD R₁ R₂
- MOVE X R₁

- 访存: $8 + 7 = 15$

