22 - S1 - Q4

Q :(a)Draw a diagram

Target frame contents

Macroblocks → Difference computation → DCT → Q → VLC → Formatter → Encoded Bitstream

Q → ZQ → IDCT → Buffer

ME ← Buffer

Macroblock address

motion vector

Differential encoding

MPEG-1: I-Frame Encoding

I帧编码

(a) I-frames:

Target frame contents → | Macroblocks | → Forward DCT (FDCT) → Quantization (Q) → Entropy encoding (EE) → Formatter → Encoded bitstream

MPEG-1: P-Frame Encoding Flowchart

p帧编码流程图

MPEG-1: B-Frame Encoding Flowchart

(b) (i) Reason

①

Slice

frame
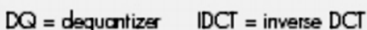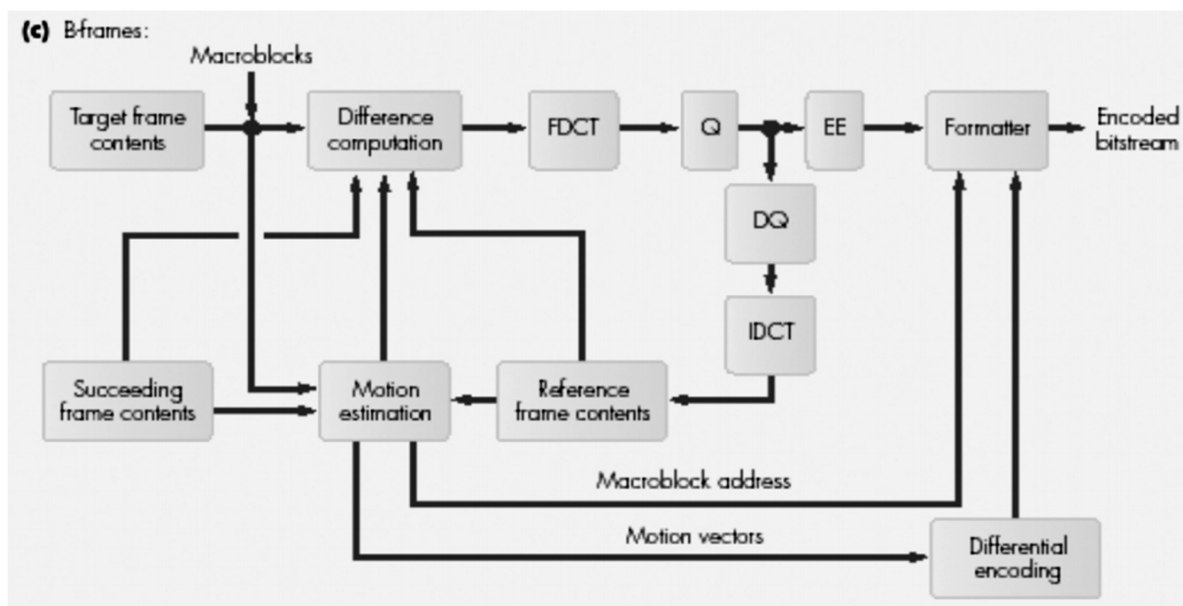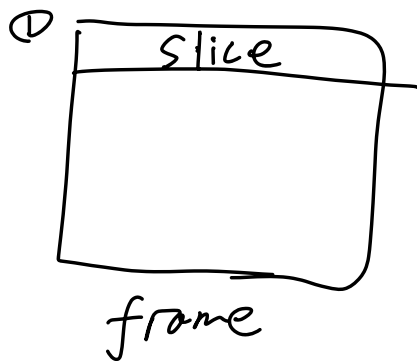
if one slice becomes corrupted impact is limited to that slice and doesn't propagate to other slice
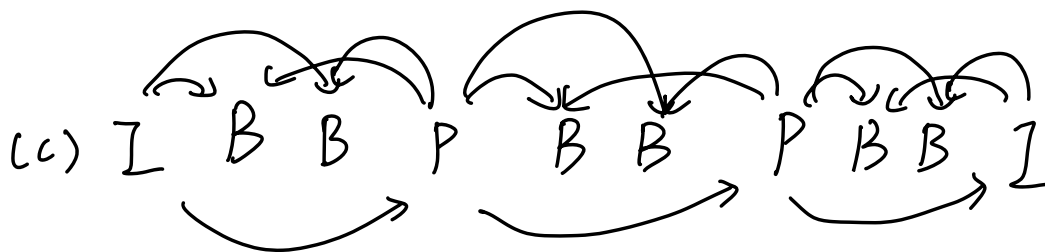
② Parallel processing

③ efficient memory usage
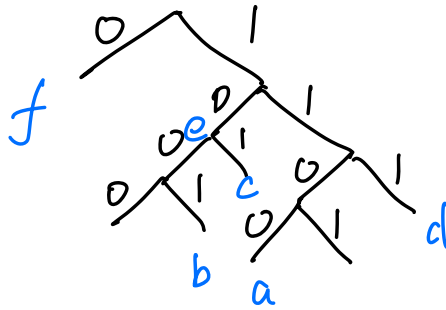
(ii) Pros
 Error Isolation

Cons
 Reduced compression efficiency

(c) I B B P B B P B B I

(d) write S tree

① a. 1 1 0 0　　b 1001　　c 101　d 1 1 1

　　　　　　　　　　　　　　e 10

② So, the codewords can't be Huffman codewords, because every symbol of Huffman coding must be leaf node.