20210804-15 用 C++解碼 ogg 音訊檔

(0)參考文件：

Ogg file format ref1:https://en.wikipedia.org/wiki/Ogg#Page_structure

Ogg file format ref2:https://www.loc.gov/preservation/digital/formats/fdd/fdd000026.shtml

Ogg file format ref3:https://www.xiph.org/vorbis/doc/

Ogg file format ref4:https://www.ietf.org/rfc/rfc3533.txt

https://www.xiph.org/vorbis/doc/Vorbis_I_spec.html

(1)在 WIN10 命令列執行

```
hexdump.exe -C Square_wave_3500.ogg
```

將檔案內容傾印如下：

```
000000  4f 67 67 53 00 02 00 00 00 00 00 00 00 00 05 40  OggS...........@
000010  00 00 00 00 00 00 29 65 e3 1b 01 1e 01 76 6f 72  ......)e.....vor
000020  62 69 73 00 00 00 00 01 44 ac 00 00 00 00 00 00  bis.....D.......
000030  00 77 01 00 00 00 00 00 b8 01 4f 67 67 53 00 00  .w........OggS..
000040  00 00 00 00 00 00 00 00 05 40 00 00 01 00 00 00  .........@......
000050  0c f9 03 38 10 2d ff ff ff ff ff ff ff ff ff ff  ...8.-..........
000060  ff ff ff ff c9 03 76 6f 72 62 69 73 1d 00 00 00  ......vorbis....
000070  58 69 70 68 2e 4f 72 67 20 6c 69 62 56 6f 72 62  Xiph.Org libVorb
000080  69 73 20 49 20 32 30 30 34 30 36 32 39 00 00 00  is I 20040629...
000090  00 01 05 76 6f 72 62 69 73 29 42 43 56 01 00 08  ...vorbis)BCV...
0000a0  00 00 00 31 4c 20 c5 80 d0 90 55 00 00 10 00 00  ...1L ....U.....
0000b0  60 24 29 0e 93 66 49 29 a5 94 a1 28 79 98 94 48  `$)..fI)...(y..H
0000c0  49 29 a5 94 c5 30 89 98 94 89 c5 18 63 8c 31 c6  I)...0......c.1.
0000d0  18 63 8c 31 c6 18 63 8c 20 34 64 15 00 00 04 00  .c.1..c. 4d.....
0000e0  80 28 09 8e a3 e6 49 6a ce 39 67 18 27 8e 72 a0  .(....Ij.9g.'.r.
0000f0  39 69 4e 38 a7 20 07 8a 51 e0 39 09 c2 f5 26 63  9iN8. ..Q.9...&c
000100  6e a6 b4 a6 6b 6e ce 29 25 08 0d 59 05 00 00 02  n...kn.)%..Y....
000110  00 40 48 21 85 14 52 48 21 85 14 62 88 21 86 18  .@H!..RH!..b.!..
000120  62 88 21 87 1c 72 c8 21 a7 9c 72 0a 2a a8 a0 82  b.!..r.!..r.*...
000130  0a 32 c8 20 83 4c 32 e9 a4 93 4e 3a e9 a8 a3 8e  .2. .L2...N:....
000140  3a ea 28 b4 d0 42 0b 2d b4 d2 4a 4c 31 d5 56 63  :.(..B.-..JL1.Vc
000150  ae bd 06 5d 7c 73 ce 39 e7 9c 73 ce 39 e7 9c 73  ...]|s.9..s.9..s

000160  ce 09 42 43 56 01 00 20 00 00 04 42 06 19 64 10  ..BCV.. ...B..d.
000170  42 08 21 85 14 52 88 29 a6 98 72 0a 32 c8 80 d0  B.!..R.)..r.2...
000180  90 55 00 00 20 00 80 00 00 00 00 47 91 14 49 b1  .U.. ......G..I.
000190  14 cb b1 1c cd d1 24 4f f2 2c 51 13 35 d1 33 45  ......$O.,Q.5.3E
0001a0  53 54 4d 55 55 55 55 75 5d 57 76 65 d7 76 75 d7  STMUUUUu]Wve.vu.
0001b0  76 7d 59 98 85 5b b8 7d 59 b8 85 5b d8 85 5d f7  v}Y..[.}Y..[..].
```

```
0001c0  85 61 18 86 61 18 86 61 18 86 61 f8 7d df f7 7d  .a..a..a..a.}..}
0001d0  df f7 7d 20 34 64 15 00 20 01 00 a0 23 39 96 e3  ..} 4d.. ...#9..
0001e0  29 a2 22 1a a2 e2 39 a2 03 84 86 ac 02 00 64 00  )."...9.......d.
0001f0  00 04 00 20 09 92 22 29 92 a3 49 a6 66 6a ae 69  ... .."))..I.fj.i
000200  9b b6 68 ab b6 6d cb b2 2c cb b2 0c 84 86 ac 02  ..h..m..,.......
000210  00 00 01 00 04 00 00 00 00 00 a0 69 9a a6 69 9a  ...........i..i.
000220  a6 69 9a a6 69 9a a6 69 9a a6 69 9a a6 69 9a 66  .i..i..i..i..i.f
000230  59 96 65 59 96 65 59 96 65 59 96 65 59 96 65 59  Y.eY.eY.eY.eY.eY
000240  96 65 59 96 65 59 96 65 59 96 65 59 96 65 59 96  .eY.eY.eY.eY.eY.
000250  65 59 96 65 59 40 68 c8 2a 00 40 02 00 40 c7 71  eY.eY@h.*.@..@.q
000260  1c c7 71 24 45 52 24 c7 72 2c 07 08 0d 59 05 00  ..q$ER$.r,...Y..
000270  c8 00 00 08 00 40 52 2c c5 72 34 47 73 34 c7 73  .....@R,.r4Gs4.s
000280  3c c7 73 3c 47 74 44 c9 94 4c cd f4 4c 0f 08 0d  <.s<GtD..L..L...
000290  59 05 00 00 02 00 08 00 00 00 00 00 40 31 1c c5  Y...........@1..
0002a0  71 1c c9 d1 24 4f 52 2d d3 72 35 57 73 3d d7 73  q...$OR-.r5Ws=.s
0002b0  4d d7 75 5d 57 55 55 55 55 55 55 55 55 55 55 55  M.u]WUUUUUUUUUU
0002c0  55 55 55 55 55 55 55 55 55 55 55 55 55 55 55 55  UUUUUUUUUUUUUUU
0002d0  55 55 55 55 55 55 55 81 d0 90 55 00 00 04 00 00  UUUUUUU...U.....
0002e0  21 9d 66 96 6a 80 08 33 90 61 20 34 64 15 00 80  !.f.j..3.a 4d...
0002f0  00 00 00 18 a1 08 43 0c 08 0d 59 05 00 00 04 00  ......C...Y.....

000300  00 88 a1 e4 20 9a d0 9a f3 cd 39 0e 9a e5 a0 a9  .... .....9.....
000310  14 9b d3 c1 89 54 9b 27 b9 a9 98 9b 73 ce 39 e7  .....T.'....s.9.
000320  9c 6c ce 19 e3 9c 73 ce 29 ca 99 c5 a0 99 d0 9a  .l....s.).......
000330  73 ce 49 0c 9a a5 a0 99 d0 9a 73 ce 79 12 9b 07  s.I.......s.y...
000340  ad a9 d2 9a 73 ce 19 e7 9c 0e c6 19 61 9c 73 ce  ....s.......a.s.
000350  69 d2 9a 07 a9 d9 58 9b 73 ce 59 d0 9a e6 a8 b9  i.....X.s.Y.....
000360  14 9b 73 ce 89 94 9b 27 b5 b9 54 9b 73 ce 39 e7  ..s....'..T.s.9.
000370  9c 73 ce 39 e7 9c 73 ce a9 5e 9c ce c1 39 e1 9c  .s.9..s..^...9..
000380  73 ce 89 da 9b 6b b9 09 5d 9c 73 ce f9 64 9c ee  s....k..].s..d..
000390  cd 09 e1 9c 73 ce 39 e7 9c 73 ce 39 e7 9c 73 ce  ....s.9..s.9..s.
0003a0  09 42 43 56 01 00 40 00 00 04 61 d8 18 c6 9d 82  .BCV..@...a.....
0003b0  20 7d 8e 06 62 14 21 a6 21 93 1e 74 8f 0e 93 a0   }..b.!.!..t....
0003c0  31 c8 29 a4 1e 8d 8e 46 4a a9 83 50 52 19 27 a5  1.)....FJ..PR.'.
0003d0  74 82 d0 90 55 00 00 20 00 00 84 10 52 48 21 85  t...U.. ....RH!.
0003e0  14 52 48 21 85 14 52 48 21 86 18 62 88 21 a7 9c  .RH!..RH!..b.!..
0003f0  72 0a 2a a8 a4 92 8a 2a ca 28 b3 cc 32 cb 2c b3  r.*....*.(..2.,.
000400  cc 32 cb ac c3 ce 3a eb b0 c3 10 43 0c 31 b4 d2  .2....:....C.1..
000410  4a 2c 35 d5 56 63 8d b5 e6 9e 73 ae 39 48 6b a5  J,5.Vc....s.9Hk.
000420  b5 d6 5a 2b a5 94 52 4a 29 a5 20 34 64 15 00 00  ..Z+..RJ). 4d...
000430  02 00 40 20 64 90 41 06 19 85 14 52 48 21 86 98  ..@ d.A....RH!..
000440  72 ca 29 a7 a0 82 0a 08 0d 59 05 00 00 02 00 08  r.).....Y......
000450  00 00 00 f0 24 cf 11 1d d1 11 1d d1 11 1d d1 11  ....$...........
000460  1d d1 11 1d cf f1 1c 51 12 25 51 12 25 d1 32 2d  .......Q.%Q.%.2-
000470  53 33 3d 55 54 55 57 76 6d 59 97 75 db b7 85 5d  S3=UTUWvmY.u...]
000480  d8 75 df d7 7d df d7 8d 5f 17 86 65 59 96 65 59  .u..}..._..eY.eY
000490  96 65 59 96 65 59 96 65 59 96 65 09 42 43 56 01  .eY.eY.eY.e.BCV.
0004a0  00 20 00 00 00 42 08 21 84 14 52 48 21 85 94 62  . ...B.!..RH!..b
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0004b0  8c 31 c7 9c 83 4e 42 09 81 d0 90 55 00 00 20 00  .1...NB....U.. .
0004c0  80 00 00 00 00 47 71 14 c7 91 1c c9 91 24 4b b2  .....Gq......$K.
0004d0  24 4d d2 2c cd f2 34 4f f3 34 d1 13 45 51 34 4d  $M.,..4O.4..EQ4M
0004e0  53 15 5d d1 15 75 d3 16 65 53 36 5d d3 35 65 d3  S.]..u..eS6].5e.
0004f0  55 65 d5 76 65 d9 b6 65 5b b7 7d 59 b6 7d df f7  Ue.ve..e[.}Y.}..
000500  7d df f7 7d df f7 7d df f7 7d df d7 75 20 34 64  }..}..}..}..u 4d
000510  15 00 20 01 00 a0 23 39 92 22 29 92 22 39 8e e3  .. ...#9.").")9..
000520  48 92 04 84 86 ac 02 00 64 00 00 04 00 a0 28 8e  H.......d.....(.
000530  e2 38 8e 23 49 92 24 59 92 26 79 96 67 89 9a a9  .8.#I.$Y.&y.g...
000540  99 9e e9 a9 a2 0a 84 86 ac 02 00 00 01 00 04 00  ................
000550  00 00 00 00 a0 68 8a a7 98 8a a7 88 8a e7 88 8e  .....h..........
000560  28 89 96 69 89 9a aa b9 a2 6c ca ae eb ba ae eb  (..i.....l......
000570  ba ae eb ba ae eb ba ae eb ba ae eb ba ae eb ba  ................
000580  ae eb ba ae eb ba ae eb ba ae eb ba ae eb ba 40  ...............@
000590  68 c8 2a 00 40 02 00 40 47 72 24 47 72 24 45 52  h.*.@..@Gr$Gr$ER
0005a0  24 45 72 24 07 08 0d 59 05 00 c8 00 00 08 00 c0  $Er$...Y........
0005b0  31 1c 43 52 24 c7 b2 2c 4d f3 34 4f f3 34 d1 13  1.CR$..,M.4O.4..
0005c0  3d d1 33 3d 55 74 45 17 08 0d 59 05 00 00 02 00  =.3=UtE...Y.....
0005d0  08 00 00 00 00 00 c0 90 0c 4b b1 1c cd d1 24 51  .........K....$Q
0005e0  52 2d d5 52 35 d5 52 2d 55 54 3d 55 55 55 55 55  R-.R5.R-UT=UUUUU
0005f0  55 55 55 55 55 55 55 55 55 55 55 55 55 55 55 55  UUUUUUUUUUUUUUUU
000600  55 55 55 55 55 55 55 55 55 55 55 55 55 d5 34 4d  UUUUUUUUUUU.4M.
000610  34 81 d0 90 95 00 00 19 00 00 23 41 06 19 84 10  4.........#A....
000620  8a 72 90 42 6e 3d 58 08 31 e6 24 05 a1 39 06 a1  .r.Bn=X.1.$..9..
000630  c4 18 84 a7 10 33 0c 39 0d 22 74 90 41 27 3d b8  .....3.9."t.A'=.
000640  92 39 c3 0c f3 e0 52 28 15 44 4c 83 8d 25 37 8e  .9....R(.DL..%7.
000650  20 0d c2 a6 5c 49 e5 38 08 42 43 56 04 00 51 00   ...\I.8.BCV..Q.
000660  00 80 31 c8 31 c4 18 72 ce 49 c9 a0 44 ce 31 09  ..1.1..r.I..D.1.
000670  9d 94 c8 39 27 a5 93 d2 49 29 2d 96 18 33 29 25  ...9'...I)-..3)%
000680  a6 12 63 e3 9c a3 d2 49 c9 a4 94 18 4b 8a 9d a4  ..c....I....K...
000690  12 63 89 ad 00 00 80 00 07 00 80 00 0b a1 d0 90  .c..............
0006a0  15 01 40 14 00 00 62 0c 52 0a 29 85 94 52 ce 29  ..@...b.R.)..R.)
0006b0  e6 90 52 ca 31 e5 1c 52 4a 39 a7 9c 53 ce 39 08  ..R.1..RJ9..S.9.
0006c0  1d 84 ca 31 06 9d 83 10 29 a5 1c 53 ce 29 c7 1c  ...1....)..S.)..
0006d0  84 cc 41 e5 9c 83 d0 41 28 00 00 20 c0 01 00 20  ..A....A(.. ... 
0006e0  c0 42 28 34 64 45 00 10 27 00 e0 70 24 cf 93 34  .B(4dE..'..p$..4
0006f0  4b 14 25 4b 13 45 cf 14 65 d7 13 4d d7 95 34 cd  K.%K.E..e..M..4.
000700  34 35 51 54 55 cb 13 55 d5 54 55 db 16 4d 55 b6  45QTU..U.TU..MU.
000710  25 4d 13 4d 4d f4 54 55 13 45 55 15 55 d3 96 4d  %M.MM.TU.EU.U..M
000720  55 b5 6d cf 34 65 d9 54 55 dd 16 55 d5 b6 65 db  U.m.4e.TU..U..e.
000730  16 7e 57 96 75 df 33 4d 59 16 55 d5 d6 4d 55 b5  .~W.u.3MY.U..MU.
000740  75 d7 96 7d 5f d6 6d 5d 98 34 cd 34 35 51 54 55  u..}_.m].4.45QTU
000750  4d 14 55 d5 54 55 db 36 55 d7 b6 35 51 74 55 51  M.U.TU.6U..5QtUQ
000760  55 65 59 54 55 59 76 65 59 f7 55 57 d6 7d 4b 14  UeYTUYveY.UW.}K.
000770  55 d5 53 4d d9 15 55 55 b6 55 d9 f5 6d 55 96 7d  U.SM..UU.U..mU.}
000780  e1 74 55 5d 57 65 d9 f7 55 59 16 7e 5b d7 85 e1  .tU]We..UY.~[...
000790  f6 7d e1 18 55 d5 d6 4d d7 d5 75 55 96 7d 61 d6  .}..U..M..uU.}a.
0007a0  65 61 b7 75 df 28 69 9a 69 6a a2 a8 aa 9a 28 aa  ea.u.(i.ij....(.
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0007b0  aa a9 aa b6 6d aa ae ad 5b a2 e8 aa a2 aa ca b2  ....m...[.......
0007c0  67 aa ae ac ca b2 af ab ae 6c eb 9a 28 aa ae a8  g........l..(···
0007d0  aa b2 2c aa aa 2c ab b2 ac fb aa 2c eb b6 a8 aa  ..,..,.....,....
0007e0  ba ad ca b2 b0 9b ae ab eb b6 ef 0b c3 2c eb ba  .............,..
0007f0  70 aa ae ae ab b2 ec fb aa 2c eb ba ad eb c6 71  p........,.....q
000800  eb ba 30 7c a6 29 cb a6 ab ea ba a9 ba ba 6e eb  ..0|.)........n.
000810  ba 71 cc b6 6d 1c a3 aa ea be 2a cb c2 b0 ca b2  .q..m.....*.....
000820  ef eb ba 2f b4 75 21 51 55 75 dd 94 5d e3 57 65  .../.u!QUu..].We
000830  59 f7 6d 5f 77 9e 5b f7 85 b2 6d 3b bf ad fb ca  Y.m_w.[...m;....
000840  71 eb ba d2 f8 39 cf 6f 1c b9 b6 6d 1c b3 6e 1b  q....9.o...m..n.
000850  bf ad fb c6 f3 2b 3f 61 38 8e a5 67 9a b6 6d aa  .....+?a8..g..m.
000860  aa ad 9b aa ab eb b2 6e 2b c3 ac eb 42 51 55 7d  .......n+...BQU}
000870  5d 95 65 df 37 5d 59 17 6e df 37 8e 5b d7 8d a2  ].e.7]Y.n.7.[...
000880  aa ea ba 2a cb be b0 ca b2 31 dc c6 6f 1c bb 30  ...*.....1..o..0
000890  1c 5d db 36 8e 5b d7 9d b2 ad 0b 7d 63 c8 f7 09  .].6.[.....}c...
0008a0  cf 6b db c6 71 fb 3a e3 f6 75 a3 af 0c 09 c7 8f  .k..q.:..u......
0008b0  00 00 80 01 07 00 80 00 13 ca 40 a1 21 2b 02 80  ..........@.!+..
0008c0  38 01 00 06 21 e7 14 53 10 2a c5 20 74 10 52 ea  8...!..S.*. t.R.
0008d0  20 a4 54 31 06 21 73 4e 4a c5 1c 94 50 4a 6a 21   .T1.!sNJ...PJj!
0008e0  94 d4 2a c6 20 54 8e 49 c8 9c 93 12 4a 68 29 94  ..*. T.I....Jh).
0008f0  d2 52 07 a1 a5 50 4a 6b a1 94 d6 52 6b b1 a6 d4  .R...PJk...Rk...
000900  62 ed 20 a4 16 4a 69 2d 94 d2 5a 6a a9 c6 d4 5a  b. ..Ji-..Zj...Z
000910  8c 11 63 10 32 e7 a4 64 ce 49 09 a5 b4 16 4a 69  ..c.2..d.I....Ji
000920  2d 73 4e 4a e7 a0 a4 0e 42 4a a5 a4 14 4b 4a 2d  -sNJ....BJ...KJ-
000930  56 cc 49 c9 a0 a3 d2 41 48 a9 a4 12 53 49 a9 b5  V.I....AH...SI..
000940  50 4a 6b a5 a4 16 4b 4a 31 b6 14 5b 6e 31 d6 1c  PJk...KJ1..[n1..
000950  4a 69 2d a4 12 5b 49 29 c6 14 53 6d 2d c6 9a 23  Ji-..[I)..Sm-..#
000960  c6 20 64 ce 49 c9 9c 93 12 4a 69 2d 94 d2 5a e5  . d.I....Ji-..Z.
000970  98 94 0e 42 4a 99 83 92 4a 4a ad 95 92 52 cc 9c  ...BJ...JJ...R..
000980  93 d2 41 48 a9 83 8e 4a 49 29 b6 92 4a 4c a1 94  ..AH...JI)..JL..
000990  d6 4a 4a b1 85 52 5a 6c 31 d6 9c 52 6c 35 94 d2  .JJ..RZl1..Rl5..
0009a0  5a 49 29 c6 92 4a 6c 2d c6 5a 5b 4c b5 75 10 5a  ZI)..Jl-.Z[L.u.Z
0009b0  0b a5 b4 16 4a 69 ad b5 56 6b 6a ad c6 50 4a 6b  ....Ji..Vkj..PJk
0009c0  25 a5 18 4b 4a b1 b5 16 6b 6e 31 e6 1a 4a 69 ad  %..KJ...kn1..Ji.
0009d0  a4 12 5b 49 a9 c5 16 5b 8e 2d c6 9a 53 6b 35 a6  ..[I...[.-..Sk5.
0009e0  d6 6a 6e 31 e6 1a 5b 6d 3d d6 9a 73 4a ad d6 d4  .jn1..[m=..sJ...
0009f0  52 8d 2d c6 9a 63 6d bd d5 9a 7b ef 20 a4 16 4a  R.-..cm...{. ..J
000a00  69 2d 94 d2 62 6a 2d c6 d6 62 ad a1 94 d6 4a 2a  i-..bj-..b....J*
000a10  b1 95 92 5a 6c 31 e6 da 5a 8c 39 94 d2 62 49 a9  ...Zl1..Z.9..bI.
000a20  c5 92 52 8c 2d c6 9a 5b 6c b9 a6 96 6a 6c 31 e6  ..R.-..[l...jl1.
000a30  9a 52 8b b5 e6 da 73 6c 35 f6 d4 5a ac 2d c6 9a  .R....sl5..Z.-..
000a40  53 4b b5 d6 5a 73 8f b9 f5 56 00 00 c0 80 03 00  SK..Zs...V......
000a50  40 80 09 65 a0 d0 90 95 00 40 14 00 00 41 88 52  @..e.....@...A.R
000a60  ce 49 69 10 72 cc 39 2a 09 42 cc 39 27 a9 72 4c  .Ii.r.9*.B.9'.rL
000a70  42 29 29 55 cc 41 08 25 b5 ce 39 29 29 c5 d6 39  B))U.A.%..9))..9
000a80  08 25 a5 16 4b 2a 2d c5 56 6b 29 29 b5 16 6b 2d  .%..K*-.Vk))..k-
000a90  00 00 a0 c0 01 00 20 c0 06 4d 89 c5 01 0a 0d 59  ...... ..M.....Y
000aa0  09 00 44 01 00 20 c6 20 c4 18 84 06 19 a5 18 83  ..D.. . ........
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000ab0  d0 18 a4 14 63 10 22 a5 18 73 4e 4a a5 14 63 ce  ....c."..sNJ..c.

000ac0  49 c9 18 73 0e 42 2a 19 63 ce 41 28 29 84 50 4a  I..s.B*.c.A().PJ
000ad0  2a 29 85 10 4a 49 25 a5 02 00 00 0a 1c 00 00 02  *)..JI%.........
000ae0  6c d0 94 58 1c a0 d0 90 15 01 40 14 00 00 60 0c  l..X......@...`.
000af0  62 0c 31 86 20 74 54 32 2a 11 84 4c 4a 27 a9 81  b.1. tT2*..LJ'..
000b00  10 5a 0b ad 75 d6 52 6b a5 c5 cc 5a 6a ad b4 d8  .Z..u.Rk...Zj...
000b10  40 08 ad 85 d6 32 4b 25 c6 d4 5a 66 ad c4 98 5a  @....2K%..Zf...Z
000b20  2b 00 00 ec c0 01 00 ec c0 42 28 34 64 25 00 90  +........B(4d%..
000b30  07 00 40 18 a3 14 63 ce 39 67 10 62 cc 39 e8 1c  ..@...c.9g.b.9..
000b40  34 08 31 e6 1c 84 0e 2a c6 9c 83 0e 42 08 15 63  4.1....*....B..c
000b50  ce 41 08 21 84 cc 39 08 21 84 10 42 e6 1c 84 10  .A.!..9.!..B....
000b60  42 08 a1 83 10 42 08 a5 94 d2 41 08 21 84 52 4a  B....B....A.!.RJ
000b70  e9 20 84 10 42 29 a5 74 10 42 08 a1 94 52 0a 00  . ..B).t.B...R..
000b80  00 2a 70 00 00 08 b0 51 64 73 82 91 a0 42 43 56  .*p....Qds...BCV
000b90  02 00 79 00 00 80 31 4a 39 07 a1 94 46 29 c6 20  ..y...1J9...F).
000ba0  94 92 52 a3 14 63 10 4a 49 a9 72 0c 42 29 29 c5  ..R..c.JI.r.B)).
000bb0  56 39 07 a1 94 94 5a ec 20 94 d2 5a 6c 35 76 10  V9....Z. ..Zl5v.
000bc0  4a 69 2d c6 5a 43 4a ad c5 58 6b ae 21 a5 d6 62  Ji-.ZCJ..Xk.!..b
000bd0  ac 35 d7 d4 5a 8c b5 e6 9a 6b 4a 2d c6 5a 6b cd  .5..Z....kJ-.Zk.
000be0  b9 00 00 dc 05 07 00 b0 03 1b 45 36 27 18 09 2a  ..........E6'..*
000bf0  34 64 25 00 90 07 00 80 20 a4 14 63 8c 31 86 14  4d%..... ..c.1..
000c00  62 8a 31 e7 9c 43 08 29 c5 98 73 ce 29 a6 18 73  b.1..C.)..s.)..s
000c10  ce 39 e7 94 62 8c 39 e7 9c 73 8c 31 e7 9c 73 ce  .9..b.9..s.1..s.
000c20  39 c6 98 73 ce 39 e7 1c 73 ce 39 e7 9c 73 8e 39  9..s.9..s.9..s.9
000c30  e7 9c 73 ce 39 e7 9c 73 ce 39 e7 9c 73 ce 39 e7  ..s.9..s.9..s.9.
000c40  9c 73 ce 09 00 00 2a 70 00 00 08 b0 51 64 73 82  .s....*p....Qds.
000c50  91 a0 42 43 56 02 00 a9 00 00 00 11 56 62 8c 31  ..BCV.......Vb.1
000c60  c6 18 1b 08 31 c6 18 63 8c 31 46 12 62 8c 31 c6  ....1..c.1F.b.1.
000c70  18 63 6c 31 c6 18 63 8c 31 c6 98 62 8c 31 c6 18  .cl1..c.1..b.1..
000c80  63 8c 31 c6 18 63 8c 31 c6 18 63 8c 31 c6 18 63  c.1..c.1..c.1..c
000c90  8c 31 c6 18 63 8c 31 c6 18 63 8c 31 c6 18 63 8c  .1..c.1..c.1..c.
000ca0  31 c6 18 63 8c 31 c6 18 63 8c 31 c6 18 63 8c 31  1..c.1..c.1..c.1
000cb0  c6 18 5b 6b ad b5 d6 5a 6b ad b5 d6 5a 6b ad b5  ..[k...Zk...Zk..
000cc0  d6 5a 6b ad 00 40 bf 0a 07 00 ff 07 1b 56 47 38  .Zk..@.......VG8
000cd0  29 1a 0b 2c 34 64 25 00 10 0e 00 00 18 c3 98 73  )..,4d%........s
000ce0  8e 39 06 1d 84 86 29 e8 a4 84 0e 42 08 a1 43 4a  .9....)....B..CJ
000cf0  39 28 25 84 50 4a 29 29 73 4e 4a 4a a5 a4 94 5a  9(%.PJ))sNJJ...Z
000d00  4a 99 73 52 52 2a 25 a5 96 52 ea 20 a4 d4 5a 4a  J.sRR*%..R. ..ZJ
000d10  2d b5 d6 5a 07 25 a5 d6 52 6a ad b5 d6 3a 08 a5  -..Z.%..Rj...:..
000d20  b4 d4 5a 6b ad b5 d8 41 48 29 a5 d6 5a 8b 2d c6  ..Zk...AH)..Z.-.
000d30  50 4a 4a ad b5 d8 62 8c 35 86 52 52 6a ad c5 d8  PJJ...b.5.RRj...
000d40  62 ac 31 a4 d2 52 6c 2d c6 18 63 ac a1 94 d6 5a  b.1..Rl-..c....Z
000d50  6b 31 c6 18 6b 2d 29 b5 d6 62 8c b5 c6 5a 6b 49  k1..k-)..b...ZkI
000d60  a9 b5 d6 62 8b 35 d6 5a 0b 00 e0 6e 70 00 80 48  ...b.5.Z...np..H
000d70  b0 71 86 95 a4 b3 c2 d1 e0 42 43 56 02 00 21 01  .q.......BCV..!.
000d80  00 04 42 8c 39 e7 9c 73 10 42 08 21 52 8a 31 e7  ..B.9..s.B.!R.1.
000d90  a0 83 10 42 08 21 44 4a 31 e6 1c 74 10 42 08 21  ...B.!DJ1..t.B.!
```

```
000da0  84 8c 31 e7 a0 83 10 42 08 21 84 90 31 e6 1c 74  ..1....B.!..1..t
000db0  10 42 08 21 84 10 3a e7 1c 84 10 42 08 a1 84 52  .B.!..:....B...R
000dc0  4a e7 1c 74 10 42 08 21 94 50 42 e9 20 84 10 42  J..t.B.!.PB. ..B
000dd0  08 a1 84 52 4a 29 1d 84 10 42 28 a1 84 52 4a 29  ...RJ)...B(..RJ)
000de0  25 84 10 42 09 a5 94 52 4a 29 a5 84 10 42 08 a1  %..B...RJ)...B..
000df0  84 12 4a 29 a5 94 10 42 08 a5 94 52 4a 29 a5 94  ..J)...B...RJ)..
000e00  12 42 08 21 94 52 4a 29 a5 94 52 42 08 a1 94 50  .B.!.RJ)..RB...P
000e10  4a 29 a5 94 52 4a 08 21 84 52 4a 29 a5 94 52 4a  J)..RJ.!.RJ)..RJ
000e20  09 21 84 50 4a 29 a5 94 52 4a 29 21 84 12 4a 29  .!.PJ)..RJ)!..J)
000e30  a5 94 52 4a 29 a5 00 00 80 03 07 00 80 00 23 e8  ..RJ).........#.
:

000f40  08 08 00 00 00 00 00 04 00 00 00 08 08 4f 67 67  .............Ogg
000f50  53 00 00 c0 2e 00 00 00 00 00 00 00 05 40 00 00  S...........@...
000f60  00 00 00 9d 01 da b4 1b 45 4c ff 5c ff 52 ff 2d  ........EL.\.R.-
000f70  ff 50 ff 40 ff 32 ff 2d ff 2e ff 2e ff 2d ff 2d  .P.@.2.-.....-.-
000f80  ff 2b ff 04 96 0b 75 9e ef 47 0c ae 58 60 92 78  .+....u..G..X`.x
000f90  30 6e 3e 03 b0 13 05 20 65 03 85 86 d4 d2 80 e6  0n>.... e.......
000fa0  e6 d3 58 4d b1 1e 16 19 cb 85 ad 53 23 00 d0 18  ..XM.......S#...
000fb0  c9 00 0c cc 0a 78 78 c8 1e 08 b7 ed 00 3c ac 6e  .....xx......<.n
000fc0  8b e2 ed 7c 48 dc 44 08 f4 95 cb 68 fb 67 3b 05  ...|H.D....h.g;.
000fd0  c6 e5 13 1b b7 07 70 9d 0d c4 0d 00 9c d1 69 5a  ......p.......iZ
000fe0  0a 50 95 20 3d db 11 30 56 b3 df f7 4d 62 d3 e6  .P. =..0V...Mb..
000ff0  8c 9f a8 60 d6 b7 c8 9a 85 af ba 49 0f d9 d4 11  ...`.......I....
001000  97 a4 5d 50 67 94 56 dd 09 67 6b 74 eb 4b 0d 7f  ..]Pg.V..gkt.K..
001010  f1 83 9c 00 3a 8a 26 92 e1 d1 bc 3b 56 5a 1f ea  ....:.&....;VZ..
001020  05 5b 4d 87 9d f7 6f 56 a6 fa 6a b3 b4 73 01 00  .[M...oV..j..s..
001030  b0 cf 03 00 d8 01 5c af 0b 00 86 0e 78 9e 1a 00  ......\.....x...
001040  7c 02 07 a0 01 8f 1d 03 00 c0 0e 40 cc ff 67 e2  |..........@..g.
001050  01 80 66 a3 0a 06 0e 6c ec 03 b2 04 ce 00 e0 39  ..f....l.......9
001060  74 d8 18 7e ac 9f 1c 33 db 67 85 fb 98 c5 be 81  t..~...3.g......
001070  fe 3d 1a 00 70 5b 34 b0 e3 0a 20 0c 91 b4 dc e7  .=..p[4... .....
001080  bb 5e ee 40 8c 31 c6 e9 e9 fb d1 87 8f 73 b5 9a  .^.@.1.......s..
001090  73 0e 00 00 ba 6c ff ff 4c dc a5 41 af 16 46 72  s....l..L..A..Fr
0010a0  b2 e7 30 22 ac b5 90 20 62 9a fc 7c bb cd 97 2a  ..0"... b..|...*
0010b0  e2 4e 95 a6 5a 2d d7 4f 0d 47 04 55 fc f6 c7 bc  .N..Z-.O.G.U....
0010c0  44 36 d3 80 2a 40 0c e2 8b e3 41 0a aa 53 40 4a  D6..*@....A..S@J
0010d0  d8 32 6d a7 ec 73 85 3b a0 5a 8c ef 5f 8d 2e 22  .2m..s.;.Z.._..."
:
```

(2)執行 DEV-C++ 並按 CTRL+N 編寫如下超連結程式碼並存為 oggParse.cpp

程式碼：oggParse.cpp

(3)給定待分析的 ogg 音訊檔(Square_wave_3500.ogg)如下：
https://upload.wikimedia.org/wikipedia/commons/6/64/Square_wave_3500.ogg

(4)按 F11 執行結果如下：

```
Given Square_wave_3500.ogg file size is 0x0110D4 bytes
page_count=0 :Current file position=000000
page_count=1 :Current file position=00003A
page_count=2 :Current file position=000F4D
page_count=3 :Current file position=001FB2
page_count=4 :Current file position=003043
page_count=5 :Current file position=0040F8
page_count=6 :Current file position=005194
page_count=7 :Current file position=00623D
page_count=8 :Current file position=00731C
page_count=9 :Current file position=0083AA
page_count=10 :Current file position=00944C
page_count=11 :Current file position=00A519
page_count=12 :Current file position=00B5AC
page_count=13 :Current file position=00C64C
page_count=14 :Current file position=00D6E9
page_count=15 :Current file position=00E785
page_count=16 :Current file position=00F82E
page_count=17 :Current file position=0108C1
page_count=18 :Current file position=0110D4
Given ogg file parse result save as Oggpacket.txt ok!
```

(5)以上程式產生的分析結果文字檔如下超連結：Oggpacket.txt