

fwf<fv fgfsfbfN,î^ê—,ð•\Ž!,·,é,É,í[A[fwf<fv] ,ì [fgfsfbfN,ìĈÿ□ð] ,ðfNfŠfbfN,μ,Ä,,¾,³,†□B

## DirectX

Microsoft® DirectX®

DirectX

-â'è.ìĈ^ô.đ"Á'è. .é

DirectX fRf"fi"flf"fg.ìfefXfg.đs.æ

Šù'è.ì"®ì.đ•ïX. .é

fhf%ofCfo.đ•œĈ³. .é

î•ñ.đ•Û'ŋ. .é

-â'è.đ•ñ. .é

**DirectX** [f',É,Â,ç,Ä]

DirectX® [f',É,Â,ç,Ä] Microsoft® DirectX fAfvfŠfP[fVf#f" fvfOf%~f"fo  
fCf" f^ [ftfFfCfX,lfRf" f| [f]f"fg, ",æ,Ńfhf%ofCfo,ÉŠÖ, :é[î•ñ,ð•\Ž!,μ[AfTfEf" fh,âfOf%oftfBfbfNfX,ìo—  
ÍfefXfg,ð[s,ç,Û,·[B,Û,½[A^ê•",ìfn[fhfEfFfA fAfNfZf%ofCE[f^,ì<@"\,ð-³CEø,É, :é,±,Æ,à,À,«,Û,·[B  
,±,ìfc[f<,ðŽg,æ,Æ[AfTf| [fg fZf" f^ [Ö, Ì-â, ç[#, í, 't, É[î•ñ, ðŽû[W, μ[AfTf| [fg<Z[ρŽÒ,É" ` ,ì,é,±  
,Æ,â,À,«,Û,·[B,Û,½[Afc[f<,âŽû[W,μ,½[î•ñ,ð•Û'¶,μ[A"dŽqf[f< f[fbfZ[fW,É"\,è•t, ,é,±  
,Æ,à,À,«,Û,·[B

- [î•ñ, í[A] "fy[fW, ìf^fu, É•ª, , Ä•\Ž!, , è, Û, ·[Bfy[fW, ©, çfy[fW, Ö^Ú" ®, :é,É, í[AŽÿ, ì•ù-@,ª, , è, Û, ·[B
- f^fu, ðfNfŠfbfN, ·, é[B
- [Žÿfy[fW] ,ðfNfŠfbfN, ·, é[B
- "ü—ÍftfH[fjX,âf^fu,É, ,é,Æ,«,É[A¶%E,ì•ùCEüfL[,ð%ÿ,·[B

'□ : fffBfXfvfCEfC fJ[fh,ìf[f, fŠ—É,È,Ç[A^ê•",ì[î•ñ,É,Â,ç,Ä,í[AŠTŽŽ,ì'l,À, ,é[ê[#,ª, ,è,Û,·[B

-â'è,ìĈ'ö,ð'Á'è,-,é

DirectX fAfvfšfP[fVf#f", ìŽÀ[s't,É-â'è,ª"□¶,μ,½□ê□#,í□ADirectX □f'ffc□[f<,ðŽg,α,Æ-â'è,ìĈ'ö,ð'Á'è,À,«,Û,·□BŽŸ,ì,æ,α,É-â'è,ª,È,ç,©Šm"F,μ,Ä,,¾,³,ç□B

□ ĈÈ,Á,½fo□[fWf#f", ì DirectX fRf"fí□[fif"fg□B[DirectX ftf@fCf<] f^fu,ì ['□^Ó) ,Á□AfX□[f^ ftf@fCf<,âfffofbfO ftf@fCf<,ÉŠÖ,·,éĈEx□□,ª,È,ç,©Šm"F,μ,Ä,,¾,³,ç□BfX□[f^ ftf@fCf<,í□%Šú,ìfexfg— pfo□[fWf#f", Á□A□α—pfAfvfšfP[fVf#f",Æ<α,ÉfCf"fXfg□[f<,·,×,«,à,ì,Á,í, ,è,Û,¹,ñ□BfffofbfO fo□[fWf#f", ìfvf□fOf%of€,ðš]",·,é□Û,ÉŽg,í,è,éftf@fCf<,Á□A,±,è,à□Á□□□»·i,Æ<α ,ÉfCf"fXfg□[f<,·,×,«,à,ì,Á,í, ,è,Û,¹,ñ□BfffofbfO fo□[fWf#f", ìfRf"fí□[fif"fg,ªfCf"fXfg□[f<,³,è,Á,ç ,é,Æ□A□□»·i"Á,ªfCf"fXfg□[f<,³,è,Á,ç,é□ê□#,æ,è,àfAfvfšfP[fVf#f", ìŽÀ[s't—"x,ª'á•□,É'á%º,·,é,±,Æ,ª, ,è, Û,·□B

□ "F'è,³,è,Á,ç,È,çfhf%ofCfo□B[DirectX fhf%ofCfo] f^fu,ìftf@fCf<,ì^ê—,Á□A-ç"F'è,ðŽì,·f}□[fN,ª\ Žì,³,è,Á,ç,éfhf%ofCfo,ª,È,ç,©Šm"F,μ,Ä,,¾,³,ç□B[fffBfXfvfĈfC]□A[ftfEf"fh]□A,·,æ,Ñ ["ü—í] f^fu,ì ['□^Ó) ,É,à□A,»,"¼,ì-â'è,ªŽì,³,è,Á,ç,é□ê□#,ª, ,è,Û,·□B-ç"F'è,ìfhf%ofCfo,í□A□Á□Vfo□[fWf#f", ì DirectX ,ÆŠ@'S,ÉĈŸŠ·□<,ª, ,é,©,ç,α,©,ðf}fCfNf□\ftfg,É,æ,Á,Áfexfg,³,è,Á,ç,Û,¹,ñ□B

□ fn□[fhfEfFfA fAfNfZf%ofĈ□[f^,ìĈ#f"@□B^ê•", ìfvf□fOf%of€,í□ADirectDraw® ,Û,½,í Direct3D® fn□[fhfEfFfA fAfNfZf%ofĈ□[f^,ª—~—p,Á,«,È,ç,Æ□AŽÀ[s't—"x,ª"ñ□í,É'á%º,·,é,©□A,Û,½,í,Û,Á,½,- "©□,μ,Û,¹,ñ□B[fffBfXfvfĈfC] f^fu,ì [DirectX,ì<@"\] ,Á□ADirectDraw ,Û,½,í Direct3D ,É "Žg—p%ºÁ"\ ,ÉfAfNfZf%ofĈ□[f^,È,μ" ,Æ•\Žì,³,è,Á,ç,È,ç,©Šm"F,μ,Ä,,¾,³,ç□B•\Žì,³,è,Á,ç ,é□ê□#,í□Afn□[fhfEfFfA, ìfAfbfvfOfĈ□[fh,ðĈŸ"ç,μ,½,Û,α,ª,æ,ç,©,à,μ,è,Û,¹,ñ□B

□ fffofCfX,ª□Ú'±,³,è,Á,ç,È,ç□BfWf#fCfXfefBfbfN,È,ç,ì"ü—ífffofCfX,ª%ºž"š,μ,È,ç□ê□#□A□³,μ,- fZfbfgfAfbfv,³,è,Á,ç,È,ç%ºÁ"\□<,ª, ,è,Û,·□B,»,ìfffofCfX,ª□ADirectX □f'ffc□[f<,ì ["ü—í] f^fu,É•\Žì,³,è,Á,ç ,é,©,ç,α,©Šm"F,μ,Ä,,¾,³,ç□B•\Žì,³,è,Á,ç,È,ç□ê□#,í□Afrf"fg□[f< fplf<,ðŽg,Á,ÁfffofCfX,ð'ç %ºÁ,μ,Û,·□B

**DirectX fRf“f|□[flf“fg,lfefXfg,đ□s,κ**

DirectX □f’ffc□[f<,đŽg,Á,Ä□AfVfXfef€É□Ú’±,³,ê,Ä,ç,éŠef,fjf^,Å,ì DirectDraw ,”,æ,Ñ Direct3D  
,lfefXfg□ÅŠe WAVE □o—ÍfffofCfX,Å,ì DirectSound® ,lfefXfg□A,”,æ,ÑŠef~f...□[fWfbfN f|□[fg,Å,ì  
DirectMusic™ ,lfefXfg,đ□s,κ,±,Æ,ª,Å,«,Ü,·□B

[lfefXfg] ,đfNfŠfbfN,·,é,Æ□Af□fbfZ□[fW,ª\Ž!,³,ê,½CEã□Af,fjf^,â□o—  
ÍfffofCfX,ÅfefXfg,ªŽÀ□s,³,ê,Ü,·□BfefXfg,ª□—CE÷,μ,½,©,Ç,κ,©,đŠm”F,·,éf□fbfZ□[fW,ª\  
Ž!,³,ê,é,Ü,Å□A,»ê,¼,ê,lfefXfg,đŽÀ□s,³,¹,Ü,·□B[,ç,ç,¡]  
,đfNfŠfbfN,μ,½□ê□‡,í□A,»ê,ê^É□āfefXfg,ÍŽÀ□s,³,ê,Ü,¹,ñ□B

DirectMusic ,ì□ê□‡,í□A’P^ê,lfefXfg,ª□s,í,ê,Ü,·□B%%o’t,³,ê,½%o¹Šy,É-â’è,ª,È,ç□ê□‡□A,Ü,½,í□³,μ,%o  
%o’t,³,ê,È,ç□ê□‡□A’P,É [OK] ,đfNfŠfbfN,μ,Ü,·□B

□î•ñ,đ•Ú’¶,μ,Ä,à□AfefXfg,ìCE<%oÊ,í•Ú’¶,³,ê,Ü,¹,ñ□B

**Šù'è,ì"®ì,ð•ïX,·,é**

fVfXfeJÉ,ÉfCf"fxfg[]f<,³,è,Ä,ç,éŠefffBfXfvfCEfC fffofCfX,É'í,·,é [fffBfXfvfCEfC] fy[]fW,Ä [-³CEø]  
,ðfNfŠfbfN,·,é,Æ[]ADirectDraw ,Ü,½,í Direct3D (—~—p%Ä"\,É[]é[]#) ,ìfn[]fhhfEJfFA fAfNfZf%ofCE[]f^,ð-  
³CEø,É,·,é,±,Æ,ª,Ä,«,Ü,·[]B-³CEø,É,µ,½fAfNfZf%ofCE[]f^,í DirectX []f'ffc[]f<,ð[]—  
¹,µ,½CEä,à,»,ì,Ü,Ü,Ä[]AfAvfŠfP[]fVf#f", ©,ç—~—p,·,é,±,Æ,í,Ä,«,Ü,¹,ñ[]BfAfNfZf%ofCE[]f^,ð,à,æ"è"x—  
LCEø,É,·,é,É,í[]A[-LCEø] fNfŠfbfN,µ,Ü,·[]B

'[] : DirectDraw fAfNfZf%ofCE[]f^,ð-³CEø,É,·,é,Æ[]ADirect3D ,ìfAfNfZf%ofCE[]f^,à-³CEø,É,È,è,Ü,·[]B

,Ü,½[]ADirectDraw ,ì'S%æ-Ê•ŽìfAvfŠfP[]fVf#f"Žg—pŽž,ìf,ffj^,ìfŠftfCEfbfVf... fCE[]fg,ð•ïX,·,é,±  
,Æ,à,Ä,«,Ü,·[]B,±,ì•ï[]X,í[]A"Á'è,ìfAvfŠfP[]fVf#f", ÄfffBfXfvfCEfC,ÉŠÖ,·,é-à'è,ª"[]¶,µ,Ä,ç  
,Ä[]A,»,ìfAvfŠfP[]fVf#f",ª-³CEø,ÉfŠftfCEfbfVf... fCE[]fg,ðŸ'è,µ,Ä,ç,é,ÆŽv,í,é,é[]³"-,É—[]—  
R,ª, ,é[]é[]#f,É,¾,³,³,ç[]B

▶ **fŠftfCEfbfVf... fCE[]fg,ð•ïX,·,é,É,í**

1. [,»,è,Ä,à-à'è,ª%øðCE^,µ,È,ç[]é[]#] f^fu,Ä[]A[[]ä[]',«] ,ðfNfŠfbfN,µ,Ü,·[]B
2. [DirectDraw fŠftfCEfbfVf... fCE[]fg,ì[]ä[]',«] f\_fCfAf[]fO f{fbfNfX,ÄfGfffBfbfg  
f{fbfNfX,ð'í'ð,µ[]Af,ffj^,É'í,µ,Ä—LCEø,ÉfŠftfCEfbfVf... fCE[]fg,ð"ü—í,µ,Ü,·[]B,±,ìf{fbfNfX,É'í,ð"ü—  
í,·,é,Æ[]A[[]ä[]',«'í] ,ªŽ©"®"í,Éfjf",É,È,è,Ü,·[]B
3. [OK] ,ðfNfŠfbfN,µ,Ü,·[]B

▶ **fŠftfCEfbfVf... fCE[]fg,ì•ïX,ðžæ,è[]Á,µ,Ä[]ADirectDraw  
fAvfŠfP[]fVf#f",ª"ÆZ©,ìfŠftfCEfbfVf... fCE[]fg,ðŸ'è,Ä,«,é,æ,æ,æ,É,·,é,É,í**

1. [,»,è,Ä,à-à'è,ª%øðCE^,µ,È,ç[]é[]#] f^fu,Ä[]A[[]ä[]',«] ,ðfNfŠfbfN,µ,Ü,·[]B
2. [DirectDraw fŠftfCEfbfVf... fCE[]fg,ì[]ä[]',«] f\_fCfAf[]fO f{fbfNfX,Ä[]A[Šù'è'í] ,ðfjf",É,µ,Ü,·[]B
3. [OK] ,ðfNfŠfbfN,µ,Ü,·[]B

**fhf%ofCfo,đ•œCE³,·,é**

□\□¬,É,æ,Á,Ä,Í□A DirectX® □f'ffc□[f<,Á□A^È'O,ìf□[fffBf] fhf%ofCfo,¨,æ,Ñfrffl fhf  
%ofCfo,đ•œCE³,Ä,«,Ü,·□Bfhf%ofCfo,ì"ñCEÝŠ·□«,ì-â'è,ì%ođCE^,É,Í□A,±,é,ª□Ä,à,æ,¢•û-@,Ä, ,é□ê□‡,ª, ,è,Ü  
,·□B

[,»,é,Á,à-â'è,ª%ođCE^,µ,È,¢□ê□‡] f^fu,É [•œCE³] f{f^f",ª\Ž!,³,è,Ä,¢,é□ê□‡,Í□A,±  
,ìf{f^f",đfNfŠfbfN,µ□ADirectX fZfbfgfAfbfv fv□fOf%of€,đŽÀ□s,Ä,«,Ü,·□B

DirectX fZfbfgfAfbfv,É,Í□A[f□[fffBf] fhf%ofCfo,ì•œCE³] ,Æ [fffBfXfvfCEfC fhf%ofCfo,ì•œCE³]  
f{f^f",ª, ,è,Ü,·□B,¢, ,è,©,ìf{f^f",đfNfŠfbfN,·,é,Æ□AfvfXfef€,É DirectX  
,đfCf"fXfg□[f<,µ,½,Æ,«,É'u,«Š·,!,ç,è,½fhf%ofCfo,ª•œCE³,³,è,Ü,·□Bf{f^f",ªŽg—p%oÂ"\  
,Ä,É,¢□ê□‡,Í□A•œCE³,·,éfhf%ofCfo,ì, ,è,Ü,¹,ñ□B,»,ì□ê□‡,Í□Afn□[fhfEfffA,ì□»'¢CE³,É-â,¢□‡,í,¹,Ä□Ä□V,ìfhf  
%ofCfo,đ"üŽè,µ,Ä,,¾,¾,³,¢□B

DirectX fZfbfgfAfbfv,É,Í□ADirect3D fn□[fhfEfffA fAfNfZf%ofCE□]f^,đ-  
³CEø,É,·,é fFfbfNf{fbfNfX,à, ,è,Ü,·,ª□A ,±,é,Í□ADxDiag "à,Ä,à□s,±,Æ,ª,Ä,«,Ü,· (Šù'è,ì"®□ì,đ•í□X,·,é  
,đŽQ□Æ,µ,Ä,,¾,¾,³,¢)□B

ĭ•ň,đ•Ů'ŕ,·,é

DirectX ĭ'ffcĭ[f<,žúĭW,μ,½ĭ•ň,đ•Ů'ŕ,·,é,É,ĭA2 ,Ā,ĭ•Ů-@,ª, ,è,Ů,·ĭB

ĭ [ĭ•ň,đ,·,×,Ā•Ů'ŕ] ,đfNfŠfbfN,μ,Ů,·ĭB,·,×,Ā,ĭfyĭ[fW,ĭĭ•ň,ªAŽw'è,μ,½ĭêŠ,É, ,éŽw'è,μ,½-¼'O,ĭftf@fCf<,É•Ů'ŕ,ª,è,Ů,·ĭB

,±,ĭfcĭ[f<,ĭŠJ"ŽÒEü, ĭfššĭ[fX,đŽg,Ā,Ā,č,éſftfgfEfFfAšJ"ŽÒ,Ā, ,é,ĭAŽŸ,ĭ•Ů-@,đ,Æ,é,±,Æ,à,Ā,«,Ů,·ĭB

ĭ [,» ,é,Ā,à-â'è,ª%øđCE^ ,μ,È,čĭêĭ‡] f^fu,ĀA[•ňĭĭ] ,đfNfŠfbfN,μ,Ů,·ĭB[áŠQ•ňĭĭ,ĭĭ•ň] f\_fCfAfĭfO f{fbfNfX,ª•\Ž!,ª,è,Ů,·ĭB•K-v,È,·,×,Ā,ĭffĭ[f^,đ"ü-ĭ,μĭ,ĭ,½,çĭA['-ĭM] ,đfNfŠfbfN,μ,Ů,·ĭB^êŽžffBfCEfNfgfŠ (,½,Æ,ĭ,ĭAC:\Windows\Temp) ,É Dxinfo.txt ,Æ,č,ª-¼'O,ĭfefLfXfg ftf@fCf<,ªĭĭ-ª,èĭAfĭf, ' ,ĀŠJ,©,è,Ů,·ĭB,±,ĭftf@fCf<,É,ĭA'O,ĭ•Ů-@,ĀŽúĭW,ª,è,½ĭĭ•ň,ĭ,Ů,©,ÉĭAf\_fCfAfĭfO f{fbfNfX,Ā"ü-ĭ,μ,½CEĀĭĭĭ•ň,â,» ,ĭ'¼,ĭĭ•ň,ªšŮ,Ů,è,Ů,·ĭB



-â'è,ð•ñ□□,·,é

DirectX ,lfRf“f□□lf“fg,Ü,½,ífhf%ofCfo,ÉŠÖCEW,ª, ,é,ÆŽv,í,è,é-â'è,ª”□¶,µ,½□ê□#,í□Af}fCfNf□\ftfg  
fefNfjffj< ftf□□fg,É~A—□,·,é,±,Æ,ª,Ä,«,Ü,·□BfefNfjffj< ftf□□fg,Ö,ì~A—□,ì•ù-@,É,Ä,ç,Ä,í□AMicrosoft®  
Windows® fwf<fv,ì□ufgf%ofuf<fvf...□[fefBf“fO□v,ðŽQ□Æ,µ,Ä,,¾,¾,ç□BŠj”-  
ŽÖCEü,~fŠfŠ□□fX,ì□f'ffc□□f<,ðŽg,Ä,Ä,ç,é\ftfgfEfffAŠj”ŽÖ,Ä, ,é,í□A“dŽqf□□f<,Ä-â'è,ð•ñ□□,·,é,±  
,Æ,à,Ä,«,Ü,·□B

'□ : Žÿ,ìŽè□#,í□A,±,íf□□f<,ìŠj”ŽÖCEü,~fŠfŠ□□fX,É,ì,Ý“K—p,¾,è,Ü,·□B,±,ì•ù-  
@,í□A,·,x,Ä,ìft□□fU□□,ªŽg,ì,é,í,~,Ä,í, ,è,Ü,¹,ñ□B

► “dŽqf□□f<,Ä-â'è,ð•ñ□□,·,é,É,í

1. [,>,è,Ä,à-â'è,ª%ðCE^,µ,È,ç□ê□#, f^fu ,Ä□A[•ñ□□] ,ðfNfŠfbfN,µ,Ü,·□B
2. [□áŠQ•ñ□□,ì□î•ñ] f\_fCfAf□fO f{fbfNfX,É•K—v,È,·,x,Ä,ì□î•ñ,ð“ü—í,µ□A[‘—□M] ,ðfNfŠfbfN,µ,Ü,·□B
3. □ì□-,¾,è,½fefLfXfg ftf@fCf<,ìftf< fpfX,Æ“dŽqf□□f< fAfhfCEfX,ðŽì,·f□fbfZ□□fW,ª•\Žì,¾,è,Ü,·□B“dŽqf□□f<  
fAfhfCEfX,ð□',«,Ä,~,Ä,~,«,Ü,·□B[OK] ,ðfNfŠfbfN,µ,Ü,·□Bf□f,' ,ª<N“®,¾,è□ADxinfo.txt ,ì“à—e,ª•\  
Žì,¾,è,Ü,·□B
4. f□f,' ,ì [•Ò□W] f□fjf...□[ì [,·,x,Ä'í'ð] ,ðfNfŠfbfN,µ□A[•Ò□W] f□fjf...□[ì [fRfs□□]  
,ðfNfŠfbfN,µ,Ü,·□Bftf@fCf<,ì,·,x,Ä,ì“à—e,ªfNfŠfbfvf{□□fh,É“ü,è,ç,è,Ü,·□B
5. “dŽqf□□f< fvf□fOf%of€ ,Ä□V,µ,çf□fbfZ□□fW,ð□ì□-,µ□AfNfŠfbfvf{□□fh,ì“à—e,ðf□fbfZ□□fW-{•¶,É“\  
,è•t,~,Ü,·□B,±,ìf□fbfZ□□fW,ð□AZè□# 3 ,Ä□',«,Ä,~,½fAfhfCEfX,É'—□M,µ,Ü,·□B

