

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

**DirectX**

Microsoft® DirectX®

DirectX

-â'è.ìĈ^ö,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'ŕ,.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^è•",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^è•",ì[î•ñ,É,Â,ç,Ä,í[AŠTŽŽ,ì'l,À, ,é[è[#,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,Ä,ç ,é,Æ□A□»·i"Á,ªfCf"fXfg□[f<,³,è,Ä,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,Ä,ç,È,çfhf%ofCfo□B[DirectX fhf%ofCfo] f^fu,ìftf@fCf<,ì^ê—,Á□A-ç"F'è,ðŽ,·f}□[fN,ª\ Ž,³,è,Ä,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,» ,ì¼,ì-â'è,ªŽ,³,è,Ä,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,ÄfefXfg,³,è,Ä,ç,Û,¹,ñ□B

□ fn□[fhfEfFfA fAfNfZf%ofĈ□[f^,ìĈ#@"B^è•", 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•\Ž,³,è,Ä,ç,È,ç,©Šm"F,μ,Ä,,¾,³,ç□B•\Ž,³,è,Ä,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,Ä,ç,È,ç□BfWf#fCfXfefBfbfN,È,ç,ì"ü—ífffofCfX,ª%ºž"š,μ,È,ç□ê□#□A□³,μ,- fZfbfgfAfbfv,³,è,Ä,ç,È,ç%ºÁ"\□<,ª, ,è,Û,·□B,»,ìfffofCfX,ª□ADirectX □f'ffc□[f<,ì ["ü—í] f^fu,É•\Ž,³,è,Ä,ç ,é,©,ç,α,©Šm"F,μ,Ä,,¾,³,ç□B•\Ž,³,è,Ä,ç,È,ç□ê□#,í□Afrf"fg□[f< fplf<,ðŽg,Á,ÄfffofCfX,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^,Á,ì DirectDraw ,“,æ,Ñ Direct3D  
,lfefXfg□AŠe WAVE □o—lfffofCfX,Á,ì DirectSound® ,lfefXfg□A,“,æ,ÑŠef~f...□[fWfbfN f|□[fg,Á,ì  
DirectMusic™ ,lfefXfg,đ□s,κ,±,Æ,ª,Á,«,Ü,·□B

[lfefXfg] ,đfNfŠfbfN,·,é,Æ□Af□fbfZ□[fW,ª\Ž!,³,ê,½CEã□Af,fjf^,â□o—  
lfffofCfX,ÁfefXfg,ªŽÀ□s,³,ê,Ü,·□BfefXfg,ª□—CE÷,μ,½,©,Ç,κ,©,đŠm”F,·,é□fbfZ□[fW,ª\  
Ž!,³,ê,é,Ü,Á□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 ,l□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]  
,ðNfŠfbfN,·,é,Æ[]ADirectDraw ,Ü,½,í Direct3D (—~—p%Ä"\,É[]é[]#) ,ìfn[]fhhEjFfA 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-È•\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,ð[]Ý'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[]',«] ,ðNfŠfbfN,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] ,ðNfŠfbfN,µ,Ü,·[]B

▶ **fŠftfCEfbfVf... fCE[]fg,ì•ïX,ðžæ,è[]Á,µ,Ä[]ADirectDraw  
fAfVfŠfP[]fVf#f",ª"ÆZ©,ìfŠftfCEfbfVf... fCE[]fg,ð[]Ý'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[]',«] ,ðNfŠfbfN,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] ,ðNfŠfbfN,µ,Ü,·[]B

**fhf%ofCfo,đ•œĚ³,·,é**

□\□¬,É,æ,Á,Ä,Í□A DirectX® □f'ffc□[f<,Á□A^È'O,ìf□[fffBfì fhf%ofCfo,¨,æ,Ñfrffì fhf %ofCfo,đ•œĚ³,Ä,«,Ü,·□Bfhf%ofCfo,ì"ñĚÝŠ·□«,ì-â'è,ì%ođĚ^,É,Í□A,±,é,ª□Ä,à,æ,ċ•û-@,Ä, ,é□ê□‡,ª, ,è,Ü ,·□B

[,»,é,Á,à-â'è,ª%ođĚ^,µ,È,ċ□ê□‡] f^fu,É [•œĚ³] f{f^f",ª\Ž!,³,è,Ä,ċ,é□ê□‡,Í□A,± ,ìf{f^f",đfNfŠfbfN,µ□ADirectX fZfbfgfAfbfv fv□fOf%of€,đŽÀ□s,Ä,«,Ü,·□B

DirectX fZfbfgfAfbfv,É,Í□A[fì□[fffBfì fhf%ofCfo,ì•œĚ³] ,Æ [fffBfXfvfĚfC fhf%ofCfo,ì•œĚ³] f{f^f",ª, ,è,Ü,·□B,ċ, ,è,©,ìf{f^f",đfNfŠfbfN,·,é,Æ□AfVfXfef€,É DirectX ,đfĊf"fXfg□[f<,µ,½,Æ,«,É'u,«Š·,!,ċ,è,½fhf%ofCfo,ª•œĚ³,³,è,Ü,·□Bf{f^f",ªŽg—p%oÂ"\ ,Ä,É,ċ□ê□‡,Í□A•œĚ³,·,éfhf%ofCfo,ì, ,è,Ü,¹,ñ□B,»,ì□ê□‡,Í□Afn□[fhfEfffA,ì□»'ċĚ³,É-â,ċ□‡,í,¹,Ä□Ä□V,ìfhf %ofCfo,đ"üŽè,µ,Ä,,¾,¾,ċ□B

DirectX fZfbfgfAfbfv,É,Í□ADirect3D fn□[fhfEfffA fAfNfZf%ofĚ□]f^,đ- ³Ěø,É,·,éf 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,ċ)□B

□î•ñ,ð•Û'¶,·,é

DirectX □f'ffc□[f<,ªŽú□W,μ,½□î•ñ,ð•Û'¶,·,é,É,Í□A2 ,Â,ì•û-@,ª, ,è,Û,·□B

□ [□î•ñ,ð,·,×,Ä•Û'¶] ,ðfNfŠfbfN,μ,Û,·□B,·,×,Ä,ìfy□[fW,ì□î•ñ,ª□AZw'è,μ,½□ê□Š,É, ,éŽw'è,μ,½-¼'O,ìftf@fCf<,É•Û'¶,ª,è,Û,·□B

,±,ìfc□[f<,ìŠJ"ŽÒEü,~fšfš□[fX,ðŽg,Á,Ä,ç,éftfgfEfFfAšJ"ŽÒ,Â, ,é,Í□AZÿ,ì•û-@,ð,Æ,é,±,Æ,à,Â,«,Û,·□B

□ [,»è,Â,à-â'è,ª%øðCE^,μ,È,ç□ê□‡] f^fu,Â□A[•ñ□□] ,ðfNfŠfbfN,μ,Û,·□B[□áŠQ•ñ□□,ì□î•ñ] f\_fCfAf□fO f{fbfNfX,ª•\Ž!,ª,è,Û,·□B•K-v,È,·,×,Ä,ìff□[f^,ð"ü-Í,μ□l,!,½,ç□A['-□M] ,ðfNfŠfbfN,μ,Û,·□B^êŽžffBfCEfNfgfŠ (,½,Æ,!,ì□AC:\Windows\Temp) ,É Dxinfo.txt ,Æ,ç,±-¼'O,ìfefLfXfg ftf@fCf<,ª□ì□-,ª,è□Af□f,' ,ÁŠJ,©,è,Û,·□B,±,ìftf@fCf<,É,Í□A'O,ì•û-@,ÂŽú□W,ª,è,½□î•ñ,ì,Û,©,É□Af\_fCfAf□fO f{fbfNfX,Â"ü-Í,μ,½CEÄ□ì□î•ñ,â,»!,¼,ì□î•ñ,ªšÛ,Û,è,Û,·□B



-â'è,ð•ñ□□,·,é

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

'□ : Žÿ,İŽè□#,İ□A,±,İfc□[f<,İŠJ”ŽÖCEü,~fŠfŠ□[fX,É,İ,Ý“K—p,¾,è,Ü,·□B,±,İ•û-  
@,İ□A,·,x,Ä,İft□[fU□[,ªŽg,İ,é,Í,~Ä,Í, ,è,Ü,¹,ñ□B

▶ “dŽqf□□[f<,Ä-â'è,ð•ñ□□,·,é,É,İ

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

