

f w f < f v f g f s f b f N , ì ^ ê — — , ð • \ Ž ! , , é , É , [ □ A [ f w f < f v ] , ì [ f g f s f b f N , ì Ç Æ Ÿ □ ð ] , ð f N f Š f b f N , 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%oCfo.đ•œĈ³. .é

î•ñ.đ•Û'ŋ. .é

-â'è.đ•ñ. .é

## DirectX f'ffc[f<,É,Â,ç,Ä

DirectX® f'ffc[f<,íAfvfXfef€ã,ì Microsoft® DirectX fAfvfŠfP[fvf#f“ fvfOf%~f“fO  
fCf“f^ [ftfFfCfX,ífRf“f| [f]f“fg,“,æ,Ñfhf%ofCfo,ÉŠÖ,·,éí•ñ,ð•\Ž!,μAfTfEf“fh,âfOf%oftfBfbfNfX,ìo—  
ÍfefXfg,ð[s,ç,Û,·B,Û,½A^è•”,ìfn [fhfEfFfA fAfNfZf%ofCE [f^,ì<@“\,ð-³CEø,É,·,é,±,Æ,à,Ä,«,Û,·B

,±,ìfc [f<,ðŽg,æ,ÆAfTf| [fg fZf“f^ [Ö,ì-â,ç#i,¹t,Éí•ñ,ðŽûW,μAfTf| [fg<ZpŽÖ,É“` ,ì,é,±  
,Æ,â,Ä,«,Û,·B,Û,½Afc [f<,âŽûW,μ,½í•ñ,ð•Û‘¶,μA“dŽqf [f< f]fbfZ [fW,É“\,è•t, ,é,±  
,Æ,à,Ä,«,Û,·B

í•ñ,íA“fy [fW,ìf^fu,É•ª, ,Ä•\Ž!,³,è,Û,·Bfy [fW,©,çfy [fW,Ö^Ú“ ®,·,é,É,íAŽÿ,ì•ù-@,ª, ,è,Û,·B

□ f^fu,ðfNfŠfbfN,·,éB

□ [Žÿfy [fW] ,ðfNfŠfbfN,·,éB

□ “ü—ÍftfH [f]fX,âf^fu,É, ,é,Æ,«,ÉA¶%E,ì•ùCEüfL [ ,ð%ÿ,·B

'□ : fffBfXfvfCEfC f] [fh,ìf]f,fŠ—É,È,ÇA^è•”,ìí•ñ,É,Â,ç,Ä,íAŠTŽŽ,ì'l,Ä, ,éé#ª, ,è,Û,·B

-â'è,ìĈ'ö,ð'Á'è,-,é

DirectX fAfvfšfP[fVf#f", ðŽÀ[s't,É-â'è,ª"□¶,µ,½□ê□#f,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", ð DirectX fRf"fí□[fif"fg□B[DirectX ftf@fCf<] f^fu, ð ['□^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, ðfexfg— pfo□[fWf#f", Á□A□α—pfAfvfšfP[fVf#f", Æ<α,ÉfCf"fXfg□[f<,·,x,«,à,ì,Á,í, ,è,Û,¹,ñ□BfffofbfO fo□[fWf#f", ðfvf□fOf%of€ ,ðš] ,·,é□Û,ÉŽg,í,è,éftf@fCf<,Á□A,±,è,à□Á□□□»·i,Æ<α ,ÉfCf"fXfg□[f<,·,x,«,à,ì,Á,í, ,è,Û,¹,ñ□BfffofbfO fo□[fWf#f", ðfRf"fí□[fif"fg,ªfCf"fXfg□[f<,³,è,Á,ç ,é,Æ□A□□»·i"Á,ªfCf"fXfg□[f<,³,è,Á,ç,é□ê□#f,æ,è,àfAfvfšfP[fVf#f", ðŽÀ[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, ðftf@fCf<, ð^è—, 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, ð ['□^Ó) ,É,à□A,» ,ì¼, ð-â'è,ªŽì,³,è,Á,ç,é□ê□#f,ª, ,è,Û,·□B-ç"F'è, ðfhf%ofCfo, í□A□Á□Vfo□[fWf#f", ð 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^, ðĈ#f"@□B^è•", ðfvf□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, ð [DirectX, ð<@"\] ,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□#f, í□Afn□[fhfEfFfA, ðfAfbfvfOfĈ□[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, ð"ü—ífffofCfX,ª%ºž"š,µ,È,ç□ê□#f□A□³,µ,- fZfbfgfAfbfv,³,è,Á,ç,È,ç%ºÁ"\□□,ª, ,è,Û,·□B,» ,ðfffofCfX,ª□ADirectX □f'ffc□[f<, ð ["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□#f, í□Afrf"fgh□□[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^,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,Ä,«,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%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[]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[]AfAfVfŠfP[]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•ŽìfAfVfŠfP[]fVf#f"Žg—pŽž,ìf,ffj^,ìfŠftfCEfbfVf... fCE[]fg,ð•ïX,·,é,±  
,Æ,à,Ä,«,Ü,·[]B,±,ì•ï[]X,í[]A"Á'è,ìfAfVfŠfP[]fVf#f", ÄfffBfXfvfCEfC,ÉŠÖ,·,é-à'è,ª"[]¶,µ,Ä,ç  
,Ä[]A,»,ìfAfVfŠfP[]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 fAfVfŠfP[]fVf#f",ª"ÆŽ©,ìfŠftfCEfbfVf... fCE[]fg,ðŸ'è,Ä,«,é,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□[fffBfì fhf%ofCfo,¨,æ,Ñfrfffl fhf %ofCfo,đ•œCE³,Ä,«,Ü,·□Bfhf%ofCfo,ì"ñCEÝŠ·□«,ì-â'è,ì%øðCE^,É,Í□A,±,é,ª□Ä,à,æ,¢•û-@,Ä, ,é□ê□‡,ª, ,è,Ü ,·□B

[,»,é,Á,à-â'è,ª%øðCE^,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[fì□[fffBfì 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%øÄ"\ ,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 ffbfNf{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

ŕî•ň,đ•Ů'ŕ,·,é

DirectX ŕf'ffcŕ[f<,žúŕW,μ,½ŕî•ň,đ•Ů'ŕ,·,é,É,ÍŕA2 ,Á,ì•ú-@,ª, ,è,Ů,·ŕB

ŕ [ŕî•ň,đ,·,×,Ä•Ů'ŕ] ,đfNfŠfbfN,μ,Ů,·ŕB,·,×,Ä,ìfyŕ[fW,ìŕî•ň,ªŕAZw'è,μ,½ŕêŕŠ,É, ,éŽw'è,μ,½-¼'O,ìftf@fCf<,É•Ů'ŕ,ª,è,Ů,·ŕB

,±,ìfcŕ[f<,ìŠJ"ŽÒEü,~fšfšŕ[fX,đŽg,Á,Ä,ç,éftfgfEfFfAšJ"ŽÒ,Á, ,é,ÍŕAZÿ,ì•ú-@,đ,Æ,é,±,Æ,à,Á,«,Ů,·ŕB

ŕ [,»è,Á,à-â'è,ª%øđCE^,μ,È,çŕêŕ‡] f^fu,ÁŕA[•ňŕŕ] ,đfNfŠfbfN,μ,Ů,·ŕB[ŕáŠQ•ňŕŕ,ìŕî•ň] f\_fCfAfŕfO f{fbfNfX,ª•\Ž!,ª,è,Ů,·ŕB•K-v,È,·,×,Ä,ìffŕ[f^,đ"ü-Í,μŕl,!,½,çŕA['-ŕM] ,đfNfŠfbfN,μ,Ů,·ŕB^êŽžffBfCEfNfgfŠ (,½,Æ,!,ìŕAC:\Windows\Temp) ,É Dxinfo.txt ,Æ,ç,ª-¼'O,ìfefLfXfg ftf@fCf<,ªŕŕŕ-ª,èŕAfŕf,' ,ÁŠJ,©,è,Ů,·ŕB,±,ìftf@fCf<,É,ÍŕA'O,ì•ú-@,ÁŽúŕW,ª,è,½ŕî•ň,ì,Ů,©,ÉŕAf\_fCfAfŕfO f{fbfNfX,Á"ü-Í,μ,½CEÁŕŕŕî•ň,â,»!,¼,ìŕî•ň,ªšŮ,Ů,è,Ů,·ŕB



-â'è,ð•ñ□□,·,é

DirectX ,ìfRf“f□□fìf“fg,Ü,½,ífhf%ofCfo,ÉŠÖCEW,ª, ,é,ÆŽv,í,è,é-â'è,ª”□¶,µ,½□ê□#,í□Af}fCfNf□fvtfg  
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,éfvtfgfEfffAŠJ”ŽÖ,Ä, ,é,í□A“dŽqf□□f<,Ä-â'è,ð•ñ□□,·,é,±,  
,Æ,à,Ä,«,Ü,·□B

'□ : Žÿ,ìŽè□#,í□A,±,ìfc□□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 ,Å□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€ ,Å□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 ,Å□',«,Ä,~,½fAfhfCEfX,É'—□M,µ,Ü,·□B

