

*f**wf*<*f**v* *f**gfsfbfN*,î^ê——,đ•Ž!,·,é,É,í□*A*[*f**wf*<*f**v*] ,ì [*f**gfsfbfN*,ìŒŸ□đ] ,đ*fNfŠfbfN*,μ,Ä,,¾,³,¢□*B*

DirectX 0f'ffc0[f<

Microsoft® DirectX® 0f'ffc0[f<,lfw f<fv, l"à—e, í0AŽŸ, l,Æ,,"è,Å,·0B

- DirectX 0f'ffc0[f<,É,Â,Ç,Ä
- -â'è,lŒ^ˆö,ð"Á'è,.,é
- DirectX fRf"f l0[f l f"fg,lfe fXfg,ð0s,ð
- Šù'è,l"®0ì,ð•l0X,.,é
- fhf%0fCfo,ð•œŒ³,.,é
- 0î•ñ,ð•Û'ŋ,.,é
- -â'è,ð•ñ00,.,é

DirectX □f'ffc□[f<,É,Â,¢,Ä

DirectX® □f'ffc□[f<,Í□AfVfXfef€□ã,Ì Microsoft® DirectX fAfvfŠfP□[fVf‡f“ fvf□fOf%of~f“fO
fCf“f^□[ftfFfCfX,ÌfRf“f|□[flf“fg,;æ,Ñfhf%oCfo,ÉŠÖ,·,é□î•ñ,ð•Ž!,μ□AfTfEf“fh,âfOf%oftfBfbfNfX,ì□o—
ÍfefXfg,ð□s,¢,Ü,·□B,Ü,½□A^ê•”,ìfn□[fhfEfFfA fAfNfZf%o fÆ□[f^,ì<@“\,ð–³Æø,É,·,é,±,Æ,à,Ä,«,Ü,·□B
,±,ìfc□[f<,ðŽg,¤,Æ□AfTf|□[fg fZf“f^□[Ö,Ì–â,¢□‡,í,¹†,É□î•ñ,ðŽû□W,μ□AfTf|□[fg<Z□pŽÒ,É“,¡,é,±
,Æ,a,Ä,«,Ü,·□B,Ü,½□AfC□[f<,ªŽû□W,μ,½□î•ñ,ð•Ů“¶,μ□A“dŽqf□□[f< f□fbfZ□[fW,É“,è•t,¯,é,±,Æ,à,Ä,«,Ü,·□B
□î•ñ,Í□A□”fy□[fW,Ìf^fu,É•ª,¯,Ä•Ž!,³,ê,Ü,·□Bfy□[fW,©,çfy□[fW,Ö^Ů“®,·,é,É,Í□AZŽÿ,Ì•û–@,ª, ,è,Ü,·□B
· f^fu,ðfNfŠfbfN,·,é□B
· [ŽŸfy□[fW],ðfNfŠfbfN,·,é□B
· “û—ÍftfH□[fJfX,ªf^fu,É, ,é,Æ,«,É□A□¶%oE,Ì•ûÆûfL□[,ð%oŸ,·□B

'□ : ffbfXfvfÆfC fJ□[fh,Ìf□f,fŠ—Ê,È,Ç□A^ê•”,)□î•ñ,É,Â,¢,Ä,Í□AŠTŽZ,Ì'l,Â, ,é□ê□‡,ª, ,è,Ü,·□B

-â'è,ìĈë''ö,ð"Á'è,-,é

DirectX fAfvfŠfP□[fVf‡f",ìŽÀ□s't,É-â'è,a"□¶,μ,½□ê□‡,í□ADirectX □fffc□[f<,ðŽg,α,Æ-â'è,ìĈë''ö,ð"Á'è,Ä,«,Ü,·□BŽŸ,ì,æ,α,É-â'è,a,É,¢,©Šm"F,μ,Ä,,¾,¾,¾,¢□B

- Ĉë,Á,½fo□[fWf‡f",ì DirectX fRf"f|□[f|f"f g□B[DirectX ftf@fCf<] f^fu,ì ['□°Ó] ,Ä□Afx□[f^ ftf@fCf<,âfffofbfO ftf@fCf<,ÉŠÖ,·,éĈx□□,ª,È,¢,©Šm"F,μ,Ä,,¾,¾,¾,¢□Bfx□[f^ ftf@fCf<,í□%Šú,ìfefXfg— pfo□[fWf‡f",Ä□A□□—pAfvfŠfP□[fVf‡f",Æ<α,ÉfCf"fXfg□[f<,·,x,«,à,ì,Ä,í, ,è,Ü,¹,ñ□BffofbfO fo□[fWf‡f",ívf□fOf%œ,ðŠJ",·,é□Ü,ÉŽg,í,è,éftf@fCf<,Ä□A,±,ê,à□Ä□I□□»i,Æ<α ,ÉfCf"fXfg□[f<,·,x,«,à,ì,Ä,í, ,è,Ü,¹,ñ□BffofbfO fo□[fWf‡f",ìfRf"f|□[f|f"f g,ªfCf"fXfg□[f<,¾,è,Ä,¢ ,é,Æ□A□□»i"Ä,ªfCf"fXfg□[f<,¾,è,Ä,¢,é□ê□‡,æ,è,àfAfvfŠfP□[fVf‡f",ìŽÀ□s'—"x,ª,ª•□,É'á%°,·,é,±,Æ,ª, ,è,Ü,·□B
- "F'è,¾,è,Ä,¢,È,¢fhf%oCfo□B[DirectX fhf%oCfo] f^fu,ìftf@fCf<,ìê——,Ä□A-¢"F'è,ðŽ!,·f}□[fN,ª,Ž!,¾,è,Ä,¢ ,éfhf%oCfo,ª,È,¢,©Šm"F,μ,Ä,,¾,¾,¾,¢□B[ffBfXfvfĈfC]□A[fTfEf"f h]□A,,"æ,Ń ["ü—í] f^fu,ì ['□°Ó] ,É,à□A,»,ì'¼,ì-â'è,ªŽ!,¾,è,Ä,¢,é□ê□‡,ª, ,è,Ü,·□B-¢"F'è,ìfhf%oCfo,í□A□Ä□Vfo□[fWf‡f",ì DirectX ,ÆŠ@'S,ÉĈŸŠ· □«,ª, ,é,©,Ç,α,©,ðf}fCfNf□f\ftfg,É,æ,Ä,ÄfefXfg,¾,è,Ä,¢,Ü,¹,ñ□B
- fn□[fhfEfFfA fAfNfZf%o fĈ□[f^,ìĈ±"@□Bê"·,ìvf□fOf%œ,í□ADirectDraw®,Ü,½,í Direct3D® fn□[fhfEfFfA fAfNfZf%o fĈ□[f^,ª—~—p,Ä,«,È,¢,Æ□AŽÀ□s'—"x,ª,ñ□í,É'á%°,·,é,©□A,Ü,½,í,Ü,Ä,½,- "®□ì,μ,Ü,¹,ñ□B[ffBfXfvfĈfC] f^fu,ì [DirectX,ì<@"] ,Ä□ADirectDraw ,Ü,½,í Direct3D ,É "Žg—p%Ä" ,ÈfAfNfZf%o fĈ□[f^,È,μ" ,Æ•Ž!,¾,è,Ä,¢,È,¢,©Šm"F,μ,Ä,,¾,¾,¾,¢□B•Ž!,¾,è,Ä,¢ ,é□ê□‡,í□Afn□[fhfEfFfA,ìfAbfvfOfĈ□[fh,ðĈŸ"¢,μ,½,Ü,α,ª,¢,©,à,μ,è,Ü,¹,ñ□B
- fffoCfX,ª□Ú±,¾,è,Ä,¢,È,¢□BfWf‡fCfXfefBfbfN,È,Ç,ì"ü—íffoCfX,ª%ž"š,μ,È,¢□ê□‡□A□³,μ,- fZfbgfAfbfv,¾,è,Ä,¢,È,¢%Ä"□□«,ª, ,è,Ü,·□B,»,ìffoCfX,ª□ADirectX □fffc□[f<,ì ["ü—í] f^fu,É•Ž!,¾,è,Ä,¢ ,é,©,Ç,α,©Šm"F,μ,Ä,,¾,¾,¾,¢□B•Ž!,¾,è,Ä,¢,È,¢□ê□‡,í□A fRf"f g f□□[f< fpflf<,ðŽg,Á,ÄffoCfX,ðÇ%Ä,μ,Ü,·□B

DirectX fRf“f|□[f|f“fg,lfefXfg,ð□s,²

DirectX □f'fc□[f<,ðŽg,Á,Ä□AfVfXfef€É□Ú'±,³,ê,Ä,¢,éŠef,fj^,Ä,ì DirectDraw ,“,æ,Ñ Direct3D ,lfefXfg□AŠe
WAVE □o—ÍfffofCfX,Ä,ì DirectSound® ,lfefXfg□A,“,æ,ÑŠef~f...□[fWfbfN f|□[fg,Ä,ì DirectMusic™
,lfefXfg,ð□s,²,±,Æ,ª,Ä,«,Ü,·□B

[fefXfg] ,ðfNfŠfbfN,·,é,Æ□Af□fbfZ□[fW,ª\Ž!,³,ê,½Œã□Af,fj^,â□o—
ÍfffofCfX,ÄfefXfg,ªŽÄ□s,³,ê,Ü,·□BfefXfg,ª□¬Œ÷,µ,½,©,Ç,²
,©,ðŠm"ƒ,·,éf□fbfZ□[fW,ª\Ž!,³,ê,é,Ü,Ä□A,»,ê,¼,ê,lfefXfg,ðŽÄ□s,³,¹,Ü,·□B[,¢,¡]
,ðfNfŠfbfN,µ,½□ê□‡,Í□A,»,ê^È□ãfefXfg,ÍŽÄ□s,³,ê,Ü,¹,ñ□B

DirectMusic ,ì□ê□‡,Í□A'P^ê,lfefXfg,ª□s,í,ê,Ü,·□B%‰'t,³,ê,½‰¹Šy,É–â'è,ª,È,¢□ê□‡□A,Ü,½,Í□³,µ,‰
‰'t,³,ê,È,¢□ê□‡□A'P,É [OK] ,ðfNfŠfbfN,µ,Ü,·□B

□î•ñ,ð•Ů'¶,µ,Ä,à□AfefXfg,ìŒ<‰Ê,Í•Ů'¶,³,ê,Ü,¹,ñ□B

Šù'è,ì"®ì,ð•î□X,·,é

$fVfXfefe\$,ÉfCf" fXfg□[f<^3,ê,Ä,¢,éŠefffBfXfvf\mathbb{C}fffofCfX,É\hat{1},\cdot,é[f\mathbb{C}BfXfvf\mathbb{C}fC]fy□[fW,\hat{A}[-^3\mathbb{C}\emptyset]$
,ðfNfŠfbfN,·,é,Æ□ADirectDraw,Ü,½,Í Direct3D (—~—p%Å",É□ê□‡) ,îfn□[fhfEfFA fAfNfZf% f\mathbb{C}□[f^,\delta-^3\mathbb{C}\emptyset,É,\cdot,é,\pm,Æ,^a,\hat{A},\ll,\ddot{U},\cdot\Box B-^3\mathbb{C}\emptyset,É,\mu,\frac{1}{2}fAfNfZf% f\mathbb{C}□[f^,\hat{1} DirectX □f'fc□[f<,\delta□|—
^1,\mu,\frac{1}{2}\mathbb{C}\tilde{a},\tilde{a},\gg,)\ddot{U},\ddot{U},\hat{A}\Box AfAvfŠfP□[fVf‡f",©,ç~—p,\cdot,é,\pm,Æ,Í,\hat{A},\ll,\ddot{U},^1,\tilde{n}\Box BfAfNfZf% f\mathbb{C}□[f^,\delta,\tilde{a},\sigma^{\wedge}\tilde{e}"x—
L\mathbb{C}\emptyset,É,\cdot,é,É,Í□A[—L\mathbb{C}\emptyset] fNfŠfbfN,\mu,\ddot{U},\cdot\Box B

'□ : DirectDraw $fAfNfZf% f\mathbb{C}□[f^,\delta-^3\mathbb{C}\emptyset,É,\cdot,é,Æ\Box Direct3D$,îfAfNfZf% f\mathbb{C}□[f^,\tilde{a}-^3\mathbb{C}\emptyset,É,É,\tilde{e},\ddot{U},\cdot\Box B

,Ü,½□ADirectDraw ,ì'S%æ—Ê•Ž!fAvfŠfP□[fVf‡f"Žg—pŽž,ìf,fj f^,ìfŠftf\mathbb{C}fbfVf... f\mathbb{C}□[fg,\delta\cdot\Box X,\cdot,é,\pm,Æ,\tilde{a},\hat{A},\ll,\ddot{U},\cdot\Box B,\pm,)\cdot\Box X,Í□A"Á'è,ìfAvfŠfP□[fVf‡f",\hat{A}ffBfXfvf\mathbb{C}fC,ÉŠÖ,\cdot,é-â'è,^a\Box\mathbb{I},\mu,\hat{A},¢
,\hat{A}\Box A,\gg,ìfAvfŠfP□[fVf‡f",^a-^3\mathbb{C}\emptyset,ÉfŠftf\mathbb{C}fbfVf... f\mathbb{C}□[fg,\delta\Box\mathbb{Y}'\tilde{e},\mu,\hat{A},¢,é,ÆŽv,í,\tilde{e},é\Box^3"-,\tilde{E}—□—
R,^a,\cdot,é□ê□‡,É,\frac{3}{4},\Box s,\hat{A},\tilde{A},,\frac{3}{4},^3,¢□B

► $fŠftf\mathbb{C}fbfVf... f\mathbb{C}□[fg,\delta\cdot\Box X,\cdot,é,É,Í$

1. [.,»,ê,Ä,â-â'è,^a%ð\mathbb{C}^,\mu,É,¢□ê□‡] f^fu,\hat{A}\Box A[□\tilde{a}□',\ll] ,ðfNfŠfbfN,\mu,\ddot{U},\cdot\Box B
2. [DirectDraw $fŠftf\mathbb{C}fbfVf... f\mathbb{C}□[fg,ì□\tilde{a}□',\ll] f_fCfAf□fO f\{fbfNfX,\hat{A}fGffBfbfg$
 $f\{fbfNfX,\delta'\delta,\mu\Box Af,fj f^,É'\hat{1},\mu,\tilde{A}-L\mathbb{C}\emptyset,ÉfŠftf\mathbb{C}fbfVf... f\mathbb{C}□[fg,\delta"ü-Í,\mu,\ddot{U},\cdot\Box B,\pm,ìf\{fbfNfX,É'\delta"ü-$
 $Í,\cdot,é,Æ\Box A[□\tilde{a}□',\ll']$,^aŽ©"®"l,ÉfIf",É,É,è,\ddot{U},\cdot\Box B
3. [OK] ,ðfNfŠfbfN,\mu,\ddot{U},\cdot\Box B

► $fŠftf\mathbb{C}fbfVf... f\mathbb{C}□[fg,ì\cdot\Box X,\delta\tilde{Z}\tilde{a},\tilde{e}\Box\hat{A},\mu,\tilde{A}\Box ADirectDraw$
 $fAfvfŠfP□[fVf‡f",^a\tilde{A}\tilde{Z}\tilde{e},ìfŠftf\mathbb{C}fbfVf... f\mathbb{C}□[fg,\delta\Box\mathbb{Y}'\tilde{e},\hat{A},\ll,é,\tilde{a},\alpha,É,\cdot,é,É,Í$

1. [.,»,ê,Ä,â-â'è,^a%ð\mathbb{C}^,\mu,É,¢□ê□‡] f^fu,\hat{A}\Box A[□\tilde{a}□',\ll] ,ðfNfŠfbfN,\mu,\ddot{U},\cdot\Box B
2. [DirectDraw $fŠftf\mathbb{C}fbfVf... f\mathbb{C}□[fg,ì□\tilde{a}□',\ll] f_fCfAf□fO f\{fbfNfX,\hat{A}\Box A[\tilde{S}\tilde{u}'\tilde{e}'\mathbb{I}]$,ðfIf",É,\mu,\ddot{U},\cdot\Box B
3. [OK] ,ðfNfŠfbfN,\mu,\ddot{U},\cdot\Box B

fhf%oCfo,ð•œƎ³,·,é

□\□¬,É,æ,Á,Ä,Í□A DirectX® □f'fc□[f<,Á□A`È`O,lfI□[ffBfI fhf%oCfo,;æ,ÑfrffI
fhf%oCfo,ð•œƎ³,Á,«,Ü,·□Bfhf%oCfo,ì"ñŒÝŠ·□«,ì-â`è,ì%oðƎ^,É,Í□A,±,ê,^a□Ä,à,æ,¢•û-@,Ä, ,é□ê□‡,^a, ,è,Ü,·□B
[,»,ê,Ä,à-â`è,^a%oðƎ^,μ,È,¢□ê□‡] f^fu,É [•œƎ³] f{f^f",^a•\Ž!,³ê,Ä,¢,é□ê□‡,Í□A,±,lf{f^f",ðfNfŠfbfN,μ□ADirectX
fZfbfgfAfbfv fvf□fOf%of€,ðŽÀ□s,Ä,«,Ü,·□B

DirectX fZfbfgfAfbfv,É,Í□A[fI□[ffBfI fhf%oCfo,ì•œƎ³] ,Æ [ffBfXfvfƎfC fhf%oCfo,ì•œƎ³]
f{f^f",^a, ,è,Ü,·□B,¢,,è,©,lf{f^f",ðfNfŠfbfN,·,é,Æ□AfVfXfef€,É DirectX
,ðfCf"fXfg□[f<,μ,½,Æ,«,É'u,«Š·,!,ç,ê,½fhf%oCfo,^a•œƎ³,³ê,Ü,·□Bf{f^f",^aŽg—p%oÂ"\
,Ä,È,¢□ê□‡,Í□A•œƎ³,·,éfhf%oCfo,Í, ,è,Ü,¹ñ□B,»,ì□ê□‡,Í□Afn□[fhfEfFfA,ì□»'¢Ǝ³,É-
â,¢□‡,í,¹,Ä□Ä□V,lfhf%oCfo,ð"üŽè,μ,Ä,,¾,³,¢□B

DirectX fZfbfgfAfbfv,É,Í□ADirect3D fn□[fhfEfFfA fAfNfZf%oƎ□|f^,ð-
³Ǝø,É,·,éf`fFfbfNf{fbfNfX,à, ,è,Ü,·,^a□A ,±,ê,Í□ADxDiag "à,Ä,à□s,σ,±,Æ,^a,Ä,«,Ü,· (Šù`è,ì"©□i,ð•i□X,·,é
,ðŽQ□Æ,μ,Ä,,¾,³,¢)□B

□î•ñ,ð•Ô•¶,·,é

DirectX □fffc□[f<,ªŽû□W,μ,½□î•ñ,ð•Ô•¶,·,é,É,Í□A2 ,Â,}•û-@,ª, ,è,Û,·□B

· [□î•ñ,ð,·,x,Ä•Ô•¶] ,ðfNfŠfbfN,μ,Û,·□B,·,x,Ä,}fy□[fW,}□î•ñ,ª□AZw'è,μ,½□ê□Š,É, ,éŽw'è,μ,½-
¼'O,}ftf@fCf<,É•Ô•¶,³,è,Û,·□B

,±,}fc□[f<,}ŠJ"ŽÒÆü,¯fŠfŠ□[fX,ðŽg,Á,Ä,¢,é f\ftfgfEfFAŠJ"ŽÒ,Â, ,è,Î□AZÿ,}•û-@,ð,Æ,é,±,Æ,à,Â,«,Û,·□B

· [,»,è,Â,â-â'è,ª%ðÆ^,μ,È,¢□ê□‡] f^fu,Â□A[•ñ□□] ,ðfNfŠfbfN,μ,Û,·□B[□áŠQ•ñ□□,}□î•ñ] f_fCfAf□fO
f{fbfNfX,ª•Ž,³,è,Û,·□B•K—v,È,·,x,Ä,}ff□[f^,ð"ü—Í,μ□I,},½,ç□A['—□M]
,ðfNfŠfbfN,μ,Û,·□B^êŽžffBfÆfNfgfŠ (½,Æ,¡,Î□AC:Windows\Temp) ,É Dxinfo.txt ,Æ,¢,ª-¼'O,}fefLfXfg
ftf@fCf<,ª□ì□¬,³,è□Af□f, ' ,ÄŠJ,©,è,Û,·□B,±,}ftf@fCf<,É,Í□A'O,}•û-
@,ÄŽû□W,³,è,½□î•ñ,}ì,Û,©,É□Af_fCfAf□fO f{fbfNfX,Ä"ü—Í,μ,½ÆÂ□□î•ñ,â,»,}¼,}□î•ñ,ªŠÛ,Û,è,Û,·□B

-â'è,ð•ñ□□,·,é

DirectX,ìfRf"fl□[flf"fg,Ü,½,Ífhf%fcfo,ÉŠÖŒW,^a,,é,ÆŽv,í,ê,é-â'è,^a□¶,μ,½□ê□‡,Í□Af})fCfNf□f\ftfg
fefNfjJf<fTf|□[fg,É~A—□,·,é,±,Æ,^aÄ,«,Ü,·□BfefNfjJf<fTf|□[fg,Ö,İ~A—□,İ•û-@,É,Ä,¢,Ä,Í□AMicrosoft®
Windows®fwf<fv,ì□ufgf%fu<fVf...□[fefBf"fO□v,ðŽQ□Æ,μ,Ä,,¾,³,¢□BSJ"-
ŽÖŒü,¬fŠfŠ□[fX,ì□fffc□[f<,ðŽg,Ä,Ä,¢,éf\ftfgfEfFAŠJ"ŽÖ,Ä,,ê,î□A"dŽqf□□[f<,Ä-â'è,ð•ñ□□,·,é,±
,Æ,à,Ä,«,Ü,·□B

'□ : ŽŸ,ìŽè□‡,Í□A,±,ìfc□[f<,İŠJ"ŽÖŒü,¬fŠfŠ□[fX,É,İ,Ÿ"K—p,³ê,Ü,·□B,±,İ•û-
@,Í□A,·,x,Ä,ìf†□[fU□[^aŽg,ì,é,í,¬,Ä,Í,,è,Ü,¹,ñ□B

► “dŽqf□□[f<,Ä-â'è,ð•ñ□□,·,é,É,Í

1. [,»,ê,Ä,à-â'è,^a‰ðŒ[^],μ,È,¢□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□¬,³ê,½fefLfxfgftf@fCf<,ìftf<fpfX,Æ“dŽqf□□[f<
fAfhfŒfX,ðŽ!,·f□fbfZ□[fW,^aŽ!,³ê,Ü,·□B“dŽqf□□[f<fAfhfŒfX,ð□',«,Ä,¬,Ä,¬,«,Ü,·□B[OK]
,ðfNfŠfbfN,μ,Ü,·□Bf□f,' ,^a«N“@,³ê□ADxinfo.txt ,ì“à—e,^aŽ!,³ê,Ü,·□B
4. f□f,' ,ì [•Ö□W] f□fjf...□[ì [,·,x,Ä'ì'ð] ,ðfNfŠfbfN,μ□A[•Ö□W] f□fjf...□[ì [fRfs□□
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