

*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

Microsoft® DirectX®

- DirectX
- -â'è.ìĈ^ô.đ"Á'è. .é
- DirectX fRf"f|"[f|f"fg.ìefXfg.đ□s,□
- Šù'è.]"@□ì.đ•ì□X. .é
- fhf%oCfo.đ•œĈ³. .é
- □î•ñ.đ•Ů'ŋ. .é
- -â'è.đ•ñ□□. .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,É,¢,©Šm"F,μ,Ä,,¾,¾,¾,¢□Bfx□[f^ ftf@fCf<,í□%Šú,ìfefXfg— pfo□[fWf‡f",Ä□A□□—p fAfvfŠfP□[fVf‡f",Æ<α,ÉfCf"fXfg□[f<,·,x,«,à,ì,Ä,í, ,è,Ü,¹,ñ□BfffofbfO 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□BfffofbfO fo□[fWf‡f",ìfRf"f|□[f|f"f g,a fCf"fXfg□[f<,¾,è,Ä,¢ ,é,Æ□A□»·i"Ä,a fCf"fXfg□[f<,¾,è,Ä,¢,é□ê□‡,æ,è,à fAfvfŠfP□[fVf‡f",ìŽÀ□s'—"x,a"â•□,É'á%°,·,é,±,Æ,a ,è,Ü,·□B
- "F'è,¾,è,Ä,¢,É,¢fhf%o fCfo□B[DirectX fhf%o fCfo] f^fu,ìftf@fCf<,ìê——,Ä□A-¢"F'è,ðŽ!,·f}□[fN,a"Ž!,¾,è,Ä,¢ ,éfhf%o fCfo,a,É,¢,©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%o fCfo,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,«,É,¢,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^,É,μ" ,Æ•Ž!,¾,è,Ä,¢,É,¢,©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,æ,¢,©,à,μ,è,Ü,¹,ñ□B
- fffo fCfX,a□Ú±,¾,è,Ä,¢,É,¢□BfWf‡fCfXfefBfbfN,È,Ç,ì"ü—íffo fCfX,a%ž"s,μ,È,¢□ê□‡□A□³,μ,- fZfbgfAfbfv,¾,è,Ä,¢,É,¢%Ä"□«,a ,è,Ü,·□B,»,ìffo fCfX,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,¢,É,¢□ê□‡,í□A fRf"f g f□□[f< f p f l f<,ðŽg,Á,Äffo fCfX,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"F,·,é□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•Ü'¶,µ,Ä,à□AfefXfg,ìŒ<‰Ê,Í•Ü'¶,³,ê,Ü,¹,ñ□B

Šù'è,ì"®ì,ð•ìX,·,é

$fVfXfefe\$,ÉfCf" fXfg\lceil f\langle,^3\hat{e},\tilde{A},\pounds,\acute{e}\acute{S}efffBfXfvf\in fC\ fffo fCfX,\acute{E}\acute{I},\cdot,\acute{e}\lceil fffBfXfvf\in fC\rceil f_y\lceil fW,\tilde{A}\lceil^{-3}\in\emptyset\rceil$
,ðfNfŠfbfN,·,é,ÆADirectDraw,Ü,½,Í Direct3D (—~—p%Å",Éêê±) ,ìfn\lceil fhfEfFA fAfNfZf% f\in\lceil f^,\delta-
^3\in\emptyset,\acute{E},\cdot,\acute{e},\pm,\pounds,\tilde{A},\ll,\ddot{U},\cdot\Box^{-3}\in\emptyset,\acute{E},\mu,\frac{1}{2}fAfNfZf% f\in\lceil f^,\acute{I}\ DirectX\ \lceil f'fc\lceil\lceil f\langle,\delta\lceil—
^1,\mu,\frac{1}{2}\in\tilde{a},\grave{a},\gg,\grave{I},\ddot{U},\ddot{U},\tilde{A}\Box AfAvfŠfP\lceil fVf\ddagger f",\textcircled{C},\zeta\text{---}p,\cdot,\acute{e},\pm,\pounds,\acute{E},\acute{I},\tilde{A},\ll,\ddot{U},^1,\tilde{n}\Box BfAfNfZf% f\in\lceil f^,\delta,\grave{a},\sigma^{\wedge}\acute{e}"x—
L\in\emptyset,\acute{E},\cdot,\acute{e},\acute{E},\acute{I}\Box A\lceil—L\in\emptyset\rceil fNfŠfbfN,\mu,\ddot{U},\cdot\Box B

'\Box : DirectDraw fAfNfZf% f\in\lceil f^,\delta-^3\in\emptyset,\acute{E},\cdot,\acute{e},\pounds ADirect3D ,ìfAfNfZf% f\in\lceil f^,\grave{a}-^3\in\emptyset,\acute{E},\acute{E},\grave{e},\ddot{U},\cdot\Box B

,Ü,½ADirectDraw ,ì'S%æ-Ê•Ž!fAvfŠfP\lceil fVf\ddagger f"Žg—pŽž,ìf,fj f^,ìfŠftf\in fbfVf... f\in\lceil fg,\delta\lceil X,·,é,\pm
,\pounds,\grave{a},\tilde{A},\ll,\ddot{U},\cdot\Box B,\pm,\grave{I}\lceil X,\acute{I}\Box A"Á'è,ìfAvfŠfP\lceil fVf\ddagger f",\tilde{A}ffBfXfvf\in fC,\acute{E}\acute{S}\acute{O},\cdot,\acute{e}-\grave{a}'è,\text{a}^\text{a}\lceil\lceil,\mu,\tilde{A},\pounds
,\tilde{A}\Box A,\gg,\grave{I}fAvfŠfP\lceil fVf\ddagger f",\text{a}-^3\in\emptyset,\acute{E}\acute{S}ftf\in fbfVf... f\in\lceil fg,\delta\lceil Y'è,\mu,\tilde{A},\pounds,\acute{e},\pounds\acute{Z}\acute{v},\acute{I},\hat{e},\acute{e}\lceil^3\text{---},\acute{E}—\Box—
R,\text{a},\cdot,\acute{e}\lceil\hat{e}\lceil\ddagger,\acute{E},\frac{3}{4},\text{---}\Box s,\tilde{A},\tilde{A},,\frac{3}{4},^3,\pounds\Box B

► $f\acute{S}ftf\in fbfVf... f\in\lceil fg,\delta\lceil X,·,é,\acute{E},\acute{I}$

1. [.,»,è,\tilde{A},\grave{a}-\grave{a}'è,\text{a}^\text{a}\delta\in^{\wedge},\mu,\acute{E},\pounds\lceil\hat{e}\lceil\ddagger] f^fu,\tilde{A}\Box A[\lceil\tilde{a}\lceil',\ll] ,ðfNfŠfbfN,\mu,\ddot{U},\cdot\Box B
2. [DirectDraw fŠftf\in fbfVf... f\in\lceil fg,\grave{I}\lceil\tilde{a}\lceil',\ll] f_CfAf\lceil fO f\{fbfNfX,\tilde{A}fGffBfbfg
f\{fbfNfX,\delta\lceil^1\delta,\mu\Box Af,fj f^,\acute{E}\acute{I},\mu,\tilde{A}—L\in\emptyset,\acute{E}\acute{S}ftf\in fbfVf... f\in\lceil fg,\delta\lceil ü—\acute{I},\mu,\ddot{U},\cdot\Box B,\pm,\grave{I}f\{fbfNfX,\acute{E}\acute{I},\delta\lceil ü—
\acute{I},\cdot,\acute{e},\pounds\Box A[\lceil\tilde{a}\lceil',\ll'] ,\text{a}^{\acute{Z}}\textcircled{\text{a}}\lceil,\acute{E}f\lceil f",\acute{E},\acute{E},\grave{e},\ddot{U},\cdot\Box B
3. [OK] ,ðfNfŠfbfN,\mu,\ddot{U},\cdot\Box B

► $f\acute{S}ftf\in fbfVf... f\in\lceil fg,\grave{I}\lceil X,\delta\acute{Z}\acute{a},\grave{e}\Box \acute{A},\mu,\tilde{A}\Box ADirectDraw$
 $fAfvfŠfP\lceil fVf\ddagger f",\text{a}^\text{a}\pounds\textcircled{\text{a}},\grave{I}f\acute{S}ftf\in fbfVf... f\in\lceil fg,\delta\lceil Y'è,\tilde{A},\ll,\acute{e},\pounds,\pounds,\acute{E},\cdot,\acute{e},\acute{E},\acute{I}$

1. [.,»,è,\tilde{A},\grave{a}-\grave{a}'è,\text{a}^\text{a}\delta\in^{\wedge},\mu,\acute{E},\pounds\lceil\hat{e}\lceil\ddagger] f^fu,\tilde{A}\Box A[\lceil\tilde{a}\lceil',\ll] ,ðfNfŠfbfN,\mu,\ddot{U},\cdot\Box B
2. [DirectDraw fŠftf\in fbfVf... f\in\lceil fg,\grave{I}\lceil\tilde{a}\lceil',\ll] f_CfAf\lceil fO f\{fbfNfX,\tilde{A}\Box A[\acute{S}\grave{u}'\grave{e}'\acute{I}] ,ðf\lceil f",\acute{E},\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,¹/₂,Æ,«,É'u,«Š·,!,ç,ê,¹/₂fhf%oCfo,^a•œƎ³,³ê,Ü,·□Bf{f^f",^aŽg—p%oÂ"\
,Ä,É,¢□ê□‡,Í□A•œƎ³,·,éfhf%oCfo,Í, ,è,Ü,¹,ñ□B,»,ì□ê□‡,Í□Afn□[fhfEfFfA,ì□»'¢Ǝ³,É-
â,¢□‡,í,¹,Ä□Ä□V,lfhf%oCfo,ð"üŽè,μ,Ä,,³/₄,³,¢□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,,³/₄,³,¢)□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,¢,éf\ftfgfEfFfAŠJ"ŽÒ,Â, ,è,}□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,},}□AC:Windows\Temp) ,É Dxinfo.txt ,Æ,¢,ª-¼'O,}fefLfXfg
ftf@fCf<,ª□ì□¬,³,è□Af□f, ' ,ĂŠJ,©,è,Û,·□B,±,}ftf@fCf<,É,Í□A'O,}•û-
@,ĂŽû□W,³,è,½□î•ñ,}ì,Û,©,É□Af_fCfAf□fO f{fbfNfX,Ă"ü—Í,μ,½ÆÂ□I□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□□
,ðfNfŠfbfN,μ,Ü,·□Bftf@fCf<,ì,·,x,Ä,ì“à—e,^afNfŠfbfvf{□[fh,É“ü,ê,ç,ê,Ü,·□B
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