==
T H E " U N - O F F I C I A L"
PLAYSTATION DEVELOPMENT FAQ

LIBGTE
CONFERENCE
==

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[1.] Library GTE (LIBGTE)

[1.1.]: What function can set FogNear and FogFar at the same time?

SetFogNearFar() can.

We have Japanese document only.

```
<begin Japanese>
_$BL>>N_(J
        SetFogNearFar   _$B%U%)%0%Q%i%a!<%?$r@_Dj$9$k_(J
_$B7A<0_(J
        void SetFogNearFar(a,b,h)
        long    a.b,h;
_$B2r@b_(J
        _$B;kE@$H%9%/%j!<%s$N5wN%$,_(Jh_$B$N$H$-!"_(J
        _$B%U%)%0#0!s$H$J$k#ZCM$r_(J a _$B$K@_Dj$9$k!#_(J
        _$B%U%)%0#1#0#0!s$H$J$k#ZCM$r_(J b _$B$K@_Dj$9$k!#_(J
        0<a,b<65536
        (b-a)>=100
        <_$B0z?t%U%)!<%^%C%H_(J>
        a : (0,32,0)
        b : (0,32,0)
        h : (0,32,0)
_$BJV$jCM_(J
        _$B$J$7_(J
<end Japanese>
```

[1.2.]: Which is a faster divider to use CPU or to use GTE?

It is faster to use CPU divider because of the overhead of register settings of GTE.

[1.3.]: How does GTE calculate 'p' (depth queue parameters)

```
p = DQB + DQA*(h/sz)
```

```
h:     projection.
sz:    z value in the screen coordinate.
DQB,DQA: set by SetFog*() functions
```

[1.4.]: Which is faster for 32bitx32bit or 32bitx16bit multiplier.

ApplyMatrixLV() is a 16bitx32bit multiplier useing GTE. No samples for 32bitx32bit multiplier using GTE.

Generally GTE is faster for matrix or vector calculation, and CPU is faster for the other case such as sigle 32bitx16bit multiplier.

[1.5.]: Which is faster for 64bitx64bit multiplier.

CPU is faster.

[1.6.]: Is there any functions for anti-aliasing ? (by Acclaim)

We can make anti-aliasing functions. please tell me the specifications.

1) Anti-aliasing for the edge of each polygon ?
2) Anti-aliasing for texture pattern?
3) Or do you want a simple LPF (Low Pass Filter) function?
4) What is the texture resolution (4bit/8bit/16bit)?

[1.7.]: When we can use new in-line GTE functions.

In-line GTE functions are built-in type libgte functions.These functions is fast because no stack access or PC (program counter) change is required when they are called.

Our in-line GTE functions are different from conventional c++ inline functions. The conventional in-line functions needs source code of the functions. but ours does not needs them. The linker attatched the in-line functions in object code level. Therefore what you need is the new linker and *.obj code in libgte.

This in-line functions are working in R&D level on some UNIX (especially Sony NEWS-OS) environment, then now we are coverting to the PC environment which everyone uses.

So it takes for a month or so. we are trying to release the first sample in 7/E.

[1.8.]: Which is faster to use in-line RotTransPers or MESH ?

It depends on the case.

[1.9.]: The syntax of the MESH functions?

*_$B#1#7!%_(JMesh functions
**17.1.
NAME
        RotMeshPrimS_F3
        RotMeshPrimS_G3
        RotMeshPrimS_FC3
        RotMeshPrimS_GC3
        RotMeshPrimS_FT3
        RotMeshPrimS_GT3
        RotMeshPrimS_FCT3
        RotMeshPrimS_GCT3
        RotMeshPrimS_T3

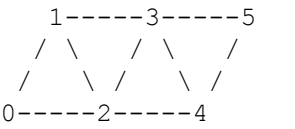
FORMAT

```
        RotMeshPrimS_F3(msh,prim,ot,otlen,dpq,backc)
        RotMeshPrimS_G3(msh,prim,ot,otlen,dpq,backc)
        RotMeshPrimS_FC3(msh,prim,ot,otlen,dpq,backc)
        RotMeshPrimS_GC3(msh,prim,ot,otlen,dpq,backc)
        RotMeshPrimS_FT3(msh,prim,ot,otlen,dpq,backc)
        RotMeshPrimS_GT3(msh,prim,ot,otlen,dpq,backc)
        RotMeshPrimS_FCT3(msh,prim,ot,otlen,dpq,backc)
        RotMeshPrimS_GCT3(msh,prim,ot,otlen,dpq,backc)
        RotMeshPrimS_T3(msh,prim,ot,otlen,dpq,backc)

        TMESH *msh;     /*pointer to TMESH data*/
        POLY_?3 *prim;  /*pointer to GPU packet*/
        u_long *ot;     /*pointer to ordering table*/
        u_long otlen;   /*length of ordering table*/
        long dpq;       /*depth quing ON/OFF(dpq=0:OFF,1:ON)*/
        long backc;     /*backface clip ON/OFF(backc=0:ON,1:OFF)*/
```

EXPALNATION

Rotation,Transposition,Perspective & Link to OT of strip type mesh data(smesh) s.t.



There is 9 drawing modes.

```
        Flat                        ...F
        Gouraud                     ...G
        FlatColor             ...FC
        GouraudColor                ...GC
        FlatTexture                 ...FT
        GouraudTexture              ...GT
        FlatColorTexture            ...FCT
        GouraudColorTexture         ...GCT
        texture                     ...T
```

Flat_$B!'_(JFlat Shading by one of vertex color_$B!J_(Jlighting ON_$B!K_(J

Gouraud_$B!'_(JGouraud Shading by vertex colors_$B!J_(Jlighting ON_$B!K_(J

Flat Color_$B!'_(JFlat rendering by one of vertex color_$B!J_(JLighting OFF_$B!K_(J

Gouraud Color_$B!'_(JSmooth rendering by vertex colors_$B!J_(JLighting OFF_$B!K_(J

Flat Texture_$B!'_(JTexture mapping & Flat Shading_$B!J_(Jlighting ON_$B!K_(J

Gouraud Texture_$B!'_(JTexture mapping & Gouraud Shading_$B!J_(Jlighting ON_$B!K_(J

Flat Color Texture_$B!'_(JTexture mapping & Flat rendering_$B!J_(Jlighting OFF_$B!K_(J

Gouraud Color Texture_$B!'_(JTexture mapping & Gouraud rendering(lighting OFF)
Texture_$B!'_(JTexture mapping_$B!J_(Jlighting OFF_$B!K_(J

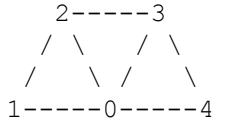
NOTE
In case of FT,GT,FCT,GCT and T texture address should be preset in GPU packet.
FCT and GCT don't have depth quing option.

RETURN VALUE
NONE

**17.2.
NAME
RotMeshPrimR_F3
RotMeshPrimR_G3
RotMeshPrimR_FC3
RotMeshPrimR_GC3
RotMeshPrimR_FT3
RotMeshPrimR_GT3
RotMeshPrimR_FCT3
RotMeshPrimR_GCT3
RotMeshPrimR_T3
FORMAT
RotMeshPrimR_F3(msh,prim,ot,otlen,dpq,backc)
RotMeshPrimR_G3(msh,prim,ot,otlen,dpq,backc)
RotMeshPrimR_FC3(msh,prim,ot,otlen,dpq,backc)
RotMeshPrimR_GC3(msh,prim,ot,otlen,dpq,backc)
RotMeshPrimR_FT3(msh,prim,ot,otlen,dpq,backc)
RotMeshPrimR_GT3(msh,prim,ot,otlen,dpq,backc)
RotMeshPrimR_FCT3(msh,prim,ot,otlen,dpq,backc)
RotMeshPrimR_GCT3(msh,prim,ot,otlen,dpq,backc)
RotMeshPrimR_T3(msh,prim,ot,otlen,dpq,backc)

```
TMESH *msh;     /*pointer to TMESH data*/
POLY_?3 *prim;  /*pointer to GPU packet*/
u_long *ot;     /*pointer to ordering table*/
u_long otlen;   /*length of ordering table*/
long dpq;       /*depth quing ON/OFF(dpq=0:OFF,1:ON)*/
long backc;     /*backface clip ON/OFF(backc=0:ON,1:OFF)*/
```

EXPLANATION
Rotation,Transposition,Perspective & Link to OT of round type mesh data(rmesh) s.t.



There is 9 drawing modes.

```
        Flat                        ...F
        Gouraud                     ...G
        FlatColor             ...FC
        GouraudColor                ...GC
        FlatTexture                 ...FT
        GouraudTexture              ...GT
        FlatColorTexture            ...FCT
        GouraudColorTexture         ...GCT
        texture                     ...T

        Flat_$B!'_(JFlat Shading by one of vertex color_$B!J_(Jlighting
ON_$B!K_(J
        Gouraud_$B!'_(JGouraud Shading by vertex colors_$B!J_(Jlighting
ON_$B!K_(J
        Flat Color_$B!'_(JFlat rendering by one of vertex
color_$B!J_(JLighting OFF_$B!K_(J
        Gouraud Color_$B!'_(JSmooth rendering by vertex
colors_$B!J_(JLighting OFF_$B!K_(J
        Flat Texture_$B!'_(JTexture mapping & Flat
Shading_$B!J_(Jlighting ON_$B!K_(J
        Gouraud Texture_$B!'_(JTexture mapping & Gouraud
Shading_$B!J_(Jlighting ON_$B!K_(J
        Flat Color Texture_$B!'_(JTexture mapping & Flat
rendering_$B!J_(Jlighting OFF_$B!K_(J
        Gouraud Color Texture_$B!'_(JTexture mapping & Gouraud
rendering(lighting OFF)
        Texture_$B!'_(JTexture mapping_$B!J_(Jlighting OFF_$B!K_(J

NOTE
      In case of FT,GT,FCT,GCT and T texture address should be
      preset in GPU packet.
             FCT and GCT don't have depth quing option.

RETURN VALUE
        NONE

**17.3.
NAME
        RotMeshPrimQ_T
FORMAT
        RotMeshPrimQ_T(msh,prim,ot,otlen,dpq,backc,SCLIP,line_sxy)

        QMERH *msh;              /*pointer to QMESH data*/
        POLY_FT4 *prim;         /*pointer to GPU packet*/
        u_long *ot;                    /*pointer to ordering table*/
        u_long otlen;               /*length of ordering table*/
        long dpq;                    /*depth quing
ON/OFF(dpq=0:OFF,1:ON)*/
        long backc;                /*backface clip
ON/OFF(backc=0:ON,1:OFF)*/
        SCLIP *SCLIP;           /*screen clipping area*/
        LINE_BUF *line_sxy      /*1 line buffer for internal
calculation*/
_$B2r@b_(J
```

```
      Rotation,Transposition,Perspective, Link to OT and
      Screen Clipping by screen coordinates(X,Y,Z) of
      2 dimensional type mesh data(qmesh) s.t.

                1-----2-----3
                |     |     |
                |     |     |
                4-----5-----6
                |     |     |
                |     |     |
                7-----8-----9


      There is 1 drawing mode.

        Texture                       ...T

        Texture_$B!'_(JTexture mapping_$B!J_(Jlighting OFF_$B!K_(J


NOTE
      Vertex number of H direction should be multiple of 3.(msh-
>lenh=3*n)
      In case of FT,GT,FCT,GCT and T texture address should be
      preset in GPU packet

      This function uses following structures.
      More than 1H+3vertices(msh->lenh+3) line buffer is necessary.
      Scratchpad as line buffer will speed up the calculation.

        typedef struct {
                long    sminX;
                long    smaxX;
                long    sminY;
                long    smaxY;
                long    sminZ;
                long    smaxZ;
        } SCLIP;

        typedef struct {
                long    sxy;
                long    code;
        } LINE_BUF;

RETURN VALUE
         NONE
```

[1.10.]: Is it possible to perform coordinate conversion and transparent perspective conversion separately in libgte?

The RotTrans() function performs coordinate conversion only. However, transparent perspective conversion can not be performed singly because of the hardware specification.

[1.11.]: How can a matrix be rotated in order of Z-, X-, and Y-axis in libgte?

Use the RotMatrixYXZ() function instead of RotMatrix().

[1.12.]: Is the screen coordinate value obtained by the RotTransPers() function returned with the offset added?

Yes. The screen coordinate is returned with the offset added.