STARTING PROGRAM

Main(Act.)

Viewer3D.Run()

RenderProcess.Run()

Construct Simulator( for Act.)

Construct Viewer3D( for Sim.)

Construct RenderProcess()

Viewer3D.Configure()

Construct LoaderProcess()

Construct UpdaterProcess()

RenderProcess

( XNA Game Class )

LoaderProcess

UpaterProcess

STARTING

3D GRAPHICS

SYSTEM

RenderProcess.Initialize()

Viewer3D.Load()

TerrainDrawer.Load()

SceneryDrawerLoad()

TrainDrawerLoad()

RenderProcess.Draw()

LoaderProcess.Run()

UpdaterProcess.Run()

UserInput.Update()

UpdaterProcess.Update()

RenderFrame

Simulator.Update()

- physics

- ai

- signals

Viewer3D.Handle UserInput()

- camera

- player loco

- game control

Viewer3D.PrepareFrame()

- camera

- sky

- terrain

- scenery

- trains

- info

RenderFrame

RenderProcess.Draw()

Draws Nothing

Must wait for the renderframe data before it can begin to draw.

FRAME 1

FRAME 2

Viewer3D.LoaderPrep()

- terrain

- scenery

- trains

Camera and Train Locations

UpdaterProcess.Update()

RenderFrame

Improving Load Time

TerrainDrawer.Load() could benefit from additional multiprocessing. It is CPU limited (vs Disk limited ) and it shouldn’t be too hard to split the loading task off into multiple processor threads, one for each tile.

Viewer3D.Initialize()

Viewer3D.LoadPrep()

Materials.Initialize()

Sets Time – RealTime and ClockTime

RenderProcess.Draw()

Simulator.Update()

- physics

- ai

- signals

Viewer3D.Handle UserInput()

- camera

- player loco

- game control

Viewer3D.PrepareFrame()

- camera

- sky

- terrain

- scenery

- trains

- info

RenderFrame.Draw()

For each Primitive …

Material.Render()

RenderPrimitive.Draw()

Material.Render()

RenderPrimitive.Draw()

Material.Render()

RenderPrimitive.Draw()

Material.Render()

RenderPrimitive.Draw()

Material.Render()

RenderPrimitive.Draw()

Material.Render()

RenderPrimitive.Draw()

Material.Render()

RenderPrimitive.Draw()

Material.Render()

RenderPrimitive.Draw()

.

.

.

Viewer3D.LoaderPrep()

- terrain

- scenery

- trains

Camera and Train Locations

Shape File Additions/Deletions

Viewer3D.Load()

- TerrainDrawerLoad()

- SceneryDrawerLoad()

- TrainDrawerLoad()

RenderFrame

List of primitives

HandleUserInput only runs when RenderProcess signals new input is ready.

LoaderPrep runs every 100 mS or when data is available

100 mS

RenderFrame

HandleUserInput runs every 30 ms

RenderProcess.Draw()

UserInput.Update()

UpdaterProcess.Update()

Normally UpdaterProcess will be waiting for RenderProcess.

REPEATS EACH FRAME