

**REFINEMENT** *gpuSchedulerRef*

**REFINES** *gpuSchedulermain*

**INCLUDES**

*gpuScheduler*

**DEFINITIONS**

*SET\_PREF\_SHOW\_EVENTB\_ANY\_VALUES* == **TRUE** ;

*SET\_PREF\_MAX\_OPERATIONS* == 40 ;

*SET\_PREF\_MAXINT* == 100 ;

**VARIABLES**

*Ready*

**INVARIANT**

$Ready \subseteq Process \wedge$

$\mathbf{dom}(running) \cap Ready = \emptyset \wedge$

$(\exists gpu . (gpu \in Gpu \wedge Gpu\_size(gpu) > 0) \Rightarrow Ready = \emptyset)$

**INITIALISATION**

*Ready* :=  $\emptyset$

**OPERATIONS**

**purge** =

**ANY** *pp* **WHERE**

$pp \in Process - (\mathbf{dom}(running) \cup Ready)$

**THEN**

**Process\_Free**(*pp*)

**END** ;

**enqueue** =

**ANY** *pp,ss* **WHERE**

$pp : (PROCESS - Process) \wedge ss \in Server$

**THEN**

**Process\_NEW**(*pp*) ;

**Server\_AddPocesses**(*ss,pp*)

**END** ;

**ready** =

**ANY** *pp* **WHERE**

$pp \in Process - (\mathbf{dom}(running) \cup Ready)$

**THEN**

**IF**  $\exists gpu . (gpu \in Gpu \wedge Gpu\_size(gpu) > 0)$  **THEN**

**ANY** *gg* **WHERE**  $gg \in Gpu \wedge Gpu\_size(gg) > 0$  **THEN**

**Process\_SetGpu**(*pp,gg*) ;

**Gpu\_SetSize**(*gg, Gpu\_size(gg) - 1*)

**END**

**ELSE**

*Ready* :=  $Ready \cup \{pp\}$

**END**

**END** ;

```

swap =
  ANY pp, gp WHERE
    pp ∈ dom(running) ∧ gp ∈ Gpu ∧ gp = running(pp)
    ∧ Gpu_size(gp) < MAXINT
  THEN
    Process_UnsetGpu(pp) ;
    IF Ready ≠ ∅ THEN
      ANY gg WHERE
        gg ∈ Ready
      THEN
        Ready := Ready - {gg} ||
        Process_SetGpu(gg, gp)
      END
    ELSE
      Gpu_SetSize(gp, Gpu_size(gp) + 1)
    END
  END
END

```