**Activity 3 & 4**

**Q1. Assuming a 2 KB page size, what are the page numbers and offsets for the following address references (provided as decimal numbers):**

1. **2975**

Page number = 2975/(2\*1024) = 1

Page offset = 2975 mod 2048 = 927

1. **29366**

Page number = 29366/(2\*1024) = 14

Page offset = 29366 mod 2048 = 694

1. **30000**

Page number = 30000/(2\*1024) = 14

Page offset = 30000 mod 2048 = 1328

1. **256**

Page number = 256/(2\*1024) = 0

Page offset = 256 mod 2048 = 256

1. **16385**

Page number = 16385/(2\*1024) = 8

Page offset = 16385 mod 2048 = 1

**Q2. Consider a paging system with the page table stored in memory.**

1. **If a memory reference takes 200 nanoseconds, how long does a paged memory reference take?**

200\*2 = 400

1. **If we add associative registers, and 75 percent of all page-table references are found in the associative registers, what is the effective memory reference time? (Assume that finding a page-table entry in the associative registers takes 20ns if the entry is there.)**

Effective memory reference time = 0.75\*(200+20) + 0.25\*(400+20) = 270

**Q3. Consider a machine with 64 MB physical memory and 34 bit virtual address space. If the page size is 4KB, Find  
  
a)     No. of pages in page table**

No. of pages = 234/ (4\*1024) = 222

**b)    No. of frames**

(64\*1024\*1024)/(4\*1024) = 214

**c)     Number of bits in physical address**

64\*1024\*1024 = 67108864 bytes = 226 = 26 bits