CSCI 315 Operating Systems Design
Activity 20

_____

Work with at least one partner in this activity. **Assume that all problems in this activity refer to the same computer system, which uses virtual memory.**

1) You learn that the system works with *16-bit long physical addresses* and 20-*bit long logical addresses*. Assuming that the system is configured to use page size of 1,024 bytes, determine:
   a) The amount of RAM installed in the system.
   b) The number of bits used for offset or displacement in a frame.
   c) The number of physical memory frames the system can address.
   d) The number of virtual memory pages the system can address.

2) For physical address `0x1064`, determine, **in base 10**, the number of the corresponding frame and the offset (or displacement) of the byte indicated within this frame.

3) For logical address `0x12187`, determine, **in base 10**, the number of the corresponding page and the offset of the byte indicated within this page.

4) Assume that one captures the following sequence of logical addresses referenced by a program that is actively running in the CPU: `0x12188, 0x1218c, 0x1218e, 0x123ff, 0x122c0,  0x12000`. Assuming that the system loads pages on demand, that this is the very first process to run and that it runs by itself in the system, determine the number of page faults generated by this sequence of addresses.