1. a) False

   b)

   Notes

   - **User Mode**
     - Is restricted
     - Executing code has no ability to *directly* access hardware or reference memory [1]
     - Crashes are always recoverable [1]
     - Is where most of the code on our computer / applications are executed [3]
   - **Kernel Mode**
     - Is previleged (non-restricted)
     - Executing code has complete and unrestricted access to the underlying hardware [3]
     - Is generally reserved for the lowest-level, most trusted functions of the operating system [1]
     - Is fatal to crash; it will halt the entire PC (i.e the blue screen of death) [3]
   - **Interrupt**
     - Are signals sent to the CPU by external devices, normally I/O devices. [2]
     - Tells the CPU to stop its current activities and execute the appropriate part of the operating system (**Interrupt Handler**). [2]
     - Has three different types [2]

       1) **Hardware Interupts**

          * Are generated by hardware devices to signal that they need some attention from the OS.
          * May be due to receiving some data

            Examples

            · Keystrokes on the keyboard
            · Receiving data on the ethernet card

          * May be due to completing a task which the operating system previous requested

            Examples

            Transfering data between the hard drive and memory

2) **Software Interupts**

   * Are generated by programs when a system call is requested

3) **Traps**

   * Are generated by the CPU itself
   * Indicate that some error or condition occured for which assistance from the operating system is needed

References

1) Coding Horror, Understanding User and Kernel Mode, link
2) Kansas State University, Basics of How Operating Systems Work, link