Assignment 02 - Comments

The average score is 74.6.

1. The width of general-purpose registers in a microprocessor, the width of system bus (data or address), and the size of main memory are different things, although they relate to each other. The width of address bus in a computer system is typically enough for the CPU to address a single location of main memory at one time, but this is not necessarily the case. When it is not, as most of you addressed, more than one bus cycle will be needed to provide a full-length address for access to main memory.

   In the real world, the width of address bus is usually used to know the maximum size of main memory, since the latter always falls behind.

2. Note that it is a condition in the first case only that each one-word I/O transfer requires the CPU to execute two instructions. For DMA I/O, no instruction execution is needed in the middle of the process.

   Some people mentioned that 106 instructions/second is unbelievably slow for a computer. Indeed, 106 should be 10^6 according to the errata of the textbook. It is fine to use either number though I use 106 in the following.

   a. $\frac{106 \times 5\%}{2} = 2.65$ word/second

   b. $106 \times (95\% \times 2 + 5\% \times 5) = 227.9$ word/second

3. You'd better use your **own** words to give a **brief** summary of the article.