CH. 1 Problems

Name:_________________________

1. What are the four general components of any computer?

CPU, Main Memory, Secondary Memory, Input/Output Devices

2. If a memory address is 32-bits long, how many of the following units is that?

(a) Bytes 1 byte = 8-bits, so 32-bits = 4 bytes

(b) Words 32-bits = 1 word

3. On Monday night, you decide to work on an essay and need to use Microsoft Word:

(a) With your laptop shutdown, where are the instructions for Microsoft Word stored?

Secondary Memory

(b) After powering on your laptop and while logging in, where are the instructions for Microsoft Word stored?

Secondary Memory

(c) After you double-click the icon to the right, where are instructions for executing the Microsoft Word program stored?

Main Memory

(d) An hour passes and you have amazingly written 5 of the required 6 pages for your assignment. Unfortunately, you didn’t realize the battery drained, causing an automatic shutdown of the computer and you hadn’t saved once! Your essay was located where and what happened to it? (Assume autosaved is also turned off)

Located in Main Memory, now it is lost because Main Memory requires constant power to keep stored values

4. Match the following items listed on the left to the computer component on the right (can be used more than once):

(a) Monitor   ii   (i) Input Device
(b) Keyboard and Mouse  i   (ii) Output Device
(c) RAM   iv   (iii) CPU
(d) Microphone  i   (iv) Main Memory
(e) Speakers  ii   (v) Secondary Memory
(f) DVD   v   (vi) Operating System
(g) SD card   v
(h) Intel x86 chip   iii
(i) Linux   vi
(j) Windows10 vi

5. (True / False) With your laptop shutdown, the Windows10 operating system is stored in Main Memory.

6. (a) What hardware device is the “brain” of the computer?

CPU

(b) What software program is “in charge” of all other programs and allocates resources?

Operating System
7. Convert the following binary number 0001 0101 to decimal.  
1 * 2^4 + 1 * 2^2 + 1 * 2^0 = 16 + 4 + 1 = 21 \text{_{10}}

8. Convert the following decimal number 202 to binary.  
202 = 11001010₂

9. Convert the following hexadecimal number 0x02F7 to decimal.  
2 * 16^2 + 15 * 16^1 + 7 * 16^0 = 759 \text{_{10}}

10. Convert the following hexadecimal number 0x2A to binary.  
A = 1010  
0x2A = 101010₂

11. Convert the following decimal number 768 to hexadecimal:  
768 = 0x300

12. Convert the following binary number 00101110011011 to hexadecimal.  
1011 = B  
0xB9B  
1001 = 9  
1011 = B

13. How are letters and symbols stored in memory? How much memory is used to store these values?  
**ASCII characters as 1 byte each**

14. Convert the following ASCII letters, symbols, or special characters into their associated hex values.

   (a) % 0x25  
   (b) K 0x6B  
   (c) 10 0x31 0x30  
   (d) USNA 0x55 0x53 0x4E 0x41

15. Convert the hex values into their associated ASCII letters, symbols or special characters.

   (a) 0x33 '3'  
   (b) 0x00 null  
   (c) 0x41 'A'  
   (d) 0x6D 0x69 0x64 0x6E 'm' 'i' 'd' 'n'