Read Etter Chapter 6. Then answer the following items.

1. Refer to the following variables for all parts of this problem #1:
   ```
   int a[] = {5, 10, 15, 20};
   int *p = a;
   ```
   a. (5 pts) Draw a memory diagram for these variables, but instead of showing a (memory address) value in the diagram for p, show an arrow that indicates where p is pointing (like the instructor does in lectures).

b. (5 pts) Show the values of each of the following expressions, or write ILLEGAL if the expression is not legal for these variables:
   i. *p __________
   ii. *(p + 2) __________
   iii. *p + 2 __________
   iv. *(a + 2) __________
   v. p - a __________

c. (10) Using p instead of a, and without using any index variable like i, write a loop structure that prints all four values of the array a. Hints: loop as long as p is less than a + 4, dereference p inside the loop, and increment p at the end of the loop.
2. Carefully read section 6.4 ("Pointers in Function References"). Then answer the following items in your own words. Diagrams allowed but not required.

a. (5 pts) Why is the function named switch1 incorrect?

b. (5 pts) Why does the function named switch2 correctly solve the problem?

3. Refer to the following variable for both parts of this problem #3:

char word[] = "fun";

a. (5 pts) Draw a memory diagram for this array, and be sure to show ALL of the array's contents.

b. (4 pts) Show the values of each of the following function calls:

i. strlen(word) __________

ii. strcmp(word, "fun") __________

iii. strcat(word, "ny") __________

iv. strstr(word, "r") __________

4. (5 pts) Explain dynamic memory allocation in terms of the following problem: a program must store n double values to process later, but the value of n will not be known until the program is running.

End of Hw6