Computer Systems Programming, Homework #1

Typing speed game

You are to implement a game that tests a user's typing speed. The game randomly chooses words from an array of strings containing "The", "quick", "brown", "fox", "jumps", "over", "the", "lazy", "dog". Each word must appear exactly once. The program should output the time it takes for the user to correctly enter the entire array of words. If the user incorrectly types a word, the program must prompt the user to retype the incorrect word.

Rules and requirements

- Random permutation of words should be generated via calls to srand() and rand()
  - Seed srand() using the usec field from a call to gettimeofday().
  - Each permutation of the words must be possible.
- Ensure that your random permutation is generated using a minimal number of rand() calls
  - Hint: A modulus that decreases for each word selected is sufficient for full credit
- Use timer macro "timersub()" for handling operations on struct timevals (/usr/include/sys/time.h)
- In case you are using c99, using timersub will generate an error. You must add the following line before all other #include lines to bypass it. #define _BSD_SOURCE
  - Timing should begin when the random permutation is first given to the user
  - Timing should end when the user correctly inputs the permutation correctly.

Hints and suggestions

- Consult the linux man pages for more information on rand()/srand(), gettimeofday(), timersub(), printf()/scanf(), strlen(), strncmp() etc.
- Once you have read in the input line, you will want to flush the rest of the line. Here is a small piece of code that reads in 10 characters of input and then throws away the rest of the line.

```
scanf("%10s", word);
while((c = getchar()) != '\n' && c != EOF)
        ;     /* discard */
```

Example game session

```
% ls
Makefile  typing_word_game.c

% make
gcc -m32 -g -o typing_word_game typing_word_game.c

% ./typing_word_game
This is a game that tests typing speed

Type the following words:
  word #1 is fox: foxy
Incorrect.  Try again.
  word #1 is fox: fo
Incorrect.  Try again.
  word #1 is fox: fox
  word #2 is The: The
  word #3 is brown: brown
  word #4 is lazy: lazy
  word #5 is jumped: jumped
  word #6 is over: over
  word #7 is quick: quick
  word #8 is dog: dog
  word #9 is the: the

Correct!  Your time is: 20 sec  and 222855 usec

%
```