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Problem Set 4

OUT: 11 OCTOBER, 1994

DUE: 20 OCTOBER, 1994

Goals

Write professional quality code in C, using modules and Makefiles, using Curses.

Reading Assignment

Read the handout on Curses.

Programming Assignment

Give last week's program an enjoyable and educational human interface. The target is a *Morse Code Trainer*, a software which helps the user learn morse code.

It will be necessary to use advanced techniques to handle I/O. The terminal must be set to cbreak mode, and then reset after the program is over. To help with exceptional situations, it is best to "catch" the control-C and direct this interrupt to a section of code which resets the terminal. This can be done as follows.

```
#include<curses.h>
#include<signal.h>

int die()      {
/* when ^C, call this exit routine. */
/* restore signal */
  signal(SIGINT,SIG_IGN) ;
  printf("Exiting...\n") ;
/* end curses */
  endwin() ;
  exit(0) ;
}

int main( int ac, char * av[] )  {
/* install exit routine */
  signal(SIGINT,die) ;
/* start curses */
  initscr() ; crmode() ; noecho() ; nonl() ;
/* loop until ^C */
  for (;;) ;
}
```

Compile with `cc filename.c -lcurses -ltermcap`

I don't know exactly how the program should work, you are to design a user interface. But the program must use command line switches to support its various options. The program must include these modes of operation:

1. Produce X random letters and wait for the user to type in the morse code equivalents.
2. Produce X random words, a dictionary can be found in `/usr/dict/words`, and wait for the user to type in morse code equivalents.
3. The same as above, but in the opposite direction, given morse code words or letters, wait for the user to decode.
4. It should mark and time the user's performance.
5. A list of errors should be posted to reinforce learning of difficult letters.

It would be interesting to divide the screen in portions, to display the challenge text and the solution, with errors indicated. Here is a possibility.

```

----- Challenge 1 -----
?>  s      w      t      o      p      a
!>  ...    .--   -      ---   .--.  .-

----- Score -----

Correct:    15
Incorrect:   3
Time:       5 char/minute

----- Your Common Errors -----

  b          j
  -...      .---
```