

Final Project Report

Final Project

SECTION #5

Westin Gjervold

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Problem

You are to create a typing game that can be played through the Cygwin terminal. Words will appear in a box and the player will need to type the words before they reach the bottom of the box, or the game will end.

Analysis

I started the code by declaring variables, seeding a random time, and using a function called “read_words” which counts the number of words in the file and puts them into an array. After that I wrote the start message and asked the user to either press ‘w’ to add words to the file or ‘p’ to play the game. If the user selected ‘w’, the program opened the file and appended the users input to the end of the file. After that the user is prompted again to either press ‘w’ to add words to the file or ‘p’ to play the game. If the user selected ‘p’ I setup the screen and used a function, I made called “window_outline” which creates an outline on the screen. After that I set all the values in the “yVal” array to 1 so that the words wouldn’t interfere with the outline. Then I created a game loop that continues until one of the words reaches the bottom of the outline. Inside the game loop, I created another loop that prints the words on the board. Then the program waits for the user to enter a word and records how long it took for the user to enter the word. After that I created another loop which checks if the user entered a word that is on the board. Then I increase the number of words on the board based on how much time has passed and created another loop that changes the y values and checks if the bottom of the outline is touched. If the bottom of the outline isn’t touched, the game loop repeats, but if the bottom of the outline is touched, the screen is ended, and the end message is printed.

Design

```
1 //SE 185: Final Project
2 //Typing Game
3 // "Westin Gjervold" | "100%"
4
5 //Header Files and Constant Variables//
6 #include <stdio.h>
7 #include <stdlib.h>
8 #include <string.h>
9 #include <ncurses/ncurses.h>
10 #include <time.h>
11 #include <ctype.h>
12 #define MAXWORDS 2000
13 #define WORDLENGTH 17
14 #define EMPTY_SPACE ' '
15
16 //User Defined Functions Prototype//
17 void draw_character(int x, int y, char use);
18 void window_outline();
19 int read_words(char* WL[MAXWORDS], char* file_name);
20 void trimws(char* str);
21
22 //Main function
23 int main(int argc, char* argv[]) {
24     //Declaring variables
25     int wordcount;
26     int rows = 0, cols = 0;
27     int yVal[MAXWORDS], xVal[MAXWORDS];
28     int timePassed;
29     int gameOver;
30     int numBoardWords;
31     int randWord;
32     int rand_X_Value;
33     int temp_Y_Value;
34     char boardWords[MAXWORDS][WORDLENGTH];
35     char empty_space[17] = "                ";
36     char answer[20];
37     char startOption;
38     char wordAdded[20];
39     char* wordlist[MAXWORDS];
40     char* file_name = argv[1];
41     time_t startTime, endTime;
```



```

83         rand_X_Value = (rand()%30) + 1;
84         xVal[i] = rand_X_Value;
85         strcpy(boardWords[i], wordlist[randWord]);
86     }
87     mvprintw(yVal[i], xVal[i], "%s", boardWords[i]);
88 }
89 //Gets user input and checks the time passed
90 mvprintw(21, 0, "Type here: ");
91 time(&startTime);
92 getstr(answer);
93 time(&endTime);
94 timePassed = difftime(endTime, startTime);
95 //Checks if user is correct
96 for(int i = 0; i <= numBoardWords; i++){
97     if(strcmp(boardWords[i], answer) == 0){
98         strcpy(boardWords[i], " ");
99         mvprintw(21, 11, "%s", empty_space);
100     }
101     if(strcmp(boardWords[i], answer) != 0){
102         mvprintw(21, 11, "%s", empty_space);
103     }
104     mvprintw(yVal[i], xVal[i], "%s", empty_space);
105 }
106 //Increases the number of words on the board
107 numBoardWords += timePassed;
108 //Changes the y values and check if the bottom is touched
109 temp_Y_Value = numBoardWords+1;
110 for(int i = 0; i <= numBoardWords; i++){
111     if(strcmp(boardWords[i], " ") != 0){
112         yVal[i] = temp_Y_Value;
113         if(yVal[i] > 18){
114             gameOver = 1;
115         }
116     }
117     temp_Y_Value--;
118 }
119 }
120 if(gameOver == 1){
121     startOption = '!';
122 }
123 endwin();

```

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124     }
125     //End message
126     if(startOption == '!'){
127         printf("A word touched the bottom!\n");
128         printf("You made it %d seconds!\n", numBoardWords);
129         break;
130     }
131 }
132 return 0;
133 }
134
135 //User Defined Functions' Definition//
136
137 //Draws a character in the screen
138 void draw_character(int x, int y, char use){
139     mvaddch(y,x,use);
140     refresh();
141 }
142
143 //Draws the window outline
144 void window_outline(){
145     int row = 0;
146     int column = 0;
147     for(int i = 0; i < 51; i++){
148         draw_character(i, row, '_');
149     }
150     row++;
151     for(row = 1; row < 19; row++){
152         draw_character(0, row, '|');
153         draw_character(50, row, '|');
154     }
155     for(int i = 0; i < 51; i++){
156         draw_character(i, row, '_');
157     }
158     row++;
159     for(int i = 0; i < 51; i++){
160         draw_character(i, row, '_');
161     }
162 }
163
164 //Reads the words in the file and returns the number of words

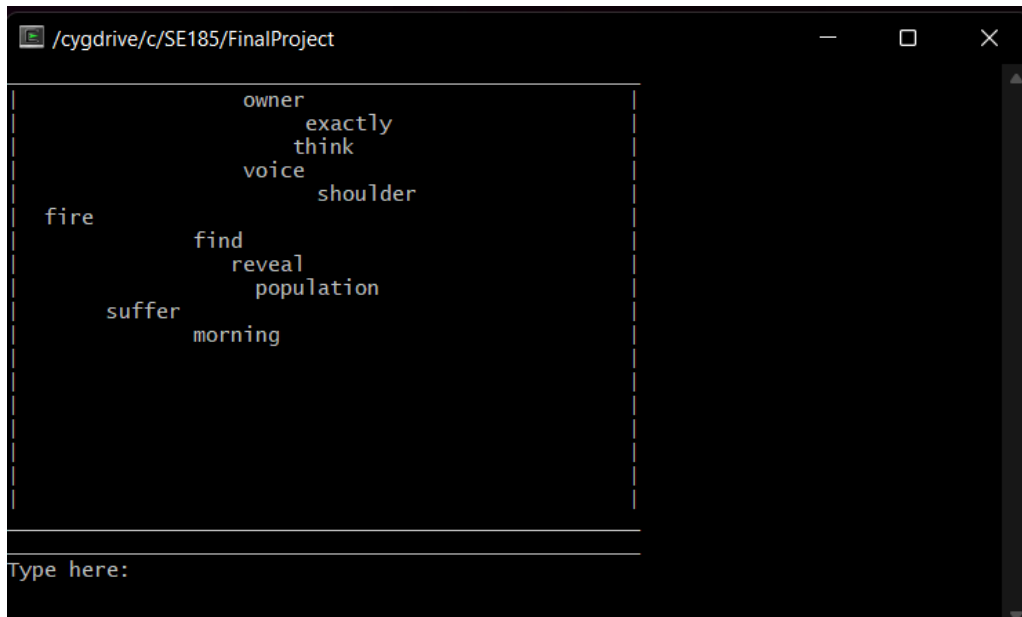
```

```

165 int read_words(char* WL[MAXWORDS], char* file_name){
166     int numread = 0;
167     char line[WORDLENGTH];
168     char *p;
169     FILE* fp = fopen(file_name, "r");
170     while (!feof(fp)) {
171         p = fgets(line, WORDLENGTH, fp);
172         if (p != NULL)
173         {
174             trimws(line);
175             WL[numread] = (char *)malloc(strlen(line) + 1);
176             strcpy(WL[numread], line);
177             numread++;
178         }
179     }
180     fclose(fp);
181     return numread;
182 }
183
184 //Seperates the words on the same line
185 void trimws(char* str) {
186     int length = strlen(str);
187     int x;
188     if (length == 0) return;
189     x = length - 1;
190     while (isspace(str[x]) && (x >= 0)) {
191         str[x] = '\0';
192         x -= 1;
193     }
194 }

```

Testing



```
west3@WestinLaptop /cygdrive/c/SE185/FinalProject
$ ./FinalProject wordList.txt
Hello, this is the typing game. You will need to type the words as they appear
Would you like to play or add a word?
You currently have 1000 words that can be used. (p/w)
w
What word would you like to add?
Westin
There are now 1001 words. Would you like to play or add a word?(p/w)
w
What word would you like to add?
Gjervold
There are now 1002 words. Would you like to play or add a word?(p/w)
p
A word touched the bottom!
You made it 56 seconds!
```

