**ECE 270**



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Quiz #6 - Part 2

Hangman Game

October 1, 2014

# Statement of the Problem

This program upgrades the word guessing game from Quiz#6 - Part 1 to a full featured Hangman game. For brevity, this report assumes that you have read the report on Part 1 and, as such, will focus on the new functionality added in Part 2 instead of the basic functions already covered in Part 1.

# Description of solution

All program output is printed to the screen and a text file names quiz6part2.txt.

Part 2 uses the same loops and logic as Part 1, but allows a “Player 1” to set the mystery word and number of allowed guesses, the addition of which required replacing all pre-defined win and lose conditions with conditions based on the game parameters set by “Player 1”:

This loop initializes the game progress display with ‘-‘s based on the length of the entered mystery word:

**for**(j=0;j<strlen(word);j++)

{

display[j]='-';

}

This line from part 1:

**while**((correctCounter<10)&&(guessCounter<10))

Is replaced by this:

**while**((correctCounter<strlen(word))&&(guessCounter<maxGuesses))

Showing the change in win/lose conditions.

A separate function, **void** gameDisplay(**float** , FILE \*);, is defined that is used the display the graphics for the current game state. The gameDisplay function has the percentage of incorrect guesses as a proportion of total guesses and the file pointer for outputting to quiz6part2.txt passed into it.

wrongGuesses=(guessCounter-correctCounter);

percentWrong=(**float**)wrongGuesses/(**float**)maxGuesses;

The program then uses the Windows console command system(“cls”); to clear the output window before displaying the current game state:

gameDisplay(percentWrong, fp);

gameDisplay then uses a series of if statements to determine how much of the hangman to display.

Sample of if statement determining game display based on percentage of wrong guesses:

**if** (wrong>0&&wrong<.1)

{

printf("\n|--------------------|");

printf("\n| |");

printf("\n|");

printf("\n|");

printf("\n|");

printf("\n|");

printf("\n|");

printf("\n|");

printf("\n|");

printf("\n|");

printf("\n|");

printf("\n|");

printf("\n|");

printf("\n|");

}

# Output and Testing

To test the program I ran it a series of times, attached are samples of a winning game and a losing game.

**Win:**

Hangman Game

Please enter a word for the player to guess: won

Please enter how many guesses the player should get: 5

Begin Game!

Try # 1

Guess a letter: w

w--

Try # 2

Guess a letter: i

|--------------------|

| |

| | |

| | |

| |

| |-------|

| | |

| | |

| | |

| | |

| -------

|

|

|

|

|

|

w--

**-------OUTPUT TRUNCATED--------**

Try # 4

Guess a letter: n

|--------------------|

| |

| | |

| | |

| |

| |-------|

| | |

| | |

| | |

| | |

| -------

|

|

|

|

|

|

won

Congrats, You WIN!!

Won in 4 guesses

**Lose:**

Hangman Game

Please enter a word for the player to guess: verified

Please enter how many guesses the player should get: 17

Begin Game!

Try # 1

Guess a letter: v

v-------

Try # 2

Guess a letter: g

|--------------------|

| |

|

|

|

|

|

|

|

|

|

|

|

v-------

**-------OUTPUT TRUNCATED--------**

Try # 17

Guess a letter: c

|--------------------|

| |

| | |

| | |

| |

| |-|-------|-|

| | | | |

| | | | |

| | | | |

| m | | m

| -------

| |

| |

| |

| |

| b

|

verifie-

Sorry, you lost

|--------------------|

| |

| |x x|

| | o |

| |

| |-|-------|-|

| | | Y O U | |

| | | | |

| | | LOST..| |

| m | | m

| -------

| | |

| | |

| | |

| | |

| b b

|

Your guess: verifie-

The mystery word was: verified

# Code

1 /\* Justin Newman

2 Quiz #6 Part 2:

3 Hangman Game

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5 \*/

6

7 #include<stdio.h>

8 #include<stdlib.h>

9 #include<string.h>

10 #include<conio.h>

11

12 //prototype of function to display hangman status

13 **void** gameDisplay(**float** , FILE \*);

14

15 **int** main()

16 {

17 //Declare and initialize variables

18 **char** word[100], display[strlen(word)], guess;

19 **int** i=0, j=0, correctCounter=0, guessCounter=0, maxGuesses=10, wrongGuesses=0;

20 **float** percentWrong=0;

21

22 //Open file and prepare to write output to it

23 FILE \*fp;

24 fp=fopen("quiz6part2.txt","w");

25

26 printf("Hangman Game");

27 fprintf(fp,"Hangman Game");

28

29 //Allow player #1 to set mystery word and number of guesses allowed

30 printf("\n\nPlease enter a word for the player to guess: ");

31 scanf(" %s",&word);

32 fprintf(fp,"\n\nPlease enter a word for the player to guess: %s",word);

33

34 printf("\n\nPlease enter how many guesses the player should get: ");

35 scanf(" %d",&maxGuesses);

36 fprintf(fp,"\n\nPlease enter how many guesses the player should get: %d",maxGuesses);

37

38 //Clear screen

39 system("cls");

40

41 printf("\nBegin Game!");

42 fprintf(fp,"\nBegin Game!");

43

44 //Populate display array with '-' for each letter in the mystery word

45 **for**(j=0;j<strlen(word);j++)

46 {

47 display[j]='-';

48 }

49

50 display[strlen(word)]='\0';

51

52 //Game continues until the number of correct guesses is less than the length of the mystery word

53 //Game continues until the number of guesses equals the maximum guesses allowed

54 **while**((correctCounter<strlen(word))&&(guessCounter<maxGuesses))

55

56 {

57

58 guessCounter++;

59

60 printf("\n\nTry # %d",guessCounter);

61 fprintf(fp,"\n\nTry # %d",guessCounter);

62

63 printf("\nGuess a letter: ");

64 scanf("\n%c",&guess);

65 fprintf(fp,"\nGuess a letter: %c",guess);

66

67 **for** (i=0;i<strlen(word);i++)

68

69 {

70

71

72 **if** ((guess==word[i])&&(display[i]=='-'))

73

74 {

75 display[i]=guess;

76 correctCounter++;

77

78 }

79

80

81 }

82 //Setting up wrong guess percentage to be passed to display function

83 wrongGuesses=(guessCounter-correctCounter);

84 percentWrong=(**float**)wrongGuesses/(**float**)maxGuesses;

85

86 //Functions to simplify debugging

87 //printf("%f",percentWrong); - debug

88 //printf("%d",wrongGuesses); - debug

89

90 //Clear screen

91 system("cls");

92

93 //Display current game status

94 gameDisplay(percentWrong, fp);

95

96 printf("\n%s",display);

97 fprintf(fp,"\n%s",display);

98

99 }

100

101 system("cls");

102

103 //Determines if game was won/lost and displays accordingly

104 **if** (correctCounter==strlen(word))

105 {

106 printf("\nCongrats, You WIN!!");

107 printf("\n\nWon in %d guesses", guessCounter);

108

109 fprintf(fp,"\nCongrats, You WIN!!");

110 fprintf(fp,"\n\nWon in %d guesses", guessCounter);

111 }

112 **else**

113 {

114 printf("\nSorry, you lost\n");

115 fprintf(fp,"\nSorry, you lost\n");

116

117 gameDisplay(1.0, fp);

118

119 printf("\n\nYour guess: %s",display);

120 fprintf(fp,"\n\n Your guess: %s",display);

121

122 printf("\n\nThe mystery word was: %s\n",word);

123 fprintf(fp,"\n\nThe mystery word was: %s",word);

124

125 }

126

127 fclose(fp);

128 **return** 0;

129

130 }

131

132 //Function displays hangman based on wrong guesses as a percent of total guesses

133 **void** gameDisplay(**float** wrong,FILE \*disp)

134 {

135

136 **if** (wrong>0&&wrong<.1)

137 {

138 printf("\n|--------------------|");

139 printf("\n| |");

140 printf("\n|");

141 printf("\n|");

142 printf("\n|");

143 printf("\n|");

144 printf("\n|");

145 printf("\n|");

146 printf("\n|");

147 printf("\n|");

148 printf("\n|");

149 printf("\n|");

150 printf("\n|");

151 printf("\n|");

152

153 fprintf(disp,"\n|--------------------|");

154 fprintf(disp,"\n| |");

155 fprintf(disp,"\n|");

156 fprintf(disp,"\n|");

157 fprintf(disp,"\n|");

158 fprintf(disp,"\n|");

159 fprintf(disp,"\n|");

160 fprintf(disp,"\n|");

161 fprintf(disp,"\n|");

162 fprintf(disp,"\n|");

163 fprintf(disp,"\n|");

164 fprintf(disp,"\n|");

165 fprintf(disp,"\n|");

166 }

167 **else if** (wrong>=.1&&wrong<.2)

168 {

169 printf("\n|--------------------|");

170 printf("\n| |");

171 printf("\n| | |");

172 printf("\n| | |");

173 printf("\n|");

174 printf("\n|");

175 printf("\n|");

176 printf("\n|");

177 printf("\n|");

178 printf("\n|");

179 printf("\n|");

180 printf("\n|");

181 printf("\n|");

182 printf("\n|");

183 printf("\n|");

184 printf("\n|");

185 printf("\n|");

186

187 fprintf(disp,"\n|--------------------|");

188 fprintf(disp,"\n| |");

189 fprintf(disp,"\n| | |");

190 fprintf(disp,"\n| | |");

191 fprintf(disp,"\n|");

192 fprintf(disp,"\n|");

193 fprintf(disp,"\n|");

194 fprintf(disp,"\n|");

195 fprintf(disp,"\n|");

196 fprintf(disp,"\n|");

197 fprintf(disp,"\n|");

198 fprintf(disp,"\n|");

199 fprintf(disp,"\n|");

200 fprintf(disp,"\n|");

201 fprintf(disp,"\n|");

202 fprintf(disp,"\n|");

203 fprintf(disp,"\n|");

204

205 }

206 **else if** (wrong>=.2&&wrong<.3)

207 {

208 printf("\n|--------------------|");

209 printf("\n| |");

210 printf("\n| | |");

211 printf("\n| | |");

212 printf("\n| |");

213 printf("\n| |-------|");

214 printf("\n| | |");

215 printf("\n| | |");

216 printf("\n| | |");

217 printf("\n| | |");

218 printf("\n| ------- ");

219 printf("\n|");

220 printf("\n|");

221 printf("\n|");

222 printf("\n|");

223 printf("\n|");

224 printf("\n|");

225

226 fprintf(disp,"\n|--------------------|");

227 fprintf(disp,"\n| |");

228 fprintf(disp,"\n| | |");

229 fprintf(disp,"\n| | |");

230 fprintf(disp,"\n| |");

231 fprintf(disp,"\n| |-------|");

232 fprintf(disp,"\n| | |");

233 fprintf(disp,"\n| | |");

234 fprintf(disp,"\n| | |");

235 fprintf(disp,"\n| | |");

236 fprintf(disp,"\n| ------- ");

237 fprintf(disp,"\n|");

238 fprintf(disp,"\n|");

239 fprintf(disp,"\n|");

240 fprintf(disp,"\n|");

241 fprintf(disp,"\n|");

242 fprintf(disp,"\n|");

243 }

244 **else if** (wrong>=.3&&wrong<.4)

245 {

246 printf("\n|--------------------|");

247 printf("\n| |");

248 printf("\n| | |");

249 printf("\n| | |");

250 printf("\n| |");

251 printf("\n| |-|-------|");

252 printf("\n| | | |");

253 printf("\n| | | |");

254 printf("\n| | | |");

255 printf("\n| m | |");

256 printf("\n| ------- ");

257 printf("\n|");

258 printf("\n|");

259 printf("\n|");

260 printf("\n|");

261 printf("\n|");

262 printf("\n|");

263

264 fprintf(disp,"\n|--------------------|");

265 fprintf(disp,"\n| |");

266 fprintf(disp,"\n| | |");

267 fprintf(disp,"\n| | |");

268 fprintf(disp,"\n| |");

269 fprintf(disp,"\n| |-|-------|");

270 fprintf(disp,"\n| | | |");

271 fprintf(disp,"\n| | | |");

272 fprintf(disp,"\n| | | |");

273 fprintf(disp,"\n| m | |");

274 fprintf(disp,"\n| ------- ");

275 fprintf(disp,"\n|");

276 fprintf(disp,"\n|");

277 fprintf(disp,"\n|");

278 fprintf(disp,"\n|");

279 fprintf(disp,"\n|");

280 fprintf(disp,"\n|");

281

282 }

283 **else if** (wrong>=.4&&wrong<.5)

284 {

285 printf("\n|--------------------|");

286 printf("\n| |");

287 printf("\n| | |");

288 printf("\n| | |");

289 printf("\n| |");

290 printf("\n| |-|-------|-|");

291 printf("\n| | | | |");

292 printf("\n| | | | |");

293 printf("\n| | | | |");

294 printf("\n| m | | m");

295 printf("\n| ------- ");

296 printf("\n|");

297 printf("\n|");

298 printf("\n|");

299 printf("\n|");

300 printf("\n|");

301 printf("\n|");

302

303 fprintf(disp,"\n|--------------------|");

304 fprintf(disp,"\n| |");

305 fprintf(disp,"\n| | |");

306 fprintf(disp,"\n| | |");

307 fprintf(disp,"\n| |");

308 fprintf(disp,"\n| |-|-------|-|");

309 fprintf(disp,"\n| | | | |");

310 fprintf(disp,"\n| | | | |");

311 fprintf(disp,"\n| | | | |");

312 fprintf(disp,"\n| m | | m");

313 fprintf(disp,"\n| ------- ");

314 fprintf(disp,"\n|");

315 fprintf(disp,"\n|");

316 fprintf(disp,"\n|");

317 fprintf(disp,"\n|");

318 fprintf(disp,"\n|");

319 fprintf(disp,"\n|");

320

321 }

322 **else if** (wrong>=.5&&wrong<.6)

323 {

324 printf("\n|--------------------|");

325 printf("\n| |");

326 printf("\n| | |");

327 printf("\n| | |");

328 printf("\n| |");

329 printf("\n| |-|-------|-|");

330 printf("\n| | | | |");

331 printf("\n| | | | |");

332 printf("\n| | | | |");

333 printf("\n| m | | m");

334 printf("\n| ------- ");

335 printf("\n| |");

336 printf("\n| |");

337 printf("\n| |");

338 printf("\n| |");

339 printf("\n| b");

340 printf("\n|");

341

342 fprintf(disp,"\n|--------------------|");

343 fprintf(disp,"\n| |");

344 fprintf(disp,"\n| | |");

345 fprintf(disp,"\n| | |");

346 fprintf(disp,"\n| |");

347 fprintf(disp,"\n| |-|-------|-|");

348 fprintf(disp,"\n| | | | |");

349 fprintf(disp,"\n| | | | |");

350 fprintf(disp,"\n| | | | |");

351 fprintf(disp,"\n| m | | m");

352 fprintf(disp,"\n| ------- ");

353 fprintf(disp,"\n| |");

354 fprintf(disp,"\n| |");

355 fprintf(disp,"\n| |");

356 fprintf(disp,"\n| |");

357 fprintf(disp,"\n| b");

358 fprintf(disp,"\n|");

359

360 }

361 **else if** (wrong>=.6&&wrong<.7)

362 {

363 printf("\n|--------------------|");

364 printf("\n| |");

365 printf("\n| | |");

366 printf("\n| | |");

367 printf("\n| |");

368 printf("\n| |-|-------|-|");

369 printf("\n| | | | |");

370 printf("\n| | | | |");

371 printf("\n| | | | |");

372 printf("\n| m | | m");

373 printf("\n| ------- ");

374 printf("\n| | |");

375 printf("\n| | |");

376 printf("\n| | |");

377 printf("\n| | |");

378 printf("\n| b b");

379 printf("\n|");

380

381 fprintf(disp,"\n|--------------------|");

382 fprintf(disp,"\n| |");

383 fprintf(disp,"\n| | |");

384 fprintf(disp,"\n| | |");

385 fprintf(disp,"\n| |");

386 fprintf(disp,"\n| |-|-------|-|");

387 fprintf(disp,"\n| | | | |");

388 fprintf(disp,"\n| | | | |");

389 fprintf(disp,"\n| | | | |");

390 fprintf(disp,"\n| m | | m");

391 fprintf(disp,"\n| ------- ");

392 fprintf(disp,"\n| | |");

393 fprintf(disp,"\n| | |");

394 fprintf(disp,"\n| | |");

395 fprintf(disp,"\n| | |");

396 fprintf(disp,"\n| b b");

397 fprintf(disp,"\n|");

398

399 }

400 **else if** (wrong>=.7&&wrong<.8)

401 {

402 printf("\n|--------------------|");

403 printf("\n| |");

404 printf("\n| |o |");

405 printf("\n| | |");

406 printf("\n| |");

407 printf("\n| |-|-------|-|");

408 printf("\n| | | | |");

409 printf("\n| | | | |");

410 printf("\n| | | | |");

411 printf("\n| m | | m");

412 printf("\n| ------- ");

413 printf("\n| | |");

414 printf("\n| | |");

415 printf("\n| | |");

416 printf("\n| | |");

417 printf("\n| b b");

418 printf("\n|");

419

420 fprintf(disp,"\n|--------------------|");

421 fprintf(disp,"\n| |");

422 fprintf(disp,"\n| |o |");

423 fprintf(disp,"\n| | |");

424 fprintf(disp,"\n| |");

425 fprintf(disp,"\n| |-|-------|-|");

426 fprintf(disp,"\n| | | | |");

427 fprintf(disp,"\n| | | | |");

428 fprintf(disp,"\n| | | | |");

429 fprintf(disp,"\n| m | | m");

430 fprintf(disp,"\n| ------- ");

431 fprintf(disp,"\n| | |");

432 fprintf(disp,"\n| | |");

433 fprintf(disp,"\n| | |");

434 fprintf(disp,"\n| | |");

435 fprintf(disp,"\n| b b");

436 fprintf(disp,"\n|");

437

438 }

439 **else if** (wrong>=.8&&wrong<1.0)

440 {

441 printf("\n|--------------------|");

442 printf("\n| |");

443 printf("\n| |o o|");

444 printf("\n| | |");

445 printf("\n| |");

446 printf("\n| |-|-------|-|");

447 printf("\n| | | | |");

448 printf("\n| | | | |");

449 printf("\n| | | | |");

450 printf("\n| m | | m");

451 printf("\n| ------- ");

452 printf("\n| | |");

453 printf("\n| | |");

454 printf("\n| | |");

455 printf("\n| | |");

456 printf("\n| b b");

457 printf("\n|");

458

459 fprintf(disp,"\n|--------------------|");

460 fprintf(disp,"\n| |");

461 fprintf(disp,"\n| |o o|");

462 fprintf(disp,"\n| | |");

463 fprintf(disp,"\n| |");

464 fprintf(disp,"\n| |-|-------|-|");

465 fprintf(disp,"\n| | | | |");

466 fprintf(disp,"\n| | | | |");

467 fprintf(disp,"\n| | | | |");

468 fprintf(disp,"\n| m | | m");

469 fprintf(disp,"\n| ------- ");

470 fprintf(disp,"\n| | |");

471 fprintf(disp,"\n| | |");

472 fprintf(disp,"\n| | |");

473 fprintf(disp,"\n| | |");

474 fprintf(disp,"\n| b b");

475 fprintf(disp,"\n|");

476

477 }

478 **else if** (wrong==1.0)

479 {

480 printf("\n|--------------------|");

481 printf("\n| |");

482 printf("\n| |o o|");

483 printf("\n| | Q |");

484 printf("\n| |");

485 printf("\n| |-|-------|-|");

486 printf("\n| | | Y o u | |");

487 printf("\n| | | | |");

488 printf("\n| | | Lose..| |");

489 printf("\n| m | | m");

490 printf("\n| ------- ");

491 printf("\n| | |");

492 printf("\n| | |");

493 printf("\n| | |");

494 printf("\n| | |");

495 printf("\n| b b");

496 printf("\n|");

497

498 fprintf(disp,"\n|--------------------|");

499 fprintf(disp,"\n| |");

500 fprintf(disp,"\n| |x x|");

501 fprintf(disp,"\n| | o |");

502 fprintf(disp,"\n| |");

503 fprintf(disp,"\n| |-|-------|-|");

504 fprintf(disp,"\n| | | Y O U | |");

505 fprintf(disp,"\n| | | | |");

506 fprintf(disp,"\n| | | LOST..| |");

507 fprintf(disp,"\n| m | | m");

508 fprintf(disp,"\n| ------- ");

509 fprintf(disp,"\n| | |");

510 fprintf(disp,"\n| | |");

511 fprintf(disp,"\n| | |");

512 fprintf(disp,"\n| | |");

513 fprintf(disp,"\n| b b");

514 fprintf(disp,"\n|");

515 }

516 }