ASSIGNMENT 7

(Ask your question on Coadsys and Gökhan Akgün is the responsible assistant for this assignment and grading)

Do not forget to read the warnings at the end of the document before coding and submission.

In this assignment, you are going to implement a cheating program for word puzzles. The user will enter the word to be searched, and your program will determine where it starts in the puzzles.

Assume that you have a 12x15 puzzle. The contents of the puzzle should be the same with the one in the following example (Figure 1).

	0	1	2	3	4	5	6	7	8	9	10	11
0	X	T	Z	M	Q	Y	K	C	E	C	F	H
1	S	H	O	U	T	E	X	O	E	A	P	I
2	X	G	T	L	Q	B	E	L	T	N	F	K
3	A	I	R	I	D	Z	A	L	I	O	D	M
4	M	E	I	E	T	Y	S	E	H	R	T	I
5	A	W	B	R	N	E	T	C	W	O	H	X
6	N	O	U	I	R	U	Z	T	S	C	C	T
7	U	D	T	P	E	C	J	I	E	H	R	U
8	A	L	E	M	C	S	Y	O	N	I	U	R
9	L	V	K	E	R	E	M	N	I	P	H	E
10	E	A	N	B	U	R	E	J	O	N	C	Y
11	A	W	I	I	I	J	N	J	R	U	Y	F
12	D	W	T	N	T	H	E	N	P	J	Y	T
13	E	Q	L	Z	D	I	L	E	M	M	A	B
14	R	C	I	T	E	N	G	A	M	T	P	C

Figure 1: Word Puzzle

First, you need to implement a function which prints the puzzle to the screen. An example look would be:

Figure 2: Printed Word Puzzle

Another trivial task is to implement a function which computes the length of a given string, since you are not allowed to use built-in string functions such as strlen.

The main challenge of this assignment is to implement the function which actually searches the string in the puzzle. Note that the word may be written in the puzzle from left to right, right to left, top to bottom and eventually bottom to top.

- **Function 1 (15 pts):**
  - **Name of the function:** printPuzzle
  - **Return type of the function:** void
  - **1. Parameter:** a character matrix
  - In this function, you will print the word puzzle which is the content of the character matrix as in the example above. Assume that the word puzzle will be 12x15 character matrix.

- **Function 2 (15 pts):**
  - **Name of the function:** computeLength
  - **Return type of the function:** int
  - **1. Parameter:** a string

○ In this function you will compute and return the length of the input string. Note that, you are not allowed to use built-in string functions such as strlen.

● **Function 3 (40 pts):**
  ○ **Name of the function:** findString
  ○ **Return type of the function:** int
  ○ **1. Parameter:** a character matrix
  ○ **2. Parameter:** a string
  ○ **3. Parameter:** an integer value
  ○ In this function, you will search the string in the character matrix. If found, the function returns the index of the starting point of the string in the character matrix. If not found, the function returns -1.
  ○ Index values of character matrix are as follows:

0	1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22	23
24	25	26	27	28	29	30	31	32	33	34	35
36	37	38	39	40	41	42	43	44	45	46	47
48	49	50	51	52	53	54	55	56	57	58	59
60	61	62	63	64	65	66	67	68	69	70	71
72	73	74	75	76	77	78	79	80	81	82	83
84	85	86	87	88	89	90	91	92	93	94	95
96	97	98	99	100	101	102	103	104	105	106	107
108	109	110	111	112	113	114	115	116	117	118	119
120	121	122	123	124	125	126	127	128	129	130	131
132	133	134	135	136	137	138	139	140	141	142	143
144	145	146	147	148	149	150	151	152	153	154	155
156	157	158	159	160	161	162	163	164	165	166	167
168	169	170	171	172	173	174	175	176	177	178	179

Figure 3: Puzzle Indexes

- **Main function:**
  - In the main function, you will take the puzzle from the user line by line where each line is a string with 12 letters. **(15 pts)**
  - Then, you will print the puzzle on the screen by calling printPuzzle function.
  - Finally, you will ask the string to be searched from the user continuously. If the user enters 'q' or 'Q', terminate the program, otherwise find the starting position of the string in the puzzle by calling findString function and print it on the screen. **(15 pts)**

WARNING:

- Submit only the source file in the format **assignment7_name_surname.c**
- Be sure the extension of your file is **.c**. If you do not know how to check the extension please look at the file ("How to run your code?") on the COADSYS.
- Do <u>not</u> use any library other than stdio. **That means, you are not allowed to use string library functions (such as strlen, strcmp) in this assignment.**
- You can check the example in the next 2 pages.

Example (Part 1):

```
gokhan@gokhan-Lenovo-G500:~/Desktop/cse114$ ./a.out
Enter the line 1 of the puzzle:
XTZMQYKCECFH
Enter the line 2 of the puzzle:
SHOUTEXOEAPI
Enter the line 3 of the puzzle:
XGTLQBELTNFK
Enter the line 4 of the puzzle:
AIRIDZALIODM
Enter the line 5 of the puzzle:
MEIETYSEHRTI
Enter the line 6 of the puzzle:
AWBRNETCWOHX
Enter the line 7 of the puzzle:
NOUIRUZTSCCT
Enter the line 8 of the puzzle:
UDTPECJIEHRU
Enter the line 9 of the puzzle:
ALEMCSYONIUR
Enter the line 10 of the puzzle:
LVKEREMNIPHE
Enter the line 11 of the puzzle:
EANBUREJONCY
Enter the line 12 of the puzzle:
AWIIIJNJRUYF
Enter the line 13 of the puzzle:
DWTNTHENPJYT
Enter the line 14 of the puzzle:
EQLZDILEMMAB
Enter the line 15 of the puzzle:
RCITENGAMTPC
```

Example (Part 2):

```
THE PUZZLE:

X T Z M Q Y K C E C F H
S H O U T E X O E A P I
X G T L Q B E L T N F K
A I R I D Z A L I O D M
M E I E T Y S E H R T I
A W B R N E T C W O H X
N O U I R U Z T S C C T
U D T P E C J I E H R U
A L E M C S Y O N I U R
L V K E R E M N I P H E
E A N B U R E J O N C Y
A W I I I J N J R U Y F
D W T N T H E N P J Y T
E Q L Z D I L E M M A B
R C I T E N G A M T P C
Enter the string to be searched in the puzzle:
DILEMMA
160
Enter the string to be searched in the puzzle:
COLLECTION
7
Enter the string to be searched in the puzzle:
FICTION
-1
Enter the string to be searched in the puzzle:
MAGNETIC
176
Enter the string to be searched in the puzzle:
WEIGHT
61
Enter the string to be searched in the puzzle:
LINEAR
-1
Enter the string to be searched in the puzzle:
Q
gokhan@gokhan-Lenovo-G500:~/Desktop/cse114$ 
```