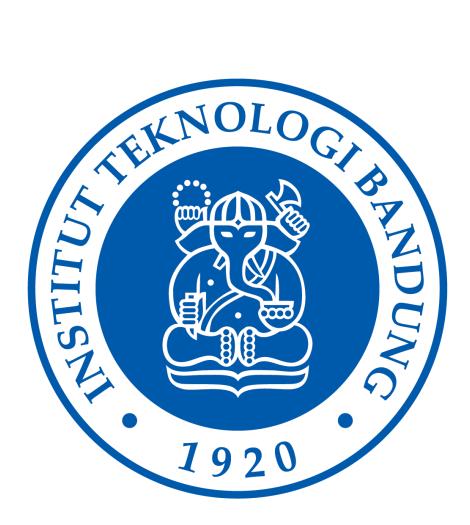
# Laporan Tugas Kecil Word Search Puzzle dengan Algoritma Brute Force



## **Pembuat:**

**Vincent Christian Siregar 13520136** 

### **Algoritma Brute Force**

Tahapan algoritma yang digunakan:

Proses pembacaan input:

- 1. Puzzle yang dibaca dari file txt disimpan dalam bentuk array multidimensi (2 dimensi) bertipe character.
- 2. Kata yang akan dicari pada puzzle disimpan dalam bentuk array bertipe string.

Proses algoritma brute force:

- 1. Program melakukan nested loop sebanyak 3 buah loop. Loop pertama merupakan representasi kata yang akan dicari (misal: kata EARTH merupakan kata yang pertama ingin dicari, maka pada putaran pertama program akan mencari keberadaan EARTH pada puzzle). Loop didalamnya merupakan loop untuk mengakses tiap character pada puzzle yang merupakan array 2 dimensi (terdiri dari 2 loop yaitu loop baris dan loop kolom).
- 2. Program dimulai dengan mengecek character puzzle pada absis 0 dan ordinat 0. Jika character tersebut sama dengan huruf pertama maka lanjut ke poin 3. Jika character tidak sama maka lanjut ke poin 5.
- 3. Program akan mengecek character yang berada di sekitar huruf tersebut (maksimal 8 karakter yang ada di sekitar character tersebut). Jika character tersebut sama dengan huruf kedua dari kata yang dicari maka lanjut ke poin 4, jika tidak maka lanjut ke poin 5.
- 4. Program akan mengecek karakter selanjutnya (sesuai arah dari karakter kedua terhadap karakter pertama). Program akan melakukan loop hingga semua huruf pada kata secara terurut sama dengan yang terdapat pada puzzle. Jika rangkaian kata ditemukan maka lanjut ke poin 6. Jika tidak, lanjut ke poin 5
- 5. Jika kata atau character tidak valid maka proses berpindah ke character selanjutnya, kembali ke poin 2. Proses berulang sampai menemukan rangkaian karakter yang sesuai dengan kata.
- 6. Jika rangkaian kata ditemukan, maka program akan menampilkan kata yang ditemukan pada layar sesuai letaknya pada puzzle. Loop dilanjutkan ke kata berikutnya. Proses diulang sampai menemukan seluruh kata pada puzzle.

#### **Source Code**

```
import java.io.*;
import java.util.Scanner;
public class WordPuzzle {
    private static final Scanner keyboard_scanner = new Scanner(System.in);
    static Scanner s = null;
    public static int[] RowNColCount(String FileName)
        try {
            s = new Scanner(new File(FileName));
            String RRows = s.nextLine();
            RRows = RRows.replaceAll("\\s","");
            int Rows = 0;
            String line = "dummy";
            while(s.hasNextLine() && line != "") {
                Rows++;
                line = s.nextLine();
            s.nextLine();
            int total_words=1;
            while(s.hasNextLine()) {
                total_words++;
                s.nextLine();
            s.close();
            int Cols = RRows.length();
            int[] Result = new int[3];
            Result[0] = Rows;
            Result[1] = Cols;
            Result[2] = total_words;
            return Result;
        } catch(Exception e) {
```

```
int[] Result = new int[1];
        Result[0] = -1;
        s.close();
        return Result;
public static void ReadPuzzle(String FileName, char[][]puzzle, String[] words)
    try{
        s = new Scanner(new File(FileName));
        int Rows = puzzle.length;
        int Cols = puzzle[0].length;
        int count = 0;
        int count2 = 0;
        while(s.hasNextLine())
            int countL = 0;
            String str = s.nextLine();
            str = str.replaceAll("\\s","");
            if(count < Rows){</pre>
                while (countL < Cols) {</pre>
                    puzzle[count][countL] = str.charAt(countL);
                count++;
                if (str != "")
                    words[count2] = str;
                    count2++;
    } catch (Exception e){
public static void print2D(char mat[][])
```

```
for (int i = 0; i < mat.length; i++){
            for (int j = 0; j < mat[i].length; j++){</pre>
                System.out.print(mat[i][j] + " ");
            System.out.println("");
    public static void PuzzleOutput(int[][]arr, char[][]puzzle)
        for (int x=0; x < puzzle.length; x++) {</pre>
            for (int y=0; y < puzzle[0].length; y++) {</pre>
                 if(arr[x][y] == 1)
                     System.out.print(puzzle[x][y] + " ");
                } else {
                     System.out.print("- ");
            System.out.println("");
        System.out.println("");
    public static void TurnToZero(int[][]arr)
        for (int row = 0; row < arr.length; row++)</pre>
            for (int col = 0; col < arr[row].length; col++)</pre>
                arr[row][col] = 0;
    public static int BruteForceWordPuzzle(char[][]puzzle,String[]words,
int[][]Result)
        int Rows = puzzle.length;
        int Cols = puzzle[0].length;
        int Pwords = words.length;
        int TotalCompare = 0;
```

```
for (int i=0; i < Pwords ; i++){</pre>
    int Pword = words[i].length();
    for (int j=0; j < Rows; <math>j++){
        for (int k=0; k < Cols; k++){
            if(words[i].charAt(0) == puzzle[j][k]){
                boolean Found = false;
                int m;
                int counter;
                if(!Found){
                     counter = 1;
                     m = j;
                     n = k;
                     while(m != 0 && counter < Pword) {</pre>
                         if (words[i].charAt(counter) != puzzle[m][n]) {
                             TotalCompare++;
                             break;
                         TotalCompare++;
                         counter++;
                     if(counter == Pword) {
                         counter = 0;
                         System.out.println(words[i]);
                         int [][]arr = new int[Rows][Cols];
                         TurnToZero(arr);
                         m = j;
                         n = k;
                         while(counter < Pword) {</pre>
                             arr[m][n] = 1;
                             counter++;
                         PuzzleOutput(arr,puzzle);
```

```
if(!Found){
    counter = 1;
    m = j;
    n = k;
    while(n != 0 && counter < Pword) {</pre>
        n--;
        if (words[i].charAt(counter) != puzzle[m][n]) {
            TotalCompare++;
            break;
        TotalCompare++;
        counter++;
    if(counter == Pword) {
        counter = 0;
        System.out.println(words[i]);
        int [][]arr = new int[Rows][Cols];
        TurnToZero(arr);
        m = j;
        n = k;
        while(counter < Pword) {</pre>
            arr[m][n] = 1;
            counter++;
        PuzzleOutput(arr,puzzle);
// cek ke bawah
if(!Found){
    counter = 1;
    m = j;
    n = k;
    while(m != Rows-1 && counter < Pword) {</pre>
        m++;
        if (words[i].charAt(counter) != puzzle[m][n]) {
            TotalCompare++;
            break;
        TotalCompare++;
```

```
counter++;
    if(counter == Pword) {
        counter = 0;
        System.out.println(words[i]);
        int [][]arr = new int[Rows][Cols];
        TurnToZero(arr);
        m = j;
        n = k;
        while(counter < Pword) {</pre>
            arr[m][n] = 1;
            m++;
            counter++;
        PuzzleOutput(arr,puzzle);
if(!Found){
    counter = 1;
    m = j;
    n = k;
    while(n != Cols-1 && counter < Pword) {</pre>
        if (words[i].charAt(counter) != puzzle[m][n]) {
            TotalCompare++;
            break;
        TotalCompare++;
        counter++;
    if(counter == Pword) {
        counter = 0;
        System.out.println(words[i]);
        int [][]arr = new int[Rows][Cols];
        TurnToZero(arr);
        m = j;
```

```
n = k;
        while(counter < Pword) {</pre>
            arr[m][n] = 1;
            n++;
            counter++;
        PuzzleOutput(arr,puzzle);
// cek ke kiri atas
if(!Found){
    counter = 1;
    m = j;
    n = k;
    while(n != 0 && m != 0 && counter < Pword) {
        if (words[i].charAt(counter) != puzzle[m][n]) {
            TotalCompare++;
            break;
        TotalCompare++;
        counter++;
    if(counter == Pword) {
        counter = 0;
        System.out.println(words[i]);
        int [][]arr = new int[Rows][Cols];
        TurnToZero(arr);
        m = j;
        n = k;
        while(counter < Pword) {</pre>
            arr[m][n] = 1;
            counter++;
        PuzzleOutput(arr,puzzle);
```

```
if(!Found){
    counter = 1;
    m = j;
    n = k;
    while(n != 0 && m != Rows-1 && counter < Pword) {</pre>
        m++;
        if (words[i].charAt(counter) != puzzle[m][n]) {
            TotalCompare++;
            break;
        TotalCompare++;
        counter++;
    if(counter == Pword) {
        counter = 0;
        System.out.println(words[i]);
        int [][]arr = new int[Rows][Cols];
        TurnToZero(arr);
        m = j;
        n = k;
        while(counter < Pword) {</pre>
            arr[m][n] = 1;
            m++;
            counter++;
        PuzzleOutput(arr,puzzle);
if(!Found){
    counter = 1;
    m = j;
    n = k;
    while(n != Cols-1 && m != Rows-1 && counter < Pword) {</pre>
        m++;
        n++;
```

```
if (words[i].charAt(counter) != puzzle[m][n]) {
            TotalCompare++;
            break;
        TotalCompare++;
        counter++;
    if(counter == Pword) {
        counter = 0;
        System.out.println(words[i]);
        int [][]arr = new int[Rows][Cols];
        TurnToZero(arr);
        m = j;
        n = k;
        while(counter < Pword) {</pre>
            arr[m][n] = 1;
            m++;
            n++;
            counter++;
        PuzzleOutput(arr,puzzle);
if(!Found){
    counter = 1;
    m = j;
    n = k;
    while(n != Cols-1 && m != 0 && counter < Pword) {</pre>
        n++;
        if (words[i].charAt(counter) != puzzle[m][n]) {
            TotalCompare++;
            break;
        TotalCompare++;
        counter++;
    if(counter == Pword) {
        counter = 0;
```

```
System.out.println(words[i]);
                            int [][]arr = new int[Rows][Cols];
                            TurnToZero(arr);
                            m = j;
                            n = k;
                            while(counter < Pword) {</pre>
                                arr[m][n] = 1;
                                n++;
                                counter++;
                            PuzzleOutput(arr,puzzle);
                TotalCompare++;
    return TotalCompare;
public static void main(String[] args){
    System.out.print("Masukkan nama file: ");
    String FileName = keyboard_scanner.next();
    System.out.println();
    int[] RC = RowNColCount(FileName);
    char[][] puzzle = new char[RC[0]][RC[1]];
    String[] words = new String[RC[2]];
    int[][] Result = new int[RC[2]][4];
    ReadPuzzle(FileName, puzzle, words);
    long StartTime = System.currentTimeMillis();
    int TotalCompare = BruteForceWordPuzzle(puzzle, words, Result);
    long StopTime = System.currentTimeMillis();
    System.out.println("");
    System.out.println("Execution time: " + (StopTime - StartTime) + " ms");
    System.out.print("Total Comparison: " + TotalCompare);
```

#### **Test Case**

#### A. Small

#### a. Small 1

```
SCOUPLEECDSANATSW
ENOMMOCQRPWBWVPEL
AYGNIVILEKMSMOSID
FDEUEGFCANIOTOFFN
UAMSXEIXTIDLLEOLU
GYKPVAPOUSEUHRHNO
XSBELQPERWATCMYER
OMNCYESFEERESELAG
BTHINGLITRDLVSKTR
YMHFVCDGCLEYOSCHE
VUFIBELMEOUDPIIGC
PROCESSEDCRCECUUV
MMWARTNNAAANIEQOE
ODZLADGTWNYLEFRHN
VITLLYLREDROPRFTS
ENNYJYTRIDVSBEGIN
GNIRATSMYNEEDEDHD
ABSOLUTELY
FIGMENT
PEERED
BEGIN
FORCED
PLACE
GROUND
PROCESS
CLEAN
IDEA
```

Masukka	n nama	file:	test	 small	1.txt
ABSOLUTI					
AB30LU11			- A -		
			- B -		
			- 5 -		
			- 0 -		
			- L -		
			- U -		
			- T -		
			- E -		
			- L -		
			- Y -		
FIGMENT					
		F			
		I			
		G			
		M			
		E			
		N			
		T			
PEERED					
	P				
		E			
		- E -			
		R			
			E		
			- D -		

BEG:	ΙN														
	_		_			_	_	-	_	_	_				-
											В	Ε	G	Ι	N
FOR	CEI	n													
	-	_													
														F	
													0		
												R			
										-	С				
									-	Ε					
									D -						
	_	_	_	_	_	Ξ	_	_	_	_	_	_	_	_	-
DI A															
PLA															
							-								
							E -	- с							
								-	Ā						
									-	L					
										-	P				

GROUND	CD	<b>∩</b> 1	II II														
PROCESS	GK	UL.	JNL	,													
PROCESS	_ :	_															
PROCESS																	D
PROCESS																	
PROCESS																	U
PROCESS																	0
PROCESS																	R
PROCESS																	G
PROCESS																	
CLEAN	-																
CLEAN																	
CLEAN	- '																
CLEAN	-																
CLEAN	_																
CLEAN		_															
CLEAN	_		_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
CLEAN																	
CLEAN	PR	00	ES	S													
CLEAN																	
CLEAN																	
CLEAN																	
CLEAN																	
CLEAN	-																
CLEAN																	
CLEAN																	
CLEAN																	
CLEAN	-																
CLEAN		_															
CLEAN	PI	- R	o	c	F	5	5										
CLEAN																	
CLEAN																	
	CLI	ΕA	W														
	-																
	-																
C																	
C																	
L																	
E																	
A																	
N																	
	-																

п	DE/	4												
														-
														-
														-
										Ι				-
										D				-
										Ε				-
										Α				-
														-
														-
														-
														-
														-
														-
														-
														-
														-
														-
E	œ	cut	tio	on	ti	Ĺme	2:	15	53	ms	5			
To	ota	al	Co	ome	oar	٠i؛	501	1:	37	746	5			
_												 		

### b. small 2

```
RAWXWATERMAFZENGY
MTBESHAPETUNJENAQ
TXONEZISUNNTPILEY
BALLOONENRIILPUMI
CVWBPHYYEFPDORDED
SLAFIBSKOPDOEPTSA
ECRSAOARDUIGSMNSI
KWUYFMPBCONCSEEIL
WCNTTNIKOOGEKZMTP
VONSOEELLDRHTNOMC
KLINYEIUYVYGUOMMC
GONEWLUREGIRLXPAQ
WRGFNOITAZINAGROX
NXEDRHPOTVTXBRATP
SUAAIETNAELCYIDIY
CEFPTISAPUPPYYGMM
HOQKHMGHBADJUSTES
ADJUST
GIRL
BACK
GREAT
PUPPY
BALLOON
HEAD
PURPOSE
BATH
RUNNING
LONGER
```

Masukkan nama	file:	test_small_2.txt
ADJUCT		
ADJUST		
		D 3 H C T
	A	DJUST
GIRL		
	G	IRL
BACK		
B		
A		
- c		
К		

CI	) F /	١Ŧ											
ur	RE#	¥1											
					-								
-													
G	-												
	R	Ξ											
		Ε											
			A										
				T									
Pι	JPF	PΥ											
							_		_	-	-		
							Р	U	Р	Р	Υ		
D/	λLI	~	NI.										
DF	<b>₹LL</b>	LU	NIC										
-													
				0		NI							
-	-	-	-	-	-	-							

Ш	EAI	1														
-	H	<u> </u>														
_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	
_	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-																
_																
_																
_																
-																
-																
-																
-																
-																
-																
-																
-			D													
-		Α														
-	Ε															
Н																
Pl	JRF	209	5E													
_																
_							Р									
_								U								
_									R							
_										Р						
_											0					
_												s				
_												_	Ε			
_													-			
_																
_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
_																
_																
_																
_																
D/	۸ТІ															
	ATH	1														
-																
_																
- - -																
-																
-																
-																
- - -																
-																
-																
-																
-																
-																
-					Н											
-						T										
_							Α									
-								В								

RUNN	ING														
	R -														
	U -														
	N -														
	N -														
	Ι-														
	N -														
	G-														
LONG	ER														
											R				
										Ε					
									G						
								N							
							0								
						L									
Exec							76								
Tota	T C	omp	oar	°i9	sor	1:	41	189	}						

#### c. small 3

```
FEVERYTHINGNSXE
AEDYQETALOCOHCL
CTEJLTGVWHATESP
TOMBKLAFIELDDSR
ANAGIRAFFESEKEU
HLOQDSSUHBROKIP
TORXRETTTETENNL
GODHERIWDCRNIOL
RKWMAFENEUAYPPM
OEERMRAFTPECXEO
UDROGERSNOTTOCR
NIECMEASTONESUF
DZXKPPAXREVIRRW
PINK
PONIES
PURPLE
GIRAFFES
ROAMED
FIELD
COTTON
GREW
FROM
GROUND
```

Masukkan	nama ·	file:	test_small_3.txt
Masukkan	Hallia	ille.	cest_small_s.cxc
PINK			
			K
			N I
			1 P
PONIES			
			S -
			E -
			I-
			N -
			0 - P -
PURPLE			
			E
			L
			P
			R
			U
			P

G]	[R/	٩FI	FES	5									
-													
_													
_													
_													
_			G	1	R	Α	F	F	Ε	s			
_													
_													
_													
_													
_													
_													
-													
-													
RO	)AI	1E(	)										
_													
-		D											
-		Ε											
-		М											
-		Α											
-		0											
-		R											
-													
-													
-													
-													
-													
_													
F)	ŒΙ	D											
_													
-													
-													
_							F	I	Ε	L	D		
-													
_													
_													
_													
-													
_													
_													
_													
-													

cc	TI	TO!	١											
								N	0	Т	Т	0	С	
GF	REV	ı												
							W							
						Ε								
					R									
				G										
	ROM	1												
														-
														M
														0
														R
														F

GF	ROL	JNE	)										
-													
-													
-													
-													
-													
-													
-													
G													
R													
0													
U													
N													
D													
E	œ	cut	tic	on	ti	ime	≥:	11	13	ms	5		
To	otá	al	Co	omp	oar	ris	sor	1:	25	512	2		

#### B. Medium

#### a. Medium 1

```
IUZKSESUACEJPYDNYTILIBAH
RREHMOFCBOTFNIOANXIETYMG
EENEVEREAUDKISSUDSSDOOME
T D O N J S L L O M C U E L G D R B E E N O J T
FNIMLPEHOAESTUDIESYYREVU
AOYEOTTILTHRUYKTHROUGHGM
OWEEZIINEKATAPHOTOICOHGO
R P P Y W D R E T U P M O C H C U M R A G F J M
CHALLENGESPONOITAVIRPEDE
I I I A K V E V A H E H T N S E O D T L A M E N
RDPUSIHTWHNVEUIFLEEHICIT
ORDWCLDLROWYAPONEPGREQTH
LIETHOUSANDSCRRNDTMNIHMO
LVLJFKHEGKEQHLOOHUWIATZU
X I L D N T Q N L W Z D A U E A B O C T S H F R
INOUAEIIHFIOGNSAHLGEJGCS
MGRMEYTEACLHRFDSRDEEDSKW
A D C H A N N I R B A Y E Z S N E L A M M G A O
G S S T U C N A Q O E Y L T A E R G Y B S N W R
EESFLAZWFNRCICVHTNODOIAK
SNQNMYCANEREMEMBERGQUHKE
HOSORTSSENOISSERPEDFCTEJ
SLEEP
DEPRIVATION
CAUSES
SORTS
CHALLENGES
AND
PROBLEMS
WHEN
DOESNT
ENOUGH
WORK
CLEARLY
STUDIES
AFTER
STAYING
AWAKE
HOURS
ABILITY
```

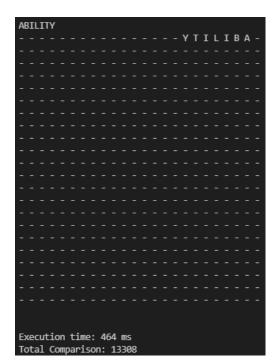
Masukkan nama file: test_medium_1.txt	CORTE
riasukkan nama file: test_medium_1.txt	SORTS
SI EED	
SLEEP	
- P	
	S O R T S
	301/13
	CHALLENGES
	CIMELLINGS
DEPRIVATION	
	C H A L L E N G E S
NOITAVIRPED-	
CAUSES	AND
S E S U A C	
	A N D

AND																	
AND																	
							-										
							A -	- N									
								-	D								
PROBLEMS	5																
								- D									
								- Р -	- R								
								- P -	- R -	- - 0							
								- P - -	- R -	- - 0 -	- - - B						
		  						- P - -	- R - -	- - 0 -	- - B -	- - - L	E				
								- P - - -	- R - -	- - 0 - -	- - B -	L	E -	- - - M			
								- P	- R - - -	- - 0 - -	- - B - -	L	E	M	- - - - - 5		
								- P	- R	- - 0 - - -	- - B - -	L	E	M	- - - - 5		
								- P	- R	0	- B	L	E	M	- - - - - - -		
								P	- R	0	- B - -	L	E	M	S		
								P	- R	- - 0 - - - -	B	L	E	M	- - - - - - -		
								P	- R	0	B	<b>L</b>	E	M	<b>S</b>		
WHEN								P	- R	O	B	<b>L</b>	<b>E</b>	M			
								P	- R								
					W												
				H	W -												
			E	H -	W												
			E	H	W												
		N	E	H	W												
		N	E	H	W												
		N	E	H	W												

DOESNT													
													-
													-
													_
													-
													-
													-
													-
					T	N	s	Ε	0	D			-
													-
													-
													_
													-
													-
													-
													_
													-
													-
													-
ENOUGH													
													-
													-
													-
													-
													-
													-
													-
													-
													-
								- M	Ε				-
							- - 0	- N -	E - -				- - -
						- - - U	- 0 -	- N - -	E - -				- - -
					- - G	- - U	- 0 -	- N - -	- - -				- - - -
				- - - H	- - G	- - U -	- 0 - -	N - - -	E				- - - -
				H	- - G -	- - - U - -	- 0 - -	- N - - -	E				
				H	- - - G - -	- - - - - -	- 0 - - -	- N - - -	E				
				H	- - - - - - -	U	- 0 - - - -	- N - - - -	E				
				H	- - - - - - - -	U	- 0 - - - - -	N	E				
				H	- - - - - - -	U	- 0 - - - -	N	E				
				H	G	U		N	E				
				H	G	U	0	N	E				
				H	G	U	0	N	E				
				H	G	<b>U</b>	- O	N	E				
													- - -
													- - - -
													- - - - -
													- - - - - - - - - - - - - - - - - - -
													- - - - - - - - W
													- - - - - - - W O R

CLEARLY							
			С -				
			- L	 -			
				E - - A			
	 			- A	 R -		
					- L		
						Υ -	
CTUDITC							
STUDIES	 						
		- S	ΤU	DΙ	E S		
ACTED							
AFTER							
R							
E							
T							
F							
A							

Sī	ΈΑ	/II	<b>VG</b>													
							- N	G								
						I	-									
					Υ											
			-	A												
		- S	T -													
		ر -														
Αŀ	ΙAΙ	Œ														
															Ā	
															W	
															A	
															K E	
															-	
Н	)UF	₹S														
																-
																H 0
																U
																R
																S



### b. Medium 2

```
H E B E H T B D T P Q S A M E T H T E M O H
H F T N Q Z D E E T R I A E A P H L G Y I G
UISARQCNEINSKKKZNELQNX
LLAMPINKRNOEMJLZNIYGKM
YSFESENSESHLCASWADGKOY
IAKZDGWHUWVCSSODVBOHAT
OWAELIHVDIOTJTEDNALWTR
NFEALGTERYHEDTMRGDOLID
SURPRISEOMWVNHGDOKDVAU
ZZBPPCKJVRLEETIAEUEIKA
CDELLACEEFRREISYIRLZMJ
ETAUCOIVLEEYRWLRHYUFTO
DNUOFHELFYDOGHTAAETQIB
TUGDENAFYPANRWDLIEVPMH
EABOUTINSLMEOPRAHSYAEA
J N A Y A D U H G D D R B T D I B R O F D L
QCIEWZQMUEKTHATCEINRNW
K D R T A H S A M E R P X S B I V N Q T H A
XGIOUIKEDOFVPOUFEHETXY
UBAPHOEGTMCBTVTFRUBTTS
I B W T M S R B A T U F M J E O Y M J T F Q
DAVE
FOUND
DAILY
ROUTINE
LIFE
AWOKE
SAME
TIME
BREAKFAST
DROVE
COMMUTE
WORKED
THAT
NEVER
SEEMED
CHANGE
```

Ması	ıl-lı	rar		200	12	t:	12		+	\c+		000	15.	ım	2	+	<b>,</b> +			
riasi	IKR	lar		Idli	ld	ΤJ	ι±ε	•	LE	:51	-"	ilec	ıπι	AIII_			ΚL			
DAVE																				
																Ε				
																	٧	A		
																		-	D	
																			-	
FOUN	ın																			
	-																			
DN	U	0	F																	
DAIL	γ																			
	-																			
																		Υ		
																	L			
																Ι				
														-	Α					
														D						

1100	דענ	ΙIΝ	ΙE													
																-
																_
																_
																_
																-
																-
																-
																-
																-
																-
																-
																-
																_
Е																_
_	N															_
		I														_
		•	-													
			1													
				U	-											-
					0	=										=
						R										-
LI	FE															
	Ε															-
	F															-
	I															-
	L															
																_
																_
																_
																-
																-
																-
																-
																-
																-
																-
																-
																_
																_
																_
																-
																- -
																- - -
																- - -
_	- -	- - -														- - -
- Ah	- - - MOK	- - -														- - -
- Ah -	- - MOK	- - - Œ														- - -
- Ah -	- - MOK -															-
																-
	- - wok - - -															
															- А	
														- W -	- A - -	- -
												- - - K	- - 0 -	- W -	- A - -	- - -
											- - - E	- - - K	- - 0 -	- W - -	- A - -	- - -
											E -	- - K -	- - 0 - -	- W - -	- A - - -	- - -
											E	- - K -	- - 0 - -	- W - -	- A - - -	-
											E	- - K - -	- - 0 - -	- W - -	- A - - -	- - -
											E	- - K - -	- - 0 - - -	- W	- A - - - -	
											E	- - K - -	- 0 - - - -	- W	- A - - - - -	
											E	- - K - - -	- 0 - - - -	- W	- A	
											E	- K	- 0 - - - -	- W	A	
											E	- - K - - -	- 0 - - - -	- W	- A	
											E	- K	- 0 - - - -	- W	A	
											E	- K	- 0 - - - -	- W	A	

SAME													
						s	А	м	F				
						_			-				
SAME													
		-	-	-	-								
		S	А	М	Ε								
TIME													
												I	
												_	

BREAKFAST				
S				
A				
F				
K			 	
E				
R				
B				
DROVE				
		 D		
		D R		
		0		
		V		
		E		
COMMUTE				
E				
	T - U -			
	- U -			
		М		
		- 0 -		
		C		

WOF	₹ĸ	ŒΓ	)														
	_	_	_														
	-																
												W					
											o	-					
										R							
									Κ								
								Ε									
							D										
<b>T.</b>																	
THA	٩I																
										т	н	А	т				
NE/																	
							-										
					- Е	V -											
				N	-												
				-													

CE	: C)	1EC	1													
20	_	IEL	<u>,</u>													
_																
_																
_																
_																
_																
_																
_																
_										D						
_									Ε							
-								М								
-							Ε									
-						Ε										
-					s											
CH	łΑŀ	VGE														
-																
-																
-																
-																
-																
-																
-																
-																
-																
_				c												
_				Ĭ	Н											
_					-	А										
_						_	N									
_							_	G								
									Ε							
_																
-																
-																
-																
										ms						
To	ota	al	Co	mp	par	۱i:	or	1:	16	<b>3</b> 07	75					

#### c. Medium 3

```
QENOYNAFXZPTLTHEREMKFTZ
K L H X S Z U O Y U T H O U M I R H D C F S W
E F I T P S O W N H S E I B X C U X D S Y U I
ZZYONQGTIFRYJERPQFBIXJZ
WNDETSISNIIPLVRTELPOEPY
AWCDFFFXDYFSHIUKWYASPGF
SFPMNISOONHPBFYMVNTBRRX
J R H F F I N U J J S J H Z Z S T A L K I V I
XSOSTLFEMUZRNLRTFSJEYII
URRYCWEESSUKESJLCBNAWZI
H A G A I N Y G N I H T V R S D I D N T W R Q
UEYTDRESCFDKEESYZINKOZM
PYEFWELYPWRLRGYKVGLDUPH
EAHMEBCHILDXKNMBEOTOLEQ
RHTOVMJJFWYENAZYEEIMDVH
OYSRRYECARTTEREHWYREVEA
M P Q P I Z D R X I J M W T O Z Q F X O H R C
N D U A T C E M L Y L K Q S N E V E B P H Z H
EGBEENKOMEOJITZVMAXVTFW
V H X S U R P R I S I N G P F C J K Y L M N C
THERE
TRACEY
FIRST
ANYONE
EVER
KNEW
WOULD
CHILD
EVERYWHERE
BEEN
FRIEND
FIVE
YEARS
THING
SURPRISING
```

### **B.** Large

#### a. Large 1

#### Isi File

V E L P R U P Y U W H J X P M V T H U E V I L B P D E A T H Y P Q A V U N T A W B A A S R T T S G N M E A N D E R E D D LZEWOIETQWYSDOUZLNSATYYAISPSRB LYBRASAOEASEHTBOOEVTPINECCIUCS A F G R P K P G E A D V E N T U R E F E H O L R E Z D G V E Q Y U E D X R T N A H T U S Y D U O L C E N A F G L A N RODKEEAGAIJRRWMRDITCPSNIEASO YTNMBINKLDLOBOUTATYNGXERENIABU LQAENIANOJTSNNVRVEDBEQYLHSGLIN NOCIHPNICCSAWYLLAUTCAVFQIIINE RHNTNGDPOWXSWEXPLORETODRRHMTJD TGOIOPLDHRDWREGRETXAELTAOGWMQ UNHPTRVOCPOTENTIALHCIRFHNMEL BILQTEKEUDAILYFZSWUKMFOIEHRP Q T O S O H T L U C I F F I D Q A D E U E X N M T R G A DIONCTETLIGHTIDEENPSBEGINZSSL ICKHCAALLBSENITUORPFPASHTIWS A X E E D E M G N I N R A W S H T V B O K S C V Q A T E E G E D R U W M T P E R E H T A E S N S A L L E R B M U D L NOITATIVNIZATBPDQEOHREVIRRITP OSNSSELJLVURJGOCCVUHIOFFBMQTO SLIPPEDAPPROACHEDILEJTFEKEZI I S T O P P E D K L D U N O T R F G L S O M E T H I N G P S A R A H E I X A T D N F G O T U K W T J K N D D A E R U T FEFILUDTWOHDPFNANHMONILIART B P E P S P E I R G W I T W R I G H T H A T N O C B W C L I P C H E E R R T S A L F S D R N K G B L E D I H R B I N I N J D D A N G E R S T E S K P M L X I P H M S E N O T S M N L R E H T A R I N I L U V S I N Y S X H I E V E R Y O N E G Z SIDEXXTWPZDOCTOGEFWXSWOULDRDTH

CLOUDY OUTSIDE **CERTAINLY** DIFFICULT **EXPLAIN** DIAGNOSIS SOMETHING DRUDGERY **ADVENTUROUS EXCITING** OTHERS BEGIN **ADVENTURE** REGRET **GIRAFFES** ROAMED **GROUND** CHOCOLATE RIVER MEANDERED

Masukkan nama	file:	test_b	pig_1.txt
CLOUDY			
			Y D U O L C
OUTSIDE			

CERTAINLY													
DIFFICULT													
DIFFICULT													
	T	L U	- · ·	 F	I	- · · · · · · · · · · · · · · · · · · ·							
	T		- · ·	 F -	I	- · · · · · · · · · · · · · · · · · · ·							
		L U	- · ·	 F	I	- · · · · · · · · · · · · · · · · · · ·							
			- · · · · · · · · · · · · · · · · · · ·	 F	I	- · · · · · · · · · · · · · · · · · · ·							
			- · · · · · · · · · · · · · · · · · · ·	 F	I								
			C 1	 F	<b>I</b>	- · · · · · · · · · · · · · · · · · · ·							
			C 1	 	<b>I</b>	- · · · · · · · · · · · · · · · · · · ·							
			C 1	 	I	- · · · · · · · · · · · · · · · · · · ·							
			C 1	 	<b>I</b>	- · · · · · · · · · · · · · · · · · · ·							
			C 1			D							
			- · · · · · · · · · · · · · · · · · · ·			D							
						D							
						D							
			C 1			D							
			C 1			D							

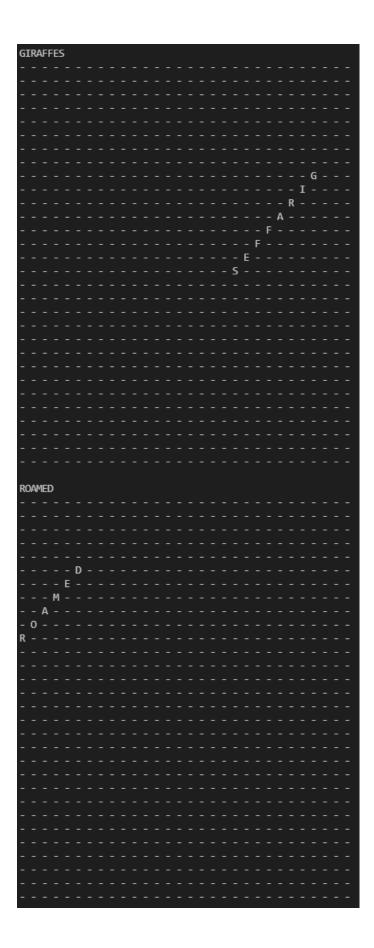
Đ	ŒΙ	LA]	EN																										
																	X												
_	_	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Ε	-	-	-	-	-	-	-	-	-	-	-	-	-
D)	[A(	SINC	)51	S																									
			)S1 -																										
D																													
D																													
- - - - D I A																													
DIAG																													
DIAGN																													
DIAGNO																													
D I A G N O S																													
DIAGNOSI																													
DIAGNOSI																													
DIAGNOSI																													
DIAGNOSI																													
DIAGNOSI																													
DIAGNOSI																													
DIAGNOSI																													

SC	OME	ΞTΗ	ΗIΝ	IG																		
_																						
_																						
_																						
_																						
_																						
_																						
_																						
-	-	-	-	-	-		-														-	-
_	-	-	-	-	-		-															
-	-	-	-	-	-	-					-									-	-	-
-																						
-																						
-																						
-																						
-																						
-																						
-																						
-																						
-																						
-																						
-																						
-																						
-																			N	G		
-																						
-																						
-																						
-																						
-																						
-																						
-																						
			ERΥ																			
-																						-
-																						- D
- - -																					R	
- - -																				- U	R -	
- - -																			- - D	- U -	R - -	
- - -																			- - D	- U	R - -	
- - -																			- - D	- U -	R - -	
- - -																- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	
- - -															- - - - Y	- - - R	- - - E	- - G -	- - D -	- U - -	R - - -	

_	OVE	ENT	ΓUF	ROL	JS														
										U									
											0								
												R							
															_				
																А			
E	KC]	ITI	ENG	â															
		[T] -																	
	- - - - - G																		
	G																		
	- - - - - G N																		
	G N I																		
	G N I T I																		
	G N I T C																		
	G N I T C																		
	G N I T I C X																		
	G N I T I C X E																		
	G N I T I C X E -																		
	G N I T I C X E																		
	G N I T I C X E																		
	GNITICXE																		
	GNITICXE																		
	G N I T I C X E																		
	GNITICXE																		
	GNITICXE																		
	G N I T I C X E																		

01	THE	ER9	5																
_	_																		
													0						
-	-				_														
																	5		
RF	-61	ΓNI																	
	G]																		
												B	E	G	I	N			
												B -	E -	G	I	N -			
												B	<b>E</b>	G	I	N			
												B	<b>E</b>	G	I	N			
												B	E	G	<b>I</b>	N			
												B	E	G	I	N			
												В		G	I I I	N			
												B		G	I	N			
												B		G		N			
												B		G		N			
												<b>В</b>		G		N			
												B		G		<b>N</b>			
												В		G		<b>N</b>			
												В		G		<b>N</b>			

ΑŒ	)VE	N	TUF	RΕ																	
							Α	D	٧	Ε	N	Т	U	R	Ε						
RE	GF	RET	Г																		
RE -	GF -	RET	г -																		
RE - -	:GF - -	RE1 - -	r - -																		
RE - -	=GF - -	RE1 - -	r - -																		
RE - - -	=GF - - -	RE1	r - -																		
RE - - -	=GF - - - -	RE1 - - -	r - - -																		
RE	=GF - - - -	RET - - - -	r																		
RE	- - - - -	RET																			
RE	=GF	RET																			
RE	- - - - -	RET																			
RE	- - - - - -	RE1																			
										B		6			· · · · · · · · · · · · · · · ·						



GROUND		
		G
		R
		0
		U
		N
		D
CHOCOLATE		
CHOCOLATE E		
CHOCOLATE		
E		
E		
E		

Cł	ю	201	Αī	ſΕ																									
-	-	-																											
								Ε																					
_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
_	_	_	_	_	_	_	_	_	_	_	_	_	_		_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
_	_	_	_	_																							_	_	_
R]	[VE	ER																											
	(VE																												
																				R	E	<b>v</b>	I	R					
																				R		<b>v</b> -	I -	R -					
																				R			I	R					
																				R			I	R					
																				R				R					
																				R			I	R					
																				R				R					
																				R			I	R					
																				R				R					

MEANDERED
MEANDERED-
Execution time: 806 ms

## b. Large 2

## Isi File

UGUMWLWFYWRPPCNDEGANAMTMYTGNSROJSEO F N X J O W Q S V G A I H N L I K E D V V H O M D N B Y D R E D V F E NIQEOUESGRUJLABIXHMQNRUUENIUOYQEPBU K K E C I V D A A U T A B E V E I H C A P M H J H Y A T L L R E R O N FOZCJGVGLDFWHYACDECROFEIYHJASNEOKUO MOKRFDRYCDXOJFCUMIAOMHVSBBOSDKVHLES MLWVUASEEMEDXRXTNAWFTHVPBRMYDUB Y F Q C P Z J R H R T Z A Y V O W B O U A H C O U P L E Y L W V L J J N H H M S G V C B V N T R A U K R V M Q E J F I Z N W G O A A K C ZOOSAWUKOTGYUEDNOYEBOJZRWIVIJKLTDWZ J S N E V E T I E E P Y V Y U O N N Y S X S A U Y H L S W A M M B H T B O Y A D N T P U M R I L E T D T E L J O H R L B X I M C L Y N U BIUCEXOPIINNEDRRYAOGKOMYLCFATVJLTHC T L T N L S V P I T H N E T V L R Q F T N I E Y D L R M B D F I N X A Y L L A U T C A H K S H C W T T S O M C O M L O L F B X A L V K R N X N K Y X O W G G Z L S K Y N G A Y U M R W M Y U Y L I D C U Y P Y X H NYYILIUDDTBOERXEGEDEVIECERACKOVOTSC T S A I D O J I P F W T H X N Q A V X A G O F G Y H O R O W N B F K R P B H M D N A T S R E D N U N T Y T S Z G K H S I Z E E N E O M E M R A T O N E E X I H E E E Q O R R A U M E U G H D R W Z T A T V W R DAICTROFSXGDISIAEELRNMENIUBAOAIWEES QSVJKHGNIKAMESWVTIFETXTEKAAITHBLHUR K W S D N P O C C L E A N Y R E V E R F D A Y S N W G K B S L C G A Z K N U G O C Z M F O X E F Z N I V A C X O L F E Z U V J S M P G N E T LDISOZZLRJHZEZNETKKIBRBOGLBEENE EICSNVSNFELOUGJIDRMPNATXOWVAXSIB J R F K M A W X R U U M O D N A R M O Y A G A K N R N U T M P STMAKGSPBGFESGGIIJEDEBJTXIGTOKJD T Y T C I G M G W R E S C A T K N M U W D U A T N T S M G E I W R ETYWIOSGOBRSHBWITAFXQHRGSIEOFCHG H V H I C D C G M M A A T G O X H P E Z T Y U F U N M B U E O X H N C E B O X S Q X G X C C H O S B O Y W A L O V M Q T G A L N K D U T K P R R Y L R E D R O N I T U M P P G R T H C D J V T Y O S G N I H T H P AWHWPZAYNSMYDYPNIAGAPEYQWUIPQOZKYZX O K X B A I L E D Y H G N I H T E M O S W B Q X S W U I X U W F U F F

HAVENT GENERATING **EFFORT** WILL RIDICULOUS RECEIVED SURE BEEN WELLMEANING SAID UNDERSTAND LITERALLY KILL ACTUALLY MANAGED ACHIEVE

Hasil Run

HAVENT		
	A	
	V	
	E	
	N	
	1	
GENERATING		

EFF	ORT	г																		
										F										
₩TI																				
WIL																				
																	- - - W			
																	- - - W			
																- - - - - I	- - - W			
																- - - - - I	- - - W			
														L	L	- - - - - I	- - - W			
														L	L	- - - - - I	- - - W			
														L	L	- - - - - I	- - - W			
														L	L	- - - - - I	- - - W			
														L	L	- - - - - I	- - - W			
														L	L	- - - - - I	- - - W			
														L	L	- - - - - I	- - - W			
														L	L	- - - - - I	- - - W			
														L	L	- - - - - I	- - - W			
														L	L	- - - - - I	- - - W			
														L	L	- - - - - I	- - - W			
														L	L	- - - - - I	- - - W			
														L	L	- - - - - I	- - - W			
														L	L	- - - - - I	- - - W			
														L	L	- - - - - I	- - - W			
														L	L	- - - - - I	- - - W			
														L	L	- - - - - I	- - - W			
														L	L	- - - - - I	- - - W			

R]	D]	α	JLC	200	5																
																				R -	
																		c			
	:CE																				
												<b>v</b>	I	C	E	R					
												 <b>v</b> -	I		<b>E</b> _	R -					
												 · · · · · · · · · · · · · · ·			<b>E</b>	R					
												 <b>v</b>		C C	<b>E</b>	R					
												 <b>v</b>	<b>I</b>	C	<b>E</b>						
												 · · · · · · · · · · · · · · · · ·		C	<b>E</b>						
												 		C		R					
												 				R					
												 		C		R					
												 				R					
												 				R					
															<b>E</b>						
																R					

SL	JRE																				
-																					
-																					
-																		Ε	-		
_											_ :								т. - I	    -	
_																				- s	
-																					
-																					
-																					
-																					
_											_ :										
_																					
-																					
-																					
-																					
-																					
_																					
-																					
-																					
-																					
-																					
_											<u>-</u> .										
_																					
-																					
-																					
-																					
-																					
_																					
_																					
-																					
-																					
DE	CN																				
BE -	EEN -	ا -																			
BE - -	= - -	ا - -																			
BE - -	=EN - -	  -  -  -																			
BE - - -	- - - -	  -  -  -																			
BE - - -	- - - -	  -  -  -																			
BE - - - -	- - - -	·									- · · · · · · · · · · · · · · · · · · ·	  								  	
BE - - - - -	- - - - -																				
BE - - - - -	- - - - -																				
BE - - - - - -	- - - - - -																				
BE - - - - - -																					
BE																					
BE	EEN																				
BE	EEN																				
BE	EEN																				
BE	EIN																				
														- - - - - B	E	E	- - - - - N				
														- - - - - B	E -	E -	- - - - N				
														B	E	E	- - - - N				
														B	E	<b>E</b>	N				
														B	E	E	N				
														B	E	<b>E</b>	N				
														B		E	N				
														B	E		N				

WELLMEANING
E
E
A
N
I
N
G G
SAID
SAID
S A I D
SAID
S A I D
S A I D
S A I D
S A I D
S A I D
S A I D
S A I D

UNDERSTAND
DNATSREDNU
ITTERALLY
LITERALLY
Υ
Y
Y L
Y
Y
Y
Y
Y
Y
Y
Y
Y
Y
Y
Y
Y
Y

K	ILI																			
																			L	
																			L	
																			I	
																			K	
A	сті	JAl	LLY	1																
A(	сти -	JAI -	- -	/ -																
A( - -	сті - -	JAI - -	- - -	/ - -																
- - -	сті - - -	JAI - -	- - -	/ - - -																
- - -	сти - - -	JAI - - -	- - -	, - - -																
- - - -	сти - - - -	JAI - - - -	- - - -	, - - - -																
AI	- - - - -	JAI - - - - -	- - - - -	/ 																
A	CTU - - - - -	JAI - - - - -	- - - - - - - - -	/ 																
A	CTU	JAI - - - - -	- - - -	,																
A	CTU	JAI	- - - - -	,																
A	CT(	JAI - - - - - -	- - - - -	,																
A	CTI	JAI 																		
Y	L	L	A	U	T	c	Α													
<b>Y</b> -	L -	<b>L</b> -	A -	U -	T -	c -	A -													
<b>Y</b>		<b>L</b>	A		T - -	c - -	A - -													
<b>Y</b>	L	L	A		T - -	c - - -	A - -													
<b>Y</b>			A		T - - -	c - - -	A - - -													
			A		T	c - - -	A - - -													
			A		T	c - - -	A - - - -													
			A		T	c - - -	A - - - -													
			A		T	C	A													
			A		T	C	A													
			A		T	c	A													
			A		T	C	A													
			A		T	C	A													
					T	C	A													
					T	C	A													
			A	<b>U</b>	T	C	A													
			A		T	C	A													
			A		T	C	A													

Managed																		
							D		G									
	 . <u>-</u>																	 
ACHIEVE																		
ACHIEVE																		
					- E	- <b>v</b>	- E	- I	- H	- C	- A							
					- E	- v	- E	- I	H	- c	- A							
					- E	- v	- E	- I	H	- c	- A							
					- E	- V	- E	- I	H	- c	- A							
					- E	- · V	- E	- I	- H	- c	- A							
					- E	- · V	- E	- I	- H	- C	- A							
					- E	<b>v</b>	- E	- I	- H	- c	- A							
					- E	<b>v</b>	- E	- I	- H	- c	- A							
					- E	<b>v</b>	- E	- I	- H	- c	- A							
					E	- · · · · · · · · · · · · · · · · · · ·		- I	- H	- c	A							
					E		E	- I	- H	C	A							
					E		E		H	C	A							
						- · V			H	c	<b>A</b>							
						<b>&gt;</b>			H	- c	<b>A</b>							
						<b>&gt;</b>			H	- c	A							
								I		c	- A							
						· · · · · · · · · · · · · · · · · · ·				- C	- A							
						· · · · · · · · · · · · · · · · · · ·			H	- C	- A							
						· · · · · · · · · · · · · · · · · · ·		I	H	- C	- A							
					E	· · · · · · · · · · · · · · · · · · ·	E			C	- A							

Poin	Ya	Tidak
1. Program berhasil dikompilasi tanpa kesalahan (no syntax error)	$\boxtimes$	
2. Program berhasil running	$\boxtimes$	
3. Program dapat membaca file masukan dan menuliskan luaran		
4. Program berhasil menemukan semua kata di dalam puzzle.		