

LAPORAN TUGAS KECIL 1
IF2211 STRATEGI ALGORITMA
Penyelesaian *Word Search Puzzle* dengan Algoritma
Brute Force



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1. PENJELASAN ALGORITMA *BRUTE FORCE*

Algoritma *Brute Force* adalah algoritma yang memecahkan masalah dengan pendekatan yang lempang atau langsung (*straightforward*). Algoritma *Brute Force* memecahkan masalah dengan sangat sederhana dan dengan cara yang jelas. Contohnya adalah menghitung nilai factorial dari suatu bilangan bulat tak-negatif (n). Algoritma *brute force* akan mengalikan n buah bilangan, dimulai dari 1 hingga n . Jumlah operasi perkalian yang terjadi pada proses ini adalah n kali sehingga kompleksitas waktu algoritmanya adalah $O(n)$.

Salah satu proses yang dapat diselesaikan dengan Algoritma *Brute Force* adalah pencocokan string (*string matching/pattern matching*). Langkah-langkahnya adalah dengan mensejajarkan *pattern* dengan awal teks. Lalu, ditelusuri mulai dari huruf awal *pattern* sampai akhir. Huruf tersebut dibandingkan dengan karakter di dalam teks sampai semua karakter *pattern* yang dibandingkan cocok (pencarian berhasil) atau ditemukan ketidakcocokan karakter (pencarian belum berhasil). Jika *pattern* tidak menemukan kecocokan dengan teks, *pattern* digeser satu karakter ke kanan dan proses diulangi kembali.

Pencarian jawaban dari sebuah *Word Search Puzzle* dapat diselesaikan dengan Algoritma *Brute Force* pencocokan string. Kata yang harus dicari pada *puzzle* merupakan *pattern* dan *puzzle* merupakan teks yang menjadi pembanding. Kumpulan huruf *puzzle* disimpan sebagai sebuah matriks huruf. Lalu, diiterasi menggunakan proses pencocokan string untuk setiap huruf pada matriks huruf *puzzle*. Proses pencocokan string ini dilakukan dalam delapan arah, yaitu vertikal ke atas, vertikal ke bawah, horizontal ke kanan, horizontal ke kiri, diagonal ke kanan atas, diagonal ke kanan bawah, diagonal ke kiri atas, dan diagonal ke kiri bawah.

2. SOURCE CODE PROGRAM

```
#include <stdio.h>
#include <string.h>
#include <unistd.h>
#include <ctype.h>
#include <sys/time.h>

#define ROWS 200
#define COLS 200
#define WORDBANK 200
FILE* filestream;
char puzzle[ROWS][COLS];
int puzzleAnswers[ROWS][COLS];
char words[WORDBANK][ROWS];
char fileName[25];
char buf;
int sumKata, lengthKata;
int row = 0;
int col = 0;
int prevCol = 0;
int i, j, k, l, m, n, o;
int compared = 0;

void proccessFile(){
    char dir[30] = {'.', '.', '/', 't', 'e', 's', 't', '/'};
    printf("Input File Name: ");
    gets(fileName);

    strcat(dir, fileName);
    filestream = fopen(dir, "r");
    if (filestream == NULL) {
        printf("File open error \n");
    }else{
        while(!feof(filestream)) {
            buf = fgetc(filestream);

            if (buf == '\n'){
                if(col == 0){
                    break;
                }else{
                    row++;
                    prevCol = col;
                    col = 0;
                }
            }
            else if(isalnum(buf)) {
                puzzle[col][row] = toupper(buf);
                puzzleAnswers[col][row] = 9;
                col++;
            }
        }
    }
}
```

```

        sumKata = 0;
        lengthKata = 0;
        while(!feof(filestream)) {
            buf = fgetc(filestream);
            if(buf == '\n'){
                words[sumKata][lengthKata] = '.';
                sumKata = sumKata + 1;
                lengthKata = 0;
            }else if(isalnum(buf)){
                words[sumKata][lengthKata] = toupper(buf);
                lengthKata++;
            }
        }
        words[sumKata][lengthKata] = '.';
        sumKata ++;
        printf("\n---P U Z Z L E   A N S W E R---\n\n");
    }
}

int findWord(int rowKata, int baris, int kolom, int a, int b){
    int found = 0;
    int colorCode;
    m = 0;
    n = baris; o = kolom;
    while((words[rowKata][m] != '.') && found == 0){
        if(words[rowKata][m] == puzzle[o][n]){
            compared=compared+1;
            n = n + a;
            o = o + b;
            m = m + 1;
        }else{
            compared=compared+1;
            found = 1;
            break;
        }
    }
    m = 0;
    n = baris; o = kolom;
    if(found == 0){
        while((words[rowKata][m] != '.')){
            colorCode = rowKata % 6;
            puzzleAnswers[o][n] = colorCode;
            n = n + a;
            o = o + b;
            m = m + 1;
        }
    }
    return found;
}

void printf_COLOR(const char *s, int code){
    if(code == 0){
        printf("\033[0m\033[1;31m%s\033[0m", s);
    }
}

```

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    }else if(code == 1){
        printf("\033[0m\033[1;32m%s\033[0m", s);
    }else if(code == 2){
        printf("\033[0m\033[1;33m%s\033[0m", s);
    }else if(code == 3){
        printf("\033[0m\033[1;34m%s\033[0m", s);
    }else if(code == 4){
        printf("\033[0m\033[1;35m%s\033[0m", s);
    }else if(code == 5){
        printf("\033[0m\033[1;36m%s\033[0m", s);
    }
}

void printResult(){
    int colorCode;
    m = 0;
    n = 0;
    for(m=0; m < row; m++){
        for(n=0; n < prevCol; n++){
            if(puzzleAnswers[n][m] != 9){
                if(n == 0 && m != 0){
                    printf("\n");
                    buf = puzzle[n][m];
                    colorCode = puzzleAnswers[n][m] % 6;
                    printf_COLOR(&buf, colorCode); printf(" ");
                }else{
                    buf = puzzle[n][m];
                    colorCode = puzzleAnswers[n][m] % 6;
                    printf_COLOR(&buf, colorCode); printf(" ");
                }
            }else{
                if(n == 0){
                    printf("\n");
                    printf("%c", puzzle[n][m]); printf(" ");
                }else{
                    printf("%c", puzzle[n][m]); printf(" ");
                }
            }
        }
    }
}

int main() {
    int found;
    struct timeval start, end;

    proccessFile();
    gettimeofday(&start, NULL);

    for(i=0; i < sumKata; i++){
        found = 0;
        k = 0;
        while(k < row && found == 0){

```

```

        j = 0;
        while(j < prevCol && found == 0){
            if(words[i][0] == puzzle[j][k]){
                if(findWord(i,k,j,0,1) == 0){
                    found = 1;
                }else if(findWord(i,k,j,0,-1) == 0){
                    found = 1;
                }else if(findWord(i,k,j,-1,0) == 0){
                    found = 1;
                }else if(findWord(i,k,j,1,0) == 0){
                    found = 1;
                }else if(findWord(i,k,j,-1,1) == 0){
                    found = 1;
                }else if(findWord(i,k,j,-1,-1) == 0){
                    found = 1;
                }else if(findWord(i,k,j,1,1) == 0){
                    found = 1;
                }else if(findWord(i,k,j,1,-1) == 0){
                    found = 1;
                }
            }else{
                compared++;
            }
            j++;
        }
        k++;
    }
}

gettimeofday(&end, NULL);
long seconds = (end.tv_sec - start.tv_sec);
long micros = ((seconds * 1000000) + end.tv_usec) - (start.tv_usec);

printResult();
printf("\n\n**The execution time is %d seconds and %d microseconds\n", seconds, micros);
printf("***Terdapat %d kali perbandingan", compared);

return 0;
}

```

3. SCREENSHOT INPUT DAN OUTPUT

3.1. Data uji yang berukuran *small*

3.1.1. *Small 1*

Input	Output
<pre>test > small1.txt 1 G N I K G N E J A L A K X G G 2 V Y G A J A H L M G L G N B N 3 K A N E K F E P D I C A H T A 4 M M G B P L O Z Z R U A S R L 5 L U G B D A X Z S R R W A I A 6 Z K R C A M E P E I M W P H L 7 V H A U N I A B M C A A A A E 8 S W L H G N W A D L A P C K B 9 I A U L D G U B E M A P L A F 10 A V T A X G N L A R A F U M N 11 D A N J H O E A E T M Y O N U 12 E T A H T K N J K A A P A B G 13 L W R B U A Y A C I C I L W Y 14 E L A L A T Y S R D S N C Q Q 15 K A T O N N Y X T U M E S V I 16 17 NYAMUK 18 BELALANG 19 FLAMINGGO 20 KANGGURU 21 CAPUNG 22 MACAN 23 BERUANG 24 HARIMAU 25 JERAPAH 26 KALAJENGKING 27 BUAYA 28 KELEDAI 29 KELELAWAR 30 LALAT 31 GAJAH 32 AYAM 33 PANDA 34 SEMUT 35 TARANTULA</pre>	<pre>Input File Name: small1.txt ---PUZZLE ANSWER--- G N I K G N E J A L A K X G G V Y G A J A H L M G L G N B N K A N E K F E P D I C A H T A M M G B P L O Z Z R U A S R L L U G B D A X Z S R R W A I A Z K R C A M E P E I M W P H L V H A U N I A B M C A A A A E S W L H G N W A D L A P C K B I A U L D G U B E M A P L A F A V T A X G N L A R A F U M N D A N J H O E A E T M Y O N U E T A H T K N J K A A P A B G L W R B U A Y A C I C I L W Y E L A L A T Y S R D S N C Q Q K A T O N N Y X T U M E S V I **The execution time is 0 seconds and 55 microseconds **Terdapat 4282 kali perbandingan</pre> <p>Keterangan:</p> <ul style="list-style-type: none">• Ukuran puzzle: 15 x 15• Banyak kata yang ingin dicari: 19• Waktu eksekusi program: 0.000055 second• Jumlah total perbandingan huruf: 4282 kali

3.1.2. Small 2

Input	Output
<pre> test > small2.txt 1 E B X G B O N W O R B Q F I A J V 2 P G G Q U T R P E A E E S L T E Y 3 N F K H T I C T G S Y D S F Q R E 4 Q E B R Z V X P F O D E E K Y R G 5 E H E C B W D I O O A T L U D M N 6 H Y O R U B V N B L U Y X L P K A 7 Q E W R G L H K U S Z L J G O A R 8 E L A U Z A M U N V K C B P G W O 9 L P V E I C N N R Z I L W S M I C 10 A R S N V K E S Z J U I I X J D H 11 Y U N G U H T I Z E Z O M X I L J 12 P P U U Q E I W N L Q X Q Z H F A 13 S T U H M M H L Q Z K A X K K Y O 14 T V A C H N W U W U D K N J X V U 15 16 WHITE 17 PURPLE 18 RED 19 PINK 20 GREEN 21 YELLOW 22 ORANGE 23 BLACK 24 BLUE 25 BROWN </pre>	<pre> Input File Name: small2.txt ---PUZZLE ANSWER--- E B X G B O N W O R B Q F I A J V P G G Q U T R P E A E E S L T E Y N F K H T I C T G S Y D S F Q R E Q E B R Z V X P F O D E E K Y R G E H E C B W D I O O A T L U D M N H Y O R U B V N B L U Y X L P K A Q E W R G L H K U S Z L J G O A R E L A U Z A M U N V K C B P G W O L P V E I C N N R Z I L W S M I C A R S N V K E S Z J U I I X J D H Y U N G U H T I Z E Z O M X I L J P P U U Q E I W N L Q X Q Z H F A S T U H M M H L Q Z K A X K K Y O T V A C H N W U W U D K N J X V U **The execution time is 0 seconds and 20 microseconds **Terdapat 1771 kali perbandingan </pre> <p>Keterangan:</p> <ul style="list-style-type: none"> • Ukuran puzzle: 14 x 17 • Banyak kata yang ingin dicari: 10 • Waktu eksekusi program: 0.000020 second • Jumlah total perbandingan huruf: 1771 kali

3.1.3. Small 3

Input	Output
<pre> test > small3.txt 1 K H U H Q U L I H F T S Y C P W 2 I M Y H N J K T E K W Z J F W B 3 N C D T A W A S E P V S R I B I 4 I C F X I R L M A F O H I B V K 5 H V Q N D V E I G I X U F S Y Y 6 Q E O O C T J P B B A P N L M M 7 M T F H Q I O P R O C J A S X I 8 P I L A I C R T O I M P H V W R 9 L F M Z K X A Q T P A P X W E T 10 F W R W W Z K F O K Y F G T P N 11 A E S W P C E K M G I K P I R V 12 T R A D E P E S Q S D O V W Y I 13 W Z J T N W B E C A K L Q O U P 14 Z T G V A H P U F I R H S C L Z 15 D F Z R T Y I L L C Y V V Y B K 16 H J A U J V T E B J C R W X L C 17 N J P W V H H S V E T Q P E Q J 18 B B Q V L F J I Q R T I Z T G C 19 20 PESAWAT 21 BECAK 22 MOTOR 23 SEPEDA 24 MOBIL 25 HELIKOPTER 26 KAPAL 27 PERAHU </pre>	<pre> Input File Name: small3.txt ---PUZZLE ANSWER--- K H U H Q U L I H F T S Y C P W I M Y H N J K T E K W Z J F W B N C D T A W A S E P V S R I B I I C F X I R L M A F O H I B V K H V Q N D V E I G I X U F S Y Y Q E O O C T J P B B A P N L M M M T F H Q I O P R O C J A S X I P I L A I C R T O I M P H V W R L F M Z K X A Q T P A P X W E T F W R W W Z K F O K Y F G T P N A E S W P C E K M G I K P I R V T R A D E P E S Q S D O V W Y I W Z J T N W B E C A K L Q O U P Z T G V A H P U F I R H S C L Z D F Z R T Y I L L C Y V V Y B K H J A U J V T E B J C R W X L C N J P W V H H S V E T Q P E Q J B B Q V L F J I Q R T I Z T G C **The execution time is 0 seconds and 16 microseconds **Terdapat 1979 kali perbandingan </pre> <p>Keterangan:</p> <ul style="list-style-type: none"> • Ukuran puzzle: 18 x 16 • Banyak kata yang ingin dicari: 8 • Waktu eksekusi program: 0.000016 second • Jumlah total perbandingan huruf: 1979 kali

3.2. Data uji yang berukuran *medium*

3.2.1. *Medium 1*

Input	Output
<pre>test > medium1.txt 1 VKLIPMEPMPTUCCFFFKRR 2 ITALEMYKQTGBMIMBRWGU 3 ECVZLVRMMLNBLWHGOXZS 4 VMCXIRWAAOUSUHHZUASK 5 EBHUMPOZBTKUJLYQMDQE 6 KNVOCOSMOSATKERGGNAI 7 TFECZYRNYJBHRFIUORLY 8 ZSAKURAHAYRGAZSIMAVA 9 QINGGOKOTDFFNRLOOKLU 10 CWDYKYHUNCNUNEIFXABF 11 BIATARETBZBADSUJRPFC 12 ASTERLGSZRANMACXXMFP 13 CYZSKZIRXGALYAGOAESL 14 SWLRPNXZWDBWKNLNECLB 15 RWJKTSTPNLOVAIEAAZNK 16 IKHBXPQNRVSZYHADZNHF 17 TDNPILUTISOBRALGJIET 18 BTTLNGTTKRDI BOSULSQK 19 BIURKQVFYDWMMDAWDOB 20 21 MAHAR 22 MELATI 23 ANGGREK 24 ALAMANDA 25 KENANGA 26 TULIP 27 SAKURA 28 COSMOS 29 ASTER 30 MATAHARI 31 BAKUNG 32 TERATAI 33 CEMPAKA 34 DANDELION</pre>	<pre>Input File Name: medium1.txt ---PUZZLE ANSWER--- VKLIPMEPMPTUCCFFFKRR ITALEMYKQTGBMIMBRWGU ECVZLVRMMLNBLWHGOXZS VMCXIRWAAOUSUHHZUASK EBHUMPOZBTKUJLYQMDQE KNVOCOSMOSATKERGGNAI TFECZYRNYJBHRFIUORLY ZSAKURAHAYRGAZSIMAVA QINGGOKOTDFFNRLOOKLU CWDYKYHUNCNUNEIFXABF BIATARETBZBADSUJRPFC ASTERLGSZRANMACXXMFP CYZSKZIRXGALYAGOAESL SWLRPNXZWDBWKNLNECLB RWJKTSTPNLOVAIEAAZNK IKHBXPQNRVSZYHADZNHF TDNPILUTISOBRALGJIET BTTLNGTTKRDI BOSULSQK BIURKQVFYDWMMDAWDOB **The execution time is 0 seconds and 54 microseconds **Terdapat 5033 kali perbandingan</pre> <p>Keterangan:</p> <ul style="list-style-type: none">• Ukuran puzzle: 19 x 20• Banyak kata yang ingin dicari: 14• Waktu eksekusi program: 0.000054 second• Jumlah total perbandingan huruf: 5033 kali

3.2.2. *Medium 2*

Input	Output
<pre>test > medium2.txt 1 UVHAVENGERARIRCELJRYVVB 2 FKSCESCEMONICUHUSTADBJA 3 JEUAPLOGGAACKATHANSIBSY 4 GULBCESNCMTCURERLMFLHDX 5 BHEOPDDAHEKAPURVEFGYAWV 6 URAMPOEVBMMJIFGBRGURGCMF 7 NGPXDMAERHAGNITIPKXKG 8 NEMORNINGPKKRPKKT LHTELI 9 KHLILVFCMHVWTPXSFRZRSM 10 EOCYPYKYDSTNOMTETMCMJRX 11 GLBJIORPFNSEDANGKANZEAY 12 DOIURAOXACASOTPENPFXOBM 13 ANCHIPWCKABHEPNCGCKOHPFL 14 IAZCNITNEESRSASABVREAYA 15 NJAWGLEZWGUCGANBBTTARXB 16 XCHICKENOTANMXRGGBRHDMV 17 BCIFPIYXPQARGLBCGLEBYWY 18 RNSCHEMAVDRSECHAMUSGFVC 19 GSTRHBCCNZFLAPTOPMRAFFD 20 DXMGRJLAUFPRNGEBFJMKWUX 21 CTJQWDPXEJHEDWMBKKKKKBW 22 23 AVENGER 24 MATA 25 ANGgur 26 MORNING 27 CHICKEN 28 LAPTOP 29 GELAS 30 PIRING 31 KEPITING 32 PANDANGAN 33 BUKU 34 SEDANGKAN 35 DODOI</pre>	<pre>Input File Name: medium2.txt ---PUZZLE ANSWER--- UVHAVENGERARIRCELJRYVVB FKSCESCEMONICUHUSTADBJA JEUAPLOGGAACKATHANSIBSY GULBCESNCMTCURERLMFLHDX BHEOPDDAHEKAPURVEFGYAWV URAMPOEVBMMJIFGBRGURGCMF NGPXDMAERHAGNITIPKXKG NEMORNINGPKKRPKKT LHTELI KHLILVFCMHVWTPXSFRZRSM EOCYPYKYDSTNOMTETMCMJRX GLBJIORPFNSEDANGKANZEAY DOIURAOXACASOTPENPFXOBM ANCHIPWCKABHEPNCGCKOHPFL IAZCNITNEESRSASABVREAYA NJAWGLEZWGUCGANBBTTARXB XCHICKENOTANMXRGGBRHDMV BCIFPIYXPQARGLBCGLEBYWY RNSCHEMAVDRSECHAMUSGFVC GSTRHBCCNZFLAPTOPMRAFFD DXMGRJLAUFPRNGEBFJMKWUX CTJQWDPXEJHEDWMBKKKKKBW **The execution time is 0 seconds and 42 microseconds **Terdapat 4641 kali perbandingan</pre> <p>Keterangan:</p> <ul style="list-style-type: none">• Ukuran puzzle: 21 x 23• Banyak kata yang ingin dicari: 13• Waktu eksekusi program: 0.000042 second• Jumlah total perbandingan huruf: 4641 kali

3.2.3. Medium 3

Input	Output
<pre>test > medium3.txt 1 HNAWCEDICYSVKNNUBDJVZD 2 YUKVRNBDPUOZNPFXNPBVPA 3 DKEQTTAMNYPZXHBMQNTIZO 4 YULJWWMAHRSOROMHQVSKAL 5 ISAZGKAGGNAMGMBXALTOH 6 EZPXJYJQFDNGBCGYNCUPSR 7 WEAGVDMUQAMILEDGXRRBQC 8 CRSZNNODIEMPISOMZONGYN 9 IPSZWMERDJJPGZHISOMSIY 10 XYJHAUUCIMNZUZUNEIPNKS 11 QTCSEDHJCJRPZIZRBRFWTA 12 BZBKNSRMUEELDHSYJLNSE 13 WPEZPTICAXGBRJIIVPBAYAO 14 FQWPBSCVZQTLOLPYUTDDQS 15 FJHNJQPWNXASERGVLNQLR 16 OCUYQAXBXVBVMTBNNRBEI 17 THNIDBMXPIUMIJMSYHTPK 18 BLNVQYFBRPTYAAELSDBA 19 RUGOWACJUILIRBMEGHIYLY 20 RLKNMXPXMYIAGSACHWDHCA 21 AUUFLADAYIOVNBEMIIIPENJ 22 BERRVYXFRUGNAXKJEAQXQ 23 LGERSTHKKXJHUBPTQUEGUV 24 ROJYVXHOQYAZCEKIUNNQAO 25 26 ANGUR 27 APEL 28 ALPUKAT 29 BELIMBING 30 KELAPA 31 SUKUN 32 STROBERTI 33 SEMANGKA 34 PISANG 35 JAMBU 36 DURIAN 37 RAMBUTAN 38 JERUK 39 DELIMA 40 SAMO 41 MANGGA 42 KIWI 43 SRIKAYA</pre>	<pre>Input File Name: medium3.txt ---PUZZLE ANSWER--- HNAWCEDICYSVKNNUBDJVZD YUKVRNBDPUOZNPFXNPBVPA DKEQTTAMNYPZXHBMQNTIZO YULJWWMAHRSOROMHQVSKAL ISAZGKAGGNAMGMBXALTOH EZPXJYJQFDNGBCGYNCUPSR WEAGVDMUQAMILEDGXRRBQC CRSZNNODIEMPISOMZONGYN IPSZWMERDJJPGZHISOMSIY XYJHAUUCIMNZUZUNEIPNKS QTCSEDHJCJRPZIZRBRFWTA BZBKNSRMUEELDHSYJLNSE WPEZPTICAXGBRJIIVPBAYAO FQWPBSCVZQTLOLPYUTDDQS FJHNJQPWNXASERGVLNQLR OCUYQAXBXVBVMTBNNRBEI THNIDBMXPIUMIJMSYHTPK BLNVQYFBRPTYAAELSDBA RUGOWACJUILIRBMEGHIYLY RLKNMXPXMYIAGSACHWDHCA AUUFLADAYIOVNBEMIIIPENJ BERRVYXFRUGNAXKJEAQXQ LGERSTHKKXJHUBPTQUEGUV ROJYVXHOQYAZCEKIUNNQAO **The execution time is 0 seconds and 90 microseconds **Terdapat 9110 kali perbandingan</pre> <p>Keterangan:</p> <ul style="list-style-type: none"> Ukuran puzzle: 24 x 22 Banyak kata yang ingin dicari: 18 Waktu eksekusi program: 0.000090 second Jumlah total perbandingan huruf: 9110 kali

3.3. Data uji yang berukuran large

3.3.1. Large 1

Input	Output
<pre>test > large1.txt 1 JJETJHHMJMXQQHINGUWKQSNVIGXAEAI 2 ELKPSQCNFPLOJSEBSYIGIWMUKNZSOFT 3 FNPHIDQORIPAGQECTLYXYAYWPPMBVMA 4 NLOPAKEFERAKKEMEUCOTHTTCDGTJHHDL 5 FYOMHLWZAGVGRGSORQOMYUIMCROZUMI 6 WKNVD8CHXXOZACUBDMZWLQVCHWLZPSA 7 IZKBJPFFPNJEMIQOLJAEDEXZBVSYLTCU 8 DJBVMJTHAILANDBKHWFOWSZTEIBIRAST 9 JCIZACPXCINEXCTCXCFMAAGRVVHYNEO 10 GKCTNLZRUIZDHUITYYFSGREAOXATRI 11 VVJBTQIGBYOQDQYFWFHYPVULMWEDEEYM 12 OSZVJB3DZHJTHKHLOAZDDKPBNIQWICA 13 RFRZVKCCHFSGWGPCNICRZFAEASQGIYIG 14 ILRVWPPCYQOUEUCFPLUQTGHHYPPDGSWL 15 INHXIRNQMNBAKDETAOFYNLMAFWHRMM 16 ZYMQHNSQJSTFNAGRRRYUZIJGQSRZVHX 17 SSLPKQDVHAJFJBLBGTFRFCYXZWPISPZ 18 TLEOVFD0XRAJFJGQCSJILZEVBHLRMBXI 19 MKHQWDPJNAKVMQSMNUTEUVUVRWBRBZEZ 20 IRHJVFGPCETMLKGPXAIZPVJLYQDAGUQ 21 NDHLQMALAYSIAATTFAMBBHANZFJSSBSXT 22 TNYORRHMYRJISNFZRBQETCNWXXGXWRVV 23 MERLWKANJYMFAXSIVEMLXUSGAKGKEVAI 24 PJMMIGHYQEKVHIKDGFSFOHJSSICNARPX 25 PQDVIFLHJGKTXRCWQIPISEZUNCQLODSPA 26 NXGSFKTRRESTRQIXRCALZTQNSZEUBNOD 27 DLSPNVZMRTMGINFGWXUINHKKHDXPARPF 28 JBULHZIYMDWMLRGRFRVPFDTPODQLTLOI 29 YSOWPIJEAJCUDNTUHTIMEKMAAGPDKCBL 30 FFMDDJFYNPCNIDZRBANSBXEXEZNKGKVF 31 ODQWOFXAAMXMHVIVAXAYIYSEZEZXUYF 32 33 INDONESIA 34 AUSTRALIA 35 BAKELADESH 36 DENMARK 37 FILIPINA 38 INGGRIS 39 ITALIA 40 JERMAN 41 JEPANG 42 MALAYSIA 43 MYANMAR 44 PRANCIS 45 SINGAPURA 46 THAILAND 47 VIETNAM 48 ZIMBABWE</pre>	<pre>Input File Name: large1.txt ---PUZZLE ANSWER--- JJETJHHMJMXQQHINGUWKQSNVIGXAEAI ELKPSQCNFPLOJSEBSYIGIWMUKNZSOFT FNPHIDQORIPAGQECTLYXYAYWPPMBVMA NLOPAKEFERAKKEMEUCOTHTTCDGTJHHDL FYOMHLWZAGVGRGSORQOMYUIMCROZUMI WKNVD8CHXXOZACUBDMZWLQVCHWLZPSA IZKBJPFFPNJEMIQOLJAEDEXZBVSYLTCU DJBVMJTHAILANDBKHWFOWSZTEIBIRAST JCIZACPXCINEXCTCXCFMAAGRVVHYNEO GKCTNLZRUIZDHUITYYFSGREAOXATRI VVJBTQIGBYOQDQYFWFHYPVULMWEDEEYM OSZVJB3DZHJTHKHLOAZDDKPBNIQWICA RFRZVKCCHFSGWGPCNICRZFAEASQGIYIG ILRVWPPCYQOUEUCFPLUQTGHHYPPDGSWL INHXIRNQMNBAKDETAOFYNLMAFWHRMM ZYMQHNSQJSTFNAGRRRYUZIJGQSRZVHX SSLPKQDVHAJFJBLBGTFRFCYXZWPISPZ TLEOVFD0XRAJFJGQCSJILZEVBHLRMBXI MKHQWDPJNAKVMQSMNUTEUVUVRWBRBZEZ IRHJVFGPCETMLKGPXAIZPVJLYQDAGUQ NDHLQMALAYSIAATTFAMBBHANZFJSSBSXT TNYORRHMYRJISNFZRBQETCNWXXGXWRVV MERLWKANJYMFAXSIVEMLXUSGAKGKEVAI PJMMIGHYQEKVHIKDGFSFOHJSSICNARPX PQDVIFLHJGKTXRCWQIPISEZUNCQLODSPA NXGSFKTRRESTRQIXRCALZTQNSZEUBNOD DLSPNVZMRTMGINFGWXUINHKKHDXPARPF JBULHZIYMDWMLRGRFRVPFDTPODQLTLOI YSOWPIJEAJCUDNTUHTIMEKMAAGPDKCBL FFMDDJFYNPCNIDZRBANSBXEXEZNKGKVF ODQWOFXAAMXMHVIVAXAYIYSEZEZXUYF **The execution time is 0 seconds and 100 microseconds **Terdapat 14329 kali perbandingan</pre> <p>Keterangan:</p> <ul style="list-style-type: none"> Ukuran puzzle: 31 x 32 Banyak kata yang ingin dicari: 16 Waktu eksekusi program: 0.000100 second Jumlah total perbandingan huruf: 14329 kali

3.3.2. Large 2

Input	Output
<pre> test > large2.bit 1 PANDDDVDWLGUENBLCNSNWQRIAWAXWDFJTJYFWZM 2 GFXCSCCKOQJNXDAJNCXCJCEQPNNQFPBRUMPTR 3 HKJZPTHPHWHVHBGNOAHZQUJAHEUOPDRRQNZD 4 OVXXMRNIDWEEEXBZPGWJIUJKKPKNLADBSQSXR 5 BWHLGMQNGBKIHDVNACAMATWLETOAOZUELNT 6 ENNYFWCNZRQLIAPTFTIRXTPOITSOCAWAFRCFGQ 7 LSGZERULXKCVQRUUIBGUWKMNITNRWHXXHAYA 8 MZISPPHOTSTNTGZHADVMRSVECNLSKNRRHIJ 9 ZBFVAEQFAKWCEOEIGTTFQMLTYARYEIVSREN 10 OOCSPDKRQZMCHGSYORHYRTALNFWKAZEYOLJ 11 XLFVAIRVAPCNRXQCKNXHDTNUZFNEDTASHWJO 12 UHQLOCLYNNYFPTCFKKS PCGOTLFXECZUYQFTB 13 KRBBJVOLTKGAIHDBRCEZGWQIYDLMFHIXAITT 14 XRMRYTWFUWNGCIZKHEKQACQZLETZUQIBTUTF 15 RSAZJAFFLDPCULAIRHRKPMVJJOHRXMTTOJXBI 16 MFKWJLBOAHLVWRQOTCSISSDMUZDOHLEPEGAU 17 OSMUAAAXGPFQOOGKUAZUAZXNGOQLWNWXBAEYEO 18 QHKDHLIJZVXKPUSSFSQJMKVCMPRJNSZMKKXX 19 UALFSXEIPIRHCUTYDNSEANXVXRONKWKKEOLRWY 20 FOVGKEWLCOZWPVUHRGKHAHUKSVHUSKCMHUH 21 XOVBCEDZEJFWQJRPBWOHJJGHNHGMVDPBFVRH 22 YCYPUAFAEEKGUTGVSRCZLEKYZJXACNAEONUSF 23 REWKVEUBRFKPCKNBFBRCFCCMCYLFEFRONTXW 24 BCFHFYCEUFJBBABHRNSABERUANGRFJPFUKIZK 25 HEFUXDPUXVNUSTJWOPVGHILTZZKZONQMFWFOI 26 GBLZONZKPYZPTVDJAXZJCYQTDREVQMKHNBNUC 27 WEIAJJKNDRQWEQGHVPBOWKOZYXOTLRCCODYD 28 HXWCLKKALAJENGKINGZSTONVFKAZIHARIMAU 29 ABJLQABKBDFTUVENTBXVRKEJRZBIFSFCJHNNX 30 JXFQPJNLKFNZUFEJAZWURZWVRVNTNNSUFENG 31 OLYYIERGYRCCZBLBFALDNZJUWKVQHPNTDTKE 32 QDNHDOGGNIMALFZVHVZNZHAJAGKJZTNXZFP 33 CNGEOLJZMNB NJWONUXUWQSWX BZVKRFLLTMA G 34 35 MACAN 36 BELALANG 37 FLAMINGGO 38 KANGGURU 39 CAPUNG 40 NYAMUK 41 BERUANG 42 HARIMAU 43 JERAPAH 44 KALAJENGKING 45 BUAYA 46 KELEDAI 47 KELELAMAR 48 LALAT 49 GAJAH 50 AYAM 51 PANDA 52 SEMUT 53 TARANTULA </pre>	<pre> Input File Name: large2.txt ---PUZZLE ANSWER--- PANDDDVDWLGUENBLCNSNWQRIAWAXWDFJTJYFWZM GFXCSCCKOQJNXDAJNCXCJCEQPNNQFPBRUMPTR HKJZPTHPHWHVHBGNOAHZQUJAHEUOPDRRQNZD OVXXMRNIDWEEEXBZPGWJIUJKKPKNLADBSQSXR BWHLGMQNGBKIHDVNACAMATWLETOAOZUELNT ENNYFWCNZRQLIAPTFTIRXTPOITSOCAWAFRCFGQ LSGZERULXKCVQRUUIBGUWKMNITNRWHXXHAYA MZISPPHOTSTNTGZHADVMRSVECNLSKNRRHIJ ZBFVAEQFAKWCEOEIGTTFQMLTYARYEIVSREN OOCSPDKRQZMCHGSYORHYRTALNFWKAZEYOLJ XLFVAIRVAPCNRXQCKNXHDTNUZFNEDTASHWJO UHQLOCLYNNYFPTCFKKS PCGOTLFXECZUYQFTB KRBBJVOLTKGAIHDBRCEZGWQIYDLMFHIXAITT XRMRYTWFUWNGCIZKHEKQACQZLETZUQIBTUTF RSAZJAFFLDPCULAIRHRKPMVJJOHRXMTTOJXBI MFKWJLBOAHLVWRQOTCSISSDMUZDOHLEPEGAU OSMUAAAXGPFQOOGKUAZUAZXNGOQLWNWXBAEYEO QHKDHLIJZVXKPUSSFSQJMKVCMPRJNSZMKKXX UALFSXEIPIRHCUTYDNSEANXVXRONKWKKEOLRWY FOVGKEWLCOZWPVUHRGKHAHUKSVHUSKCMHUH XOVBCEDZEJFWQJRPBWOHJJGHNHGMVDPBFVRH YCYPUAFAEEKGUTGVSRCZLEKYZJXACNAEONUSF REWKVEUBRFKPCKNBFBRCFCCMCYLFEFRONTXW BCFHFYCEUFJBBABHRNSABERUANGRFJPFUKIZK HEFUXDPUXVNUSTJWOPVGHILTZZKZONQMFWFOI GBLZONZKPYZPTVDJAXZJCYQTDREVQMKHNBNUC WEIAJJKNDRQWEQGHVPBOWKOZYXOTLRCCODYD HXWCLKKALAJENGKINGZSTONVFKAZIHARIMAU ABJLQABKBDFTUVENTBXVRKEJRZBIFSFCJHNNX JXFQPJNLKFNZUFEJAZWURZWVRVNTNNSUFENG OLYYIERGYRCCZBLBFALDNZJUWKVQHPNTDTKE QDNHDOGGNIMALFZVHVZNZHAJAGKJZTNXZFP CNGEOLJZMNB NJWONUXUWQSWX BZVKRFLLTMA G **The execution time is 0 seconds and 159 microseconds **Terdapat 20779 kali perbandingan </pre>

Keterangan:

- Ukuran puzzle: 33 x 36
- Banyak kata yang ingin dicari: 19
- Waktu eksekusi program: 0.000159 second
- Jumlah total perbandingan huruf: 20779 kali

3.3.3. Large 3

Input	Output
<pre> test > large3.txt 1 VOCFQDVOEPCFFLWPOVMMKPMOYPUMRUZGQU 2 MQAXJCTLLUKLLYZEACAZRHLPOXLGUYGLGS 3 JQLNGSHKZYFGNZSSIPBRXSNZTCEOHXQXBK 4 SSAVVI GPPUMRMGYNDVVQWNTNQYNIDXBALHC 5 VVYSZAMRNDEOZWZXGLPBUYUMWOJZKZFDAA 6 OLDRDHOANXXCKXIYKWN OFASGRHLWHFCULL 7 RXWXUTGOGWIKTXYUBGVWHRYKKGZRWCXVVB 8 TDJNKGAYBGNDICWLXKKVIYMWVBRWHQXTTC 9 CEPXMLSXZNZYMVOVTRAXYTJPJEYMGSO GJQ 10 ACYFXOMWTMMZQMVS BXIZFRJNBSVTMCUVFX 11 ZNMVY GQBHYDZXQTTUSRXHIASNPZLTUCTTP 12 MNAPMQLRTICKVUKOYTQROPADHMAO COGBD 13 YGXZOJTFJHORWSNNTTTRMGFI ZSVEBHLIKH 14 VNRQFDGVMZPHZHOLDTSVGYONFSZELAJYOJ 15 AORG DYNACJGBDDMOPGYEVHQI WGYUPWYUS 16 VTNUOPWB PVENLPIPHZMK SJKIXNQ MELJGBR 17 VWLADCHQNH YFTUELOEGMQCUM AURWQIZZNJ 18 QXWNYGGFEQTOWUSPD DCKUJSRJEKEAFMWLG 19 VNVAKYLFWP UKEOOCATNBZ WODCNOGVMAEQI 20 TGTPEOZYPWQKIKMSHIQWLCGTZ NKIMRNSBW 21 MSBHHTC WSSKRZEUQPI TOFWPFHRRIDIDGNY 22 PBPMITAGY PMDMPZDKHQVZVQQA OEBBAXHUM 23 SGJKNBJITZJFLNAIRKCUKBOAYBIDBNWLLU 24 QXWQMTMBEHUW WLUHJFHXUECCCFZDRBSTT 25 PCIRNCGEMPXKKBFO PKXWNL SABNCDKUFD DDP 26 PUSCQYLEFUSPHFYZQIGFEW IUBWFAHDBDFF 27 VWRTWQVNSPCMR EHTCRVILI WGCZOXTVZZSU 28 GAIPWHQBXCUF PALOKIWR TXVXJBARJKAEP 29 YHVELPQD TYDGEESODD GREENIBZCGBSPMWD 30 ZZDYPEI PSHGUCSQXHQPYU OBDWVVEYRI RTX 31 GGMXNJITBEBJQIEGGRZJCIKHRJJJORGEVW 32 GTIXRKTGKCF SYUDKCPJNJIEBLOPIXYCGK 33 GGFHFVLEJYUGQFXONDBCWTPXPDNVWZFKOL 34 EJIHOJ K LZAGRWQFHRSYVEDNWOLLEYIQRB 35 UJEBJCSQYOJZZHEJ CXVVELBGJYHQXMMGFF 36 QWDRHSHFOYURIZGUEKTFQYCYYPVGUGWVUW 37 38 WHITE 39 PURPLE 40 RED 41 PINK 42 GREEN 43 YELLOW 44 ORANGE 45 BLACK 46 BLUE 47 BROWN </pre>	<pre> Input File Name: large3.txt ---PUZZLE ANSWER--- VOCFQDVOEPCFFLWPOVMMKPMOYPUMRUZGQU MQAXJCTLLUKLLYZEACAZRHLPOXLGUYGLGS JQLNGSHKZYFGNZSSIPBRXSNZTCEOHXQXBK SSAVVI GPPUMRMGYNDVVQWNTNQYNIDXBALHC VVYSZAMRNDEOZWZXGLPBUYUMWOJZKZFDAA OLDRDHOANXXCKXIYKWN OFASGRHLWHFCULL RXWXUTGOGWIKTXYUBGVWHRYKKGZRWCXVVB TDJNKGAYBGNDICWLXKKVIYMWVBRWHQXTTC CEPXMLSXZNZYMVOVTRAXYTJPJEYMGSO GJQ ACYFXOMWTMMZQMVS BXIZFRJNBSVTMCUVFX ZNMVY GQBHYDZXQTTUSRXHIASNPZLTUCTTP MNAPMQLRTICKVUKOYTQROPADHMAO COGBD YGXZOJTFJHORWSNNTTTRMGFI ZSVEBHLIKH VNRQFDGVMZPHZHOLDTSVGYONFSZELAJYOJ AORG DYNACJGBDDMOPGYEVHQI WGYUPWYUS VTNUOPWB PVENLPIPHZMK SJKIXNQ MELJGBR VWLADCHQNH YFTUELOEGMQCUM AURWQIZZNJ QXWNYGGFEQTOWUSPD DCKUJSRJEKEAFMWLG VNVAKYLFWP UKEOOCATNBZ WODCNOGVMAEQI TGTPEOZYPWQKIKMSHIQWLCGTZ NKIMRNSBW MSBHHTC WSSKRZEUQPI TOFWPFHRRIDIDGNY PBPMITAGY PMDMPZDKHQVZVQQA OEBBAXHUM SGJKNBJITZJFLNAIRKCUKBOAYBIDBNWLLU QXWQMTMBEHUW WLUHJFHXUECCCFZDRBSTT PCIRNCGEMPXKKBFO PKXWNL SABNCDKUFD DDP PUSCQYLEFUSPHFYZQIGFEW IUBWFAHDBDFF VWRTWQVNSPCMR EHTCRVILI WGCZOXTVZZSU GAIPWHQBXCUF PALOKIWR TXVXJBARJKAEP YHVELPQD TYDGEESODD GREENIBZCGBSPMWD ZZDYPEI PSHGUCSQXHQPYU OBDWVVEYRI RTX GGMXNJITBEBJQIEGGRZJCIKHRJJJORGEVW GTIXRKTGKCF SYUDKCPJNJIEBLOPIXYCGK GGFHFVLEJYUGQFXONDBCWTPXPDNVWZFKOL EJIHOJ K LZAGRWQFHRSYVEDNWOLLEYIQRB UJEBJCSQYOJZZHEJ CXVVELBGJYHQXMMGFF QWDRHSHFOYURIZGUEKTFQYCYYPVGUGWVUW **The execution time is 0 seconds and 75 microseconds **Terdapat 12373 kali perbandingan </pre>
	<p>Keterangan:</p> <ul style="list-style-type: none"> • Ukuran puzzle: 36 x 34 • Banyak kata yang ingin dicari: 10 • Waktu eksekusi program: 0.000075 second • Jumlah total perbandingan huruf: 12373 kali

3.3.4. Large 4

Input	
	<pre> test > large4.txt 1 U I N T D Z I P V I X L P R P N G A H V L I N N L B X L M K I H C O S C G N G G U N F K S S D D K B B 2 U Q T H K P M K V J K A L G I E S J E S C E U B J E C G I M F O F M J M E R R U R K K D V M I N F E 3 P H S U P Q F E M P K A I D N A L N I F G G E N Q C J G S O H K M A R P A G U V X C C M I E P U L F 4 L D J E T R V M J G V D B Q U Q E A S Y L Q V F Y I N D T V B S S T I E H P J Q A K V N P I E F X 5 S E J X T I L V E B H T I R P Z T T A P D Q W E M N J H W R E Q E T W L N W X M N O K C M Q J J L L 6 Q K J P O W Y B E Z M Y A X U U E S D E M T U N X G E N W Y Q C X D S W A J P E L L B G L T C G U T 7 K Y H U Y P S Z I S P A J E N A U W L D G I D P U G N V O A B P O N A O S R I S M O K D Y B N M J Z 8 R I M G Q Y A C H A J M L N U J O U A W D D B C Z R N D K H Z X F E U L H A T N C H Q Q F N V V I 9 T L E L M D A O B F K A K A A U L U A T F J I P N I Z F A V R G R X G A G T X S D B D Z A M Z S C Q 10 G N Y N Q K Y S Z I X M H Z Y K C X N M L R N N L S S C G G N K Y I C E C N O P U I U G O Q N L U F 11 R Z Q T F R E A A N Z A F I E S O U P V X O J T Z T L K U Y U Z R B Y O K A A G L A A S K C A T G P 12 E A W M O F P R T X P L U M H C I M L C O N E I V U U Y U C T Z O Y R B E L T B Z U S L F S K V X Q 13 G E E M T H O U O S Y S J B A V H A G L M A L L B M Y U N G A T S L B D R N P P I O P A Q A H A M S 14 R D B E E B Z D L U Y I C A N Y S S R R T W M L V J G T D Q T E U S B Z N S U O D T J V U Y D Y N V 15 Y Q G J K H V N S T A O C B I G C Q N N A V Z H G U C D C M N C R Z E R A T A Q B O O S X P E G R 16 R T U R K I P O K C X A O W A F O X A G S K C L E V B U V F V I N P K J S N Y A G N B P T V I R Q N 17 P I H E Q M H U X U O B E R H T B M A J F E I Y J V F V U E B U H X M Y J C C B J Y R I G X A N X 18 U F W E G R X K B G Z U D C K E L L B P I B S Q W R V G J A I L X U P X E M D R D U I N A M D I D X 19 M T B F V U Q C N A M A Y U A X I H T A S H K C U Z H S T G X E C V L A N V N H N D I W M J D Z N 20 X O N G N X R J Y L S N G Y S Z U P M N H H U K K A D L D Q A Q E A S M R R I N L F Q Y U T N N N R 21 E B K R D Q K B B Y S T D C Y E P Z O E O T X R K T I Z N X T E V G U R R S S S T F J P K G X A L R 22 S M F U C E O S T W M Q A A I G F N L F C J O D R V R V F L T W E M S Q C I B K T V L S F P B L Y C 23 T V A V O N M M Q F Y M U J Z G K U K P D T I C Z B Q X F N V H L T H D C G Q C A A C G D H Y O U M 24 R J A M O R B C A W O G Y L F A P U H O X N F S Q C R X Z L S E P O V N U F T B P Z N G E T H P V P 25 J A I O K L K H H N Y R M A N T E I V S I R U M V Z P O D B V F Y A W L G W E H W L Y K E W T G I 26 D Z J X Q U B O G T O A T K J F F O A Q U M Y K G K I A B G N P J R F Z J B N U F O U C I B I D V L 27 T Q F Z K C R O K L W H M S A S T S D W E M C Y N T K P L T Y H P E Q R B U S H D G X D C O I D J O 28 G B B K Q C L Y S T A K I F Z W K H P L J O G G A G U P M N T Y M K J X R X C J F D Q D X N T A Q Y 29 H K E F K I E X O I L R J D O Z V S Y A C C O S X W K N A E V Y A U A S F N O X W J G U Z T U W O N 30 E P B I A Z U Y L P N P J M P T N O I G R O D A E U Z V L T I D A A D K E L Y L S Y U U L R Z I A 31 A I X L X U U A W M G W L Y T R Y U U Z L B A K C E N H Q V B Z D K T O D T U E A P G V X M U G P 32 P Y F A S E M Q N A O A N Y M K F Y F G Q F I F Z J A U S X V O N X A D A T O T X Y B E Z L S 33 Y L X V B D E C A C R H L P O C G N E R B D I P O J I A W J Y O R T H Q D P N M R G O K O R A H V 34 I U I O Q U M T O F M A L F U G P V G O M L Y B F N U P Q N A D B R Q M V V S F E A N G A T G L E B 35 K H U D D F O K I E N L K Q I R H G Z P I C X K D Q J E I N S M M W O D I L Y T E G A S A U M N Q L 36 V F V P R J D J N N X M W S C G A J Y P D D E O Y K Z I M C U A O U W B A J D X N P J P T L Q I H 37 F I R T E E V E K C J C P N A C H V I Y K F N C N J X T G S S J X I W V V N I V B O E G D L W S U U 38 W I F H M B X V N U O J P O Z G O N O E E E Q S I L N E L K Z O G A K J E R M A N H J W G P Z O U I 39 Z J C U H R R C W M Y W X O S E A B A P S S S U J E M L J N J Y T Y L A U H Y E U H F F U Q A I B Y 40 K P A R U R J F Y J A A D B E V M D I I K D X C G Q Q Y B K E I H B Z M K E U J S X G Q N X L B A W 41 T U C T E Z A R T Q A R Q N V I U C A Y Z Y R R B H U N M M A P J B A Q Z H L U K C Z X J P T I Z Z 42 N P Y T S I Z C F D Y D Z Y H C O D E E A U V U F V O U Y R U N T W B U V S H D K K C B N P X 43 M U E A L N G N J V J K V U L Q R K R O T H I C M R E Y F S L I A R F O P Z O F G B A R U K U O 44 A I R A N Y A S V Q V P E O Q D O A M K C O C N J T S V K S B A M P A D I E N G B G A I E T S N K E 45 N H T P J X Q F T L N N B V P A K I S T A N T S R D F L R S K A K R G N Y M B E K C I S I S Q T N H 46 Y I R Z E C O G A Z G L C V V E L G M A K B V H K R V U K U E I L L A P W X F O G E X I I P I C C 47 N E V O Q G W V C O R H X E R I S R T R I L J B C O X I E X N B V X U K G U A X A U X V J S F P A T 48 W J S U O H W H C D G H O D M T C Z Z H H I H O L S P R N Y G K G F B J R K G H P B N D U A A H G V 49 Z Y I N T F M E I F F Q Q R A T R A Z W K T A X H I C D A V A X D A V T M M R V X Z C E I W F M F X 50 I Y S X G C X V U R U G U A Y S T K O E W T S T M E A Z G H C N B N X F S H M T V S G V R U F X M B 51 52 INDONESIA 53 AUSTRALIA 54 NERAL 55 ARGENTINA 56 YAMAN 57 BELGIA 58 BULGARIA 59 DENMARK 60 INDIA 61 SERBIA 62 FINLANDIA 63 HONDURAS 64 HONGARIA 65 VENEZUELA 66 INGRIS 67 JEPANG 68 IRAN 69 ITALIA 70 IRAK 71 JERMAN 72 JAPAIKA 73 KOLONBIA 74 KENYA 75 KIMATT 76 KUNGA 77 QATAR 78 LEBANON 79 LIBIA 80 MALAYSIA 81 MADAGASKAR 82 MONGOLIA 83 SINGAPURA 84 MYANMAR 85 ALBANIA 86 OMAN 87 POLANDIA 88 VIETNAM 89 FRANCIS 90 PAKISTAN 91 LAOS 92 RUSIA 93 RUMANIA 94 TURKI 95 SPANYOL 96 FILIPINA 97 THAILAND 98 MAROKO 99 TURKMENISTAN 100 BANGLADESH 101 UGANDA 102 UKRAINA 103 ECUADOR 104 PORTUGAL 105 URUGUAY 106 ZIMBABWE </pre>

Output

Input File Name: large4.txt

---PUZZLE ANSWER---

```
U I N T D Z I P Y I X L P R P N G A H V L I N N L B X L M K I H C O B C G N G G U N F K S D D K B B
U Q T H K P M K V J K A L G I E S J E S C E U B J E C G I W F O F M J W E R R U R Y K D V M I N F E
P H S U P Q F E M P K A I D N A L N I F G G E N Q C J G S O H K M A R P A G U V X C C M I E P U L F
L D J E T R V W J G V D B Q U Q E A S Y L Q V F Y I N D T V B S S T I E H P J Q A K V N P I W E F X
S E J X T I L V E B H T I R P Z T T A P D Q W E M N J H W R E Q E T W L N W X M N O K C M Q J J L L
Q K J P O W Y B E Z M Y A X U E S D E M T U N X G E N W Y Q C X D S W A J P E L L B G L T C G U T
K Y H U Y P S Z I S P A J E N A U W L D G I D P U G N V O A B P O N A O S R I S M O K D Y B N M J Z
R I M G Q Y A C H A J M L N U J O U A W D D B C Z R N D K H Z X F E U L H A T N C M Q Q F W N V I
T L E L M D A O B F K A K A U L U A T F J I P N I Z F A V R G R X G A G T X S D B D Z A M Z S C Q
G N Y N Q K Y S Z I X W M Z Y K C X N M L R N N L S S C G G N K Y I C E C N O P U I U G O Q N L U F
R Z Q T F R E A A N Z A F I E S O U P V X O J T Z T L K U Y U Z R B Y O K A A G L A A S K C A T G P
E A M W D F P R T X P L U M H C I M L C Q N E I V U Y U C T Z O Y R B E L F I B Z U B L F S K V X Q
G E E M T M O U Q S Y S J B A Y H A G L M A L L B M Y U N G A T S L B D R N P P I Q P A Q H A A M S
R D B E E B Z D L U Y I C A N Y S S R R I W W L V J G I D Q T E U S B Z N S O O D T J V U Y D Y N V
Y Q G J K H V N S T A O C B I G C Q N N A V Z H G U C D C O M N C R Z E R A T A Q B O O S X P E G R
R T U R K I P O K C X A O W A F O X A G S K C L E V B U V F V I N P K J S N Y A G N B P T V I R Q N
P I H E H Q M H U X U O B E R H T B M A J F E I Y J V F V U E B U H X M Y J C C B J Y R I G X A N X
U F W E G R X K B G Z U D C K E L L B P I B S Q W R V G J A I L X U P X E M D R D U I N A M D I D X
M T B F V U Q U C N A M A Y U A X I H T A S H K C U Z H S T G X E C V L A N V N H N D I W M J D Z N
X O N G N X R J Y L S N G Y S Z U P M N H H U K K A D L D Q A Q E A S M R R I N L F Q Y U T N N R
E B K R D Q K B B Y S T D C Y E P Z O E O T X K T I Z N X T E V G U R R S S T F J P K G X A L R
S N F U C E O S T W W Q A A I G F N L F C J O D R V R V F L T H E M S Q C I B K T Y L S F P B L Y C
T V A V O N M M Q F Y M U J Z G K U K P D T I C Z B Q X F N V H L T H D C G Q C A A C G D M Y O U M
R J A M O R B C A W O G Y L F A P U H O X N F S Q C R X Z L S E P O V N U F I B P Z N G E T H P V P
J A I O K L K H H N Y Y R M A N T E I V S I R U M V Z P O D B V F Y A W L G W E H W L Y K E W T G I
D Z J X Q U B O G T O A T K J F F O A Q U M Y K G K I A B G N P J R F Z J B N U F O U C I B I D V L
T Q F Z K C R O K L W H M S A S T S D W E M C Y N T K P L T Y H P E Q R B U S H D G X D C O I D J O
G B B K Q C L Y S T A K I F Z W K H P L J O G G A G U P W N T Y W K J X R X C J F D Q D X N T A Q Y
H K E F K I E X O I L R J D O Z V S Y A C C O S X W K N A E V Y A U A S F N O X W J G U Z T U W O N
E P B I A Z U Y L P N P J W P T N O I G R O D A E U Z V L T I D A A D K E L Y Q L S Y U U L R Z I A
A I X L X U U A W V W G W L Y T R Y U U Z L B A K C E N H Q V B Z D K T O D T U E A P G V X M U G P
P Y F A S E N Q X N A O A N Y H K F Y T F G Q F I F Z J A U S X V O N X R D A I O I X Y B E Z L B S
Y L X V B D E C A C R H L P O C G N E R B D I P Q J I A W J I Y O R T H Q D P N M R G O K O R A M V
I U I O Q U M T Q F M A L F U G P V G O M L Y B F N W P Q N A D B R Q M V S F E A N G A I G L E B
K H U D D F O K I E N L K Q I R H G Z P I C X K D Q J E I N S M M W D D I L Y T E G A S A U W N Q L
V F V P R J D J N N X M W S C G A J Y P D D E O Y K Z K I M C U A O U W B A J D X N P J P T L Q I M
F I R T E E V E K C J C P N A C H V I Y K F E N C N J X T G S S J X I W V V N I V B O E G D L W S U U
W I F H M B X V N U O J P O Z G O N O E E E Q S I L N E L K Z O G A K J E R M A N H J W G P Z O U I
Z J C U H R R C W M Y W X O S E A B A P S S S U J E M L J N J Y T Y L A U H Y E U H B F U Q A I B Y
K P A R U R J F Y J A A D B E V W D I I K D X C G Q Q Y B K E I H B Z M K E U J S X G Q N X L B A W
T U C T E Z A R T Q A R Q N V I U C A Y Z Y R R B H U N W M A P J B A Q Z H L U K C Z X J P T I Z Z
N F Y T S I Z C F D Y D K Z Y H C O D M E E A U V U F V Q U Y R U N I M W B U V S M D K K C B N P X
M U E A L M G N W J V J K V U L Q R K R O T H I C W R E Y F S L I A R F F O P Z O F G B A R U K U O
A I R A N Y A S V Q V P E O Q D O A M K C O C M J T S V K S B A M P A D I E N G B G A I E I H S K E
N H T P J X Q F T L N N B V P A K I S T A N T S R D F L R S K A K R G N Y M B E K C I S I S Q T N H
Y I R Z E C O G A Z G L C V V E L G M A K B V H K R W V U K U E I L L A P W X F O G E X I I P I C C
N E V O Q G W V C O R H X E R I S R T R I L J B C O X I E X N B V X U K G U A X A U X V J S F P A T
W J S U O H W H C D G H O D M T C Z Z H H I H O L S P R N Y G K G F B J R K G H P B N D U A A H G V
Z Y I N T F M E I F F Q Q R A T R A Z W K T A X H I C D A V A X D A V T M M R V X Z C E I W F M X F
I Y S X G C X V U R U G U A Y S T K O E W T S T M E A Z G H C N B N X F S H M T V S G V R U F X W B
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**The execution time is 0 seconds and 626 microseconds

**Terdapat 114261 kali perbandingan

Keterangan:

- Ukuran puzzle: 50 x 50
- Banyak kata yang ingin dicari: 55
- Waktu eksekusi program: 0.000626 second
- Jumlah total perbandingan huruf: 114261 kali

4. ALAMAT DRIVE KODE PROGRAM

<https://github.com/adeliaaaa/Tucil1-STIMA.git>

5. CEKLIST

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