LAPORAN TUGAS KECIL 1
IF2211 STRATEGI ALGORITMA

Penyelesaian *Word Search Puzzle* dengan Algoritma *Brute Force*

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PROGRAM STUDI TEKNIK INFORMATIKA
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A. ALGORITMA BRUTE FORCE

Langkah-langkah :

1. Daftarkan setiap huruf di puzzle dalam tabel dan kata yang dicari dalam query
2. Lakukan pencarian kata pada query secara berurutan :

   2.1 Lakukan pembacaan dan pengecekan secara berurutan pada puzzle. Periksa apakah huruf pertama kata yang dicari sama dengan huruf yang sedang dibaca.

   2.2 Apabila sama, periksa apakah jumlah huruf pada kata muat/cukup pada arah kiri,kanan,diagonal kiri atas, diagonal kiri bawah, diagonal kanan atas, dan diagonal kiri bawah.

   2.3 Apabila muat/cukup, lakukan pengecekan apakah masing-masing huruf di kata pada arah tersebut bersesuaian

   2.4 Apabila setiap huruf bersesuaian, kata ditemukan pada puzzle

   2.5 Kembali ke langkah 2.1
3. Tampilkan/umumkan hasil terbaik

B. SOURCE CODE PROGRAM

```
#include <iostream>
#include <string>
#include <fstream>
#include <vector>
#include <windows.h>
#include <chrono>

#define BLACK "\x1B[0m"
#define RED "\x1B[31m"
#define GREEN "\x1B[32m"
#define YELLOW "\x1B[33m"
#define BLUE "\x1B[34m"
#define MAGENTA "\x1B[35m"
#define CYAN "\x1B[36m"
using namespace std;
using namespace std::chrono;

struct Letter{
    char alphabet;
    const char * color;
};
void createPuzzle(string fn, vector<vector<Letter>> &puzzle,
vector<string> &query);
const char * generateColor();
bool HorizontalR(vector<vector<Letter>> &puzzle, string keyword, int
x, int y, int &accessCounter);
bool HorizontalL(vector<vector<Letter>> &puzzle, string keyword, int
x, int y, int &accessCounter);
bool VerticalU(vector<vector<Letter>> &puzzle, string keyword, int x,
int y, int &accessCounter);
bool VerticalD(vector<vector<Letter>> &puzzle, string keyword, int x,
int y, int &accessCounter);
bool DiagLRU(vector<vector<Letter>> &puzzle, string keyword, int x,
int y, int &accessCounter);
bool DiagRLU(vector<vector<Letter>> &puzzle, string keyword, int x,
int y, int &accessCounter);
```

```
bool DiagLRD(vector<vector<Letter>> &puzzle, string keyword, int x,
int y, int &accessCounter);
bool DiagRLD(vector<vector<Letter>> &puzzle, string keyword, int x,
int y, int &accessCounter);
void bruteSolution(vector<vector<Letter>> &puzzle, vector<string>
query);
void printPuzzle(vector<vector<Letter>> puzzle);
```

```
int main(){
    vector<vector<Letter>> puzzle;
    vector<string> query;
    string filename;
    cout << "Input filename (<filename>.txt)\n>>";
    getline(cin, filename);
    createPuzzle("..\\test\\"+filename, puzzle, query);

    printPuzzle(puzzle);

    auto start = high_resolution_clock::now();
    bruteSolution(puzzle,query);
    auto stop = high_resolution_clock::now();
    auto duration = duration_cast<microseconds>(stop - start);
    cout << "Waktu eksekusi fungsi: "<< duration.count() << "
microseconds" << endl;
    cout << "\nSolusi :\n";
    printPuzzle(puzzle);

    return  0;

}
```

```
void createPuzzle(string fn, vector<vector<Letter>> &puzzle,
vector<string> &query){
    char component = '-';
    bool isPuzzle = true;
    string myText;
```

```
    ifstream readFile(fn);
    while(isPuzzle){
        vector<Letter> line;
        Letter temp;
        getline(readFile, myText);
        myText = myText + " ";
        if(myText.length() == 1){
            isPuzzle = false;
        }else{
            int row = 0;
            for(auto x : myText){
                int col = 0;
                if (x != ' '){
                    component = x;
                    temp.alphabet = component;
                    temp.color = BLACK;
                    line.push_back(temp);
                }
            }
            puzzle.push_back(line);
        }
    }
    myText = "";
    while(getline(readFile, myText)){
        string readyText;
        //Cleaning data from space symbol
        for(auto x : myText){
            if (x != ' '){
                readyText = readyText + x;
            }
        }
        query.push_back(readyText);
    }
    readFile.close();
}
```

```
const char * generateColor(){
    static int x = -1;
```

```
    vector<const char *> color =
{RED,GREEN,BLUE,YELLOW,MAGENTA,CYAN};
    x += 1;
    return color[(x%6)];
}
```

```
bool HorizontalR(vector<vector<Letter>> &puzzle, string keyword, int
x, int y, int &accessCounter){
    bool comp = true;
    int i = 1;
    int tempy = y+1;
    while(i < keyword.length() && comp){
        accessCounter += 1;
        if(keyword[i] == puzzle[x][tempy].alphabet){
            i += 1;
            tempy += 1;
        }else{
            comp = false;
        }
    }
    if (comp){
        const char * color = generateColor();
        for(i = 0; i < keyword.length(); i++){
            puzzle[x][y+i].color = color;
        }
    }
    return comp;
}
```

```
bool HorizontalL(vector<vector<Letter>> &puzzle, string keyword, int
x, int y, int &accessCounter){
    bool comp = true;
    int i = 1;
    int tempy = y-1;
    while(i < keyword.length() && comp){
        accessCounter += 1;
```

```
        if(keyword[i] == puzzle[x][tempy].alphabet){
            i += 1;
            tempy -= 1;
        }else{
            comp = false;
        }
    }
    if (comp){
        const char * color = generateColor();
        for(i = 0; i < keyword.length(); i++){
            puzzle[x][y-i].color = color;
        }
    }
    return comp;
}
```

```
bool VerticalU(vector<vector<Letter>> &puzzle, string keyword, int x,
int y, int &accessCounter){
    bool comp = true;
    int i = 1;
    int tempx = x-1;
    while(i < keyword.length() && comp){
        accessCounter += 1;
        if(keyword[i] == puzzle[tempx][y].alphabet){
            i += 1;
            tempx -= 1;
        }else{
            comp = false;
        }
    }
    if (comp){
        const char * color = generateColor();
        for(i = 0; i < keyword.length(); i++){
            puzzle[x-i][y].color = color;
        }
    }
    return comp;
}
```

```
bool VerticalD(vector<vector<Letter>> &puzzle, string keyword, int x,
int y, int &accessCounter){
    bool comp = true;
    int i = 1;
    int tempx = x+1;
    while(i < keyword.length() && comp){
        accessCounter += 1;
        if(keyword[i] == puzzle[tempx][y].alphabet){
            i += 1;
            tempx += 1;
        }else{
            comp = false;
        }
    }
    if (comp){
        const char * color = generateColor();
        for(i = 0; i < keyword.length(); i++){
            puzzle[x+i][y].color = color;
        }
    }
    return comp;
}
```

```
bool DiagLRU(vector<vector<Letter>> &puzzle, string keyword, int x,
int y, int &accessCounter){
    bool comp = true;
    int i = 1;
    int tempx = x-1;
    int tempy = y+1;
    while(i < keyword.length() && comp){
        accessCounter += 1;
        if(keyword[i] == puzzle[tempx][tempy].alphabet){
            i += 1;
            tempx -= 1;
            tempy += 1;
        }else{
```

```
            comp = false;
        }
    }
    if (comp){
        const char * color = generateColor();
        for(i = 0; i < keyword.length(); i++){
            puzzle[x-i][y+i].color = color;
        }
    }
    return comp;
}
```

```
bool DiagRLU(vector<vector<Letter>> &puzzle, string keyword, int x,
int y, int &accessCounter){
    bool comp = true;
    int i = 1;
    int tempx = x-1;
    int tempy = y-1;
    while(i < keyword.length() && comp){
        accessCounter += 1;
        if(keyword[i] == puzzle[tempx][tempy].alphabet){
            i += 1;
            tempx -= 1;
            tempy -= 1;
        }else{
            comp = false;
        }
    }
    if (comp){
        const char * color = generateColor();
        for(i = 0; i < keyword.length(); i++){
            puzzle[x-i][y-i].color = color;
        }
    }
    return comp;
}
```

```
bool DiagLRD(vector<vector<Letter>> &puzzle, string keyword, int x,
int y, int &accessCounter){
    bool comp = true;
    int i = 1;
    int tempx = x+1;
    int tempy = y+1;
    while(i < keyword.length() && comp){
        accessCounter += 1;
        if(keyword[i] == puzzle[tempx][tempy].alphabet){
            i += 1;
            tempx += 1;
            tempy += 1;
        }else{
            comp = false;
        }
    }
    if (comp){
        const char * color = generateColor();
        for(i = 0; i < keyword.length(); i++){
            puzzle[x+i][y+i].color = color;
        }
    }
    return comp;
}
```

```
bool DiagRLD(vector<vector<Letter>> &puzzle, string keyword, int x,
int y, int &accessCounter){
    bool comp = true;
    int i = 1;
    int tempx = x+1;
    int tempy = y-1;
    while(i < keyword.length() && comp){
        accessCounter += 1;
        if(keyword[i] == puzzle[tempx][tempy].alphabet){
            i += 1;
            tempx += 1;
            tempy -= 1;
        }else{
```

```
            comp = false;
        }
    }
    if (comp){
        const char * color = generateColor();
        for(i = 0; i < keyword.length(); i++){
            puzzle[x+i][y-i].color = color;
        }
    }
    return comp;
}
```

```
void bruteSolution(vector<vector<Letter>> &puzzle, vector<string>
query){
    int rowSize = puzzle.size();
    int colSize = puzzle[0].size();
    int totalAccess = 0;
    for (auto keyword : query){
        bool found = false;
        int len = keyword.length();
        int accessCounter = 0;
        int i = 0;
        while (i<rowSize && !found){
            int j = 0;
            while (j<colSize && !found){
                accessCounter += 1;
                if(keyword[0] == puzzle[i][j].alphabet){
                    if(j+len <= colSize && !found){
                        found =
HorizontalR(puzzle,keyword,i,j,accessCounter);
                    }
                    if(j-len >= -1 && !found){
                        found =
HorizontalL(puzzle,keyword,i,j,accessCounter);
                    }
                    if(i-len >= -1 && !found){
                        found =
VerticalU(puzzle,keyword,i,j,accessCounter);
```

```
                    }
                    if(i+len <= rowSize && !found){
                        found =
VerticalD(puzzle,keyword,i,j,accessCounter);
                    }
                    if(i-len >= -1 && j+len <= colSize && !found){
                        found =
DiagLRU(puzzle,keyword,i,j,accessCounter);
                    }
                    if(i-len >= -1 && j-len >= -1 && !found){
                        found =
DiagRLU(puzzle,keyword,i,j,accessCounter);
                    }
                    if(i+len <= rowSize && j+len <= colSize &&
!found){
                        found =
DiagLRD(puzzle,keyword,i,j,accessCounter);
                    }
                    if(i+len <= rowSize && j-len >= -1 && !found){
                        found =
DiagRLD(puzzle,keyword,i,j,accessCounter);
                    }
                }
            j+=1;
            }
        i+=1;
        }
        if (found){
            cout << "\"" << keyword << "\"" << "\x1B[32m" << "
ditemukan\n" << "\x1B[0m";
        }else{
            cout << "\"" << keyword << "\"" << "\x1B[31m" << " tidak
ditemukan\n" << "\x1B[0m";
        }
        cout << "\tJumlah perbandingan huruf : " << accessCounter <<
endl;
        totalAccess += accessCounter;
    }
    cout  << "\nJumlah perbandingan keseluruhan : " << totalAccess<<
```

```
endl;
}
```

```
void printPuzzle(vector<vector<Letter>> puzzle){
    for(int i = 0; i<puzzle.size(); i++){
        for(int j = 0; j<puzzle[i].size(); j++){
            //cout << puzzle[i][j].color << puzzle[i][j].alphabet <<
" ";
            printf("%s%c ",
puzzle[i][j].color,puzzle[i][j].alphabet);
        }
        cout << endl;
    }
    cout << endl;
}
```

C. INPUT DAN OUTPUT

Input	Output
test > small-1.txt Q C X P H O P I E W L T D O I A E A J W V I S T N R U M N H M C N E U U O O I E D S H E M U P O I N E R U R U O M R E L T A O I R P S N O Y P F A R A C A D V D L Y O E T Y Z A N X U R H L N M R C V A C C E A L O H M I A H V E T D O M D P M L C Z D S D W R X G F P F H W A E E O Q R K D T H E M D R H E Y W L C G C S N P R E S E N T P R ADDED AMERICA CACHES CORONARY ENDURANCE FLIRTATION FLOUT FOLLOWER HANDSOMEST HORMONE LINEUP MASTERLY PRESENT PRODUCED	Jumlah perbandingan keseluruhan : 1398 Waktu eksekusi fungsi: 7998 microseconds Solusi : Q C X P H O P I E W L T D O I A E A J W V I S T N R U M N H M C N E U U O O I E D S H E M U P O I N E R U R U O M R E L T A O I R P S N O Y P F A R A C A D V D L Y O E T Y Z A N X U R H L N M R C V A C C E A L O H M I A H V E T D O M D P M L C Z D S D W R X G F P F H W A E E O Q R K D T H E M D R H E Y W L C G C S N P R E S E N T P R

test > small-2.txt

```
1   G C O M P L I C I T B T G A
2   D A G L T H I L K V I E K F
3   D T R C T H O D E U H H E W
4   H R S B P F A N B R I S E Z
5   S O A U L S Y R E O R N R S
6   S C M G O E J L A M K A G M
7   A S M O E N D P L S E F U W
8   P E B R P R R X Z A S T K Q
9   R E M A A A S E J A E I M S
10  E R G P C L N I V V R R N C
11  V G Z T I I W J D A F B I G
12  O H N U D N T S J L C T L V
13  C A G R N E V F R O A J E C
14  R O W O A D X E L I H B L O
15  O P X U H Q H L S A W H P H
16  C F O S H Q F A P J L A Z Y
17
18  ALINED
19  ASIATIC
20  CAVERNOUS
21  COMPLICIT
22  DISREGARD
23  ESCORT
24  GARBLED
25  GREEK
26  HANDICAP
27  HARASSING
28  LAVA
29  OVERPASS
30  PHONEME
31  QUARREL
32  RAPTUROUS
33  REALLY
```

```
Jumlah perbandingan keseluruhan : 2262
Waktu eksekusi fungsi: 16999 microseconds

Solusi :
G C O M P L I C I T B T G A
D A G L T H I L K V I E K F
D T R C T H O D E U H H E W
H R S B P F A N B R I S E Z
S O A U L S Y R E O R N R S
S C M G O E J L A M K A G M
A S M O E N D P L S E F U W
P E B R P R R X Z A S T K Q
R E M A A A S E J A E I M S
E R G P C L N I V V R R N C
V G Z T I I W J D A F B I G
O H N U D N T S J L C T L V
C A G R N E V F R O A J E C
R O W O A D X E L I H B L O
O P X U H Q H L S A W H P H
C F O S H Q F A P J L A Z Y
```

test > small-3.txt

```
1  E K U O N F V R R E G R E M E F
2  B O W B S H O W I N G S T F G N
3  W T K S L A D D E R D T I U L H
4  E B N E V E L E J W T N N Z W S
5  P R Z S Y M N F E U K A T I C L
6  O I R S V Z S M R U P H N C S I
7  C T S E I D L O M P K P I C D C
8  K F Y S P Z L J R S J M U G P E
9  V U R F I W R O S H I U I V I D
10 A V I D X A V E A U S I G O B H
11 J E Y J T E N N G R I R T S A M
12 D W G E D D S A D Z W T S Z V L
13 G K X L A V E M I R P P Y K O K
14 T B D O J S N X B S C X J E W Q
15 N L R I E M S D S L O U C H E P
16 B B M E L B A T C E L E S E D I
17 K S J O E F F E T E W N P J F N
18 G Q C T F V E B R I M B M J D R
19
20 AVID
21 AVOWED
22 BRIM
23 BROADNESS
24 COPE
25 EFFETE
26 ELEVEN
27 HAZY
28 KNIFE
29 LADDER
30 MERGER
31 MOLDIEST
32 OBSESSES
33 PRIMEVAL
34 SELECTABLE
35 SHOWINGS
36 SLICED
37 SLOUCH
38 TRIUMPHANT
39 UNAPPROVED
```

```
Jumlah perbandingan keseluruhan : 3337
Waktu eksekusi fungsi: 16000 microseconds

Solusi :
E K U O N F V R R E G R E M E F
B O W B S H O W I N G S T F G N
W T K S L A D D E R D T I U L H
E B N E V E L E J W T N N Z W S
P R Z S Y M N F E U K A T I C L
O I R S V Z S M R U P H N C S I
C T S E I D L O M P K P I C D C
K F Y S P Z L J R S J M U G P E
V U R F I W R O S H I U I V I D
A V I D X A V E A U S I G O B H
J E Y J T E N N G R I R T S A M
D W G E D D S A D Z W T S Z V L
G K X L A V E M I R P P Y K O K
T B D O J S N X B S C X J E W Q
N L R I E M S D S L O U C H E P
B B M E L B A T C E L E S E D I
K S J O E F F E T E W N P J F N
G Q C T F V E B R I M B M J D R
```

test > medium-1.txt

```
V H H B S U E Q C V U O T L A F T G
T H B B B V D P W U Y I O P O J N T
S E G N I R E H D A G G A F M O M C
U P H H R Q Q H A E K N G F R U P M
O W M A G N E T R O N R C H F W K F
R E G O T D O M P M E E T I N G K U
I E E V I T I S N A R T W D D A E L
S U J U M N R R O L T E P A R A P Z
E F N R A P H X I J R K G Z H P Y C
D O B T C L W L T E M B A R R A S S
M D E Q O K N P I V R G E R N D E N
A D R I E H S H S I N F A N T U R F
I C I L D Z Q I O C I R T C E L E A
E D U T I N E L P E L M M C Y Q M Y
O C K P T A J T P B T S B Y I X P Q
W H O Y L R M T O E A R E L P M A S
P S B E S M Y D C C P E O X G O M S
S I Y B F Q Q N A T U R A L I S T G
X X K R N E K R B F L A I R K L R A
M P Z M A W F H I O B S P Y R P V A

ADHERING
ALTO
DESIROUS
EDIT
ELECTRIC
EMBARRASS
FRACAS
GERMINATED
INFANT
LEAD
MAGNETRON
MEETING
NATURALIST
OPPOSITION
PARAPET
PLENITUDE
SAMPLER
THRONG
TRANSITIVE
TURF
```

```
Jumlah perbandingan keseluruhan : 4323
Waktu eksekusi fungsi: 17000 microseconds

Solusi :
V H H B S U E Q C V U O T L A F T G
T H B B B V D P W U Y I O P O J N T
S E G N I R E H D A G G A F M O M C
U P H H R Q Q H A E K N G F R U P M
O W M A G N E T R O N R C H F W K F
R E G O T D O M P M E E T I N G K U
I E E V I T I S N A R T W D D A E L
S U J U M N R R O L T E P A R A P Z
E F N R A P H X I J R K G Z H P Y C
D O B T C L W L T E M B A R R A S S
M D E Q O K N P I V R G E R N D E N
A D R I E H S H S I N F A N T U R F
I C I L D Z Q I O C I R T C E L E A
E D U T I N E L P E L M M C Y Q M Y
O C K P T A J T P B T S B Y I X P Q
W H O Y L R M T O E A R E L P M A S
P S B E S M Y D C C P E O X G O M S
S I Y B F Q Q N A T U R A L I S T G
X X K R N E K R B F L A I R K L R A
M P Z M A W F H I O B S P Y R P V A
```

test > medium-2.txt

```
Q Z X W E X K P Y E C Y Q G F N P A K Q
Y I D U L C I R P D C T N I I X F W O A
L L W E E N D L Y J K I C A S K D H D L
S Y E A K U D S S M R N M R N O Y I E N
K T P M L J X T J U M E G N W X L H O H
O E M E A L D A O S J M P A I N T B H B
V L K E G G O T P L U A E M G W L Y L U
W U J O R B D W H W T X Q X I E C Y B M
R A N D I H J N S P Z R G R N Z F R V J
K P H X T R J Z E C N A R E V E S D W P
K E L W C F A N A C L T S D F C E U J Z
F G T P B X P T U J E S I V O T W B L M
V N Y X N W R S N U B E B U F M S Q R D
A I D Y F N A R C O B V R I H T O G E G
X H G S P A O T J S O T L D O M E O T N
K S Q E M M D S F D E P W M X F U H O V
A I Q X H E U C G O O L P F F T P M L S
U N G I N P U B U H T A O G G V R W D M
X R S S K L N S S N U E X Z X E M C Q L
S U S M R A P B I M M C B T S E R O F R
I F P W V T Y L L A U T I B A H H N O P
A E R H F E Z E V C Q U D B W Q V F C S

ALLOWS
AMENITY
BUMPY
COURTEOUS
ENDGAME
EPAULET
FOREST
FURNISHING
HABITUALLY
NAMEPLATE
NOBLENESS
ONTARIO
PAINT
RETOLD
SEVERANCE
SEXISM
SHOPLIFTED
STOMP
TOURING
VISE
```

```
Jumlah perbandingan keseluruhan : 5943
Waktu eksekusi fungsi: 16000 microseconds

Solusi :
Q Z X W E X K P Y E C Y Q G F N P A K Q
Y I D U L C I R P D C T N I I X F W O A
L L W E E N D L Y J K I C A S K D H D L
S Y E A K U D S S M R N M R N O Y I E N
K T P M L J X T J U M E G N W X L H O H
O E M E A L D A O S J M P A I N T B H B
V L K E G G O T P L U A E M G W L Y L U
W U J O R B D W H W T X Q X I E C Y B M
R A N D I H J N S P Z R G R N Z F R V J
K P H X T R J Z E C N A R E V E S D W P
K E L W C F A N A C L T S D F C E U J Z
F G T P B X P T U J E S I V O T W B L M
V N Y X N W R S N U B E B U F M S Q R D
A I D Y F N A R C O B V R I H T O G E G
X H G S P A O T J S O T L D O M E O T N
K S Q E M M D S F D E P W M X F U H O V
A I Q X H E U C G O O L P F F T P M L S
U N G I N P U B U H T A O G G V R W D M
X R S S K L N S S N U E X Z X E M C Q L
S U S M R A P B I M M C B T S E R O F R
I F P W V T Y L L A U T I B A H H N O P
A E R H F E Z E V C Q U D B W Q V F C S
```

test > medium-3.txt

```
1  W U K R H M O D G I I W X L K B A B A W S Y D U
2  B K O O B K R O W T J E R D B W P S T F V U V R
3  P I K A L U M R O F D O A Z I E P I D R M J L V
4  R T V Y M V C V O J P R B K N Q L Z B P M Z N A
5  R J A R X Z B F W D E S A E O C I G U T D U T Q
6  U H P P S C L H I N B C L V I A C R B X W R A S
7  V F I Z Z J O C H L N B U U T T A M M E I R Y X
8  U B N O M E X S L U E Y M N C X T U B A P T O N
9  Q Z L Q T O A H U E N A R W N I I S U C W U C W
10 H M A Z E R H N E J C O O K U I O O K O I J T C
11 I L P N K E S Z H A S X F R F N N T G L N B D J
12 C N L A J N I R U P D A E J C P X U W U W M K X
13 X V R I C M I G G J U I O Y W E U A I M V A U N
14 F B Z C F T V I H G Z B N B C H L P Y N D E V E
15 O I R S E O I U W T O X L G T O Q L E I R E N P
16 H I L E B L T V H G H S Q T S K I B G D A V B F
17 Z S C L T A L U E Z K G J J E N H J H R G N X W
18 D H E N R U T A A C E N R N A E W S O L I U Y P
19 H I U C X I P T D K E S H A T B H O U I O D E C
20 D L M L O N G M E D B L V B D I R S D L P H R U
21 E V W L W Y E H O E R N L L C E M A K L Z I A Q
22 R T D E E U S F T C H E Z T X B I U M R L Y S W
23 O F E C V C Q C I S G S S X X Z I O U O O I K U
24 Y N F Q S B G T L E B A L S G Z Y M M Y S W F U
25
26 APPLICATION
27 COMPUTER
28 EIGHTH
29 GRADE
30 EXCEL
31 KRASHNER
32 WORKSHEET
33 WORKBOOK
34 SHEET
35 TABS
36 ROW
37 LABEL
38 HEADINGS
39 FUNCTION
40 FORMULA
41 BAR
42 FILL
43 RIGHT
44 DOWN
45 FILE
46 DRAG
47 COLUMN
48 CELL
49 GRID
50 ADDRESS
51 AUTO
52 SUM
53 ACTIVE
```

```
Jumlah perbandingan keseluruhan : 10250
Waktu eksekusi fungsi: 20000 microseconds

Solusi :
W U K R H M O D G I I W X L K B A B A W S Y D U
B K O O B K R O W T J E R D B W P S T F V U V R
P I K A L U M R O F D O A Z I E P I D R M J L V
R T V Y M V C V O J P R B K N Q L Z B P M Z N A
R J A R X Z B F W D E S A E O C I G U T D U T Q
U H P P S C L H I N B C L V I A C R B X W R A S
V F I Z Z J O C H L N B U U T T A M M E I R Y X
U B N O M E X S L U E Y M N C X T U B A P T O N
Q Z L Q T O A H U E N A R W N I I S U C W U C W
H M A Z E R H N E J C O O K U I O O K O I J T C
I L P N K E S Z H A S X F R F N N T G L N B D J
C N L A J N I R U P D A E J C P X U W U W M K X
X V R I C M I G G J U I O Y W E U A I M V A U N
F B Z C F T V I H G Z B N B C H L P Y N D E V E
O I R S E O I U W T O X L G T O Q L E I R E N P
H I L E B L T V H G H S Q T S K I B G D A V B F
Z S C L T A L U E Z K G J J E N H J H R G N X W
D H E N R U T A A C E N R N A E W S O L I U Y P
H I U C X I P T D K E S H A T B H O U I O D E C
D L M L O N G M E D B L V B D I R S D L P H R U
E V W L W Y E H O E R N L L C E M A K L Z I A Q
R T D E E U S F T C H E Z T X B I U M R L Y S W
O F E C V C Q C I S G S S X X Z I O U O O I K U
Y N F Q S B G T L E B A L S G Z Y M M Y S W F U
```

test > large-1.txt

```
YYZFDWHLXNJVOLDYDEMPUGYZGMIVNI
ROPYBICITNEHTUAOMIZCZOLNNNBODX
CPKIOMXAAFHJYEDCNLORGBCDTMZYBP
DMFMKNSPEEHLQQLERIFLHWQFBFRQKY
QWFLFPZCOORXCEHEPSNOSFANUNASAO
KXVRMZMFVEXGSDBJCDGJHOGABGYQBV
XPXSZUANVDRJOWDAUAMNRECSYCLSCQ
JMOBDVPELIGVCNWHSNRINSVAXDENLT
RQVOTZLWAAEEDATSHKFBFAQBOQXSOG
WGBPMCDNCQIRPRBGRTEOBQHLUBACGU
FNZOINIPYPWDCNYIMTBTIDKIQPYESE
JKYHFXMRFZFQNZHTURMNFVOXCUXBDI
HVJRVVZOCFPESUOKENUBIUNOOKZWZL
VAOULGGFTMMJSASUGNNZSFLYSUOEXV
EEWNPCJFUBWAEVYDEUYXEDFUMDUATM
UVIJYTFETFASNIWCOMMKEOYUYCESJQ
QSKHUKARUUOEFSDPQPARBHSNMNAPGF
XFZZUUFSBLZKALGVEIONUJKRVSAMUJ
ODVDRNVXCNAAEYRSRFPLAEJATBGCXO
SOGASVBSKMVHDCSFKFRZITMNDACZUC
JEWLPMIIZIQTRGZIOSYMYTEYFRTFEC
EWBUWDMNAFKIEDDKZKOEIIIRGABQIZ
SMOUIVYJRSLQYPGSCHZQGSUCIXRBLH
YSENSOGBWYEQTOWVSCEZBOBNIMNWIE
EKBSCBFTVBFDSKENZPYFINRMIZRCMC
MGWGYKFKMYBPKXXPZVTIMETHUSEJZS
YFOIMPISHPEWECLGEYCLHDKFMNGJWF
KYFXCYALJRTSNHZKELUOURVXSNAZMA
DDSDIXJLIKAQENOTSDNASBKPEOUBTX
DBJJHSYXTCOWIVALUIFSYYUCOOLRLA
NMKMBKCZZGYNZKQCHRYMUXJXERYMRE
GFCRYPTICFKPAYTRCMYJEROMBVPRNH

ARABS
AUTHENTIC
BASKETFUL
BRACELET
CLEVERLY
CLOGS
COLDER
CRYPTIC
DEAFNESS
DISCLOSE
EMANATE
HERNIA
IMPISH
JETTISONED
MILIEUX
MUFFIN
OBSEQUIOUS
PAIL
POLITICIZE
PROFFERS
SANDSTONE
SUNDIAL
UNABLE
UNBIASED
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Jumlah perbandingan keseluruhan : 14716
Waktu eksekusi fungsi: 19000 microseconds

Solusi :
YYZFDWHLXNJVOLDYDEMPUGYZGMIVNI
ROPYBICITNEHTUAOMIZCZOLNNNBODX
CPKIOMXAAFHJYEDCNLORGBCDTMZYBP
DMFMKNSPEEHLQQLERIFLHWQFBFRQKY
QWFLFPZCOORXCEHEPSNOSFANUNASAO
KXVRMZMFVEXGSDBJCDGJHOGABGYQBV
XPXSZUANVDRJOWDAUAMNRECSYCLSCQ
JMOBDVPELIGVCNWHSNRINSVAXDENLT
RQVOTZLWAAEEDATSHKFBFAQBOQXSOG
WGBPMCDNCQIRPRBGRTEOBQHLUBACGU
FNZOINIPYPWDCNYIMTBTIDKIQPYESE
JKYHFXMRFZFQNZHTURMNFVOXCUXBDI
HVJRVVZOCFPESUOKENUBIUNOOKZWZL
VAOULGGFTMMJSASUGNNZSFLYSUOEXV
EEWNPCJFUBWAEVYDEUYXEDFUMDUATM
UVIJYTFETFASNIWCOMMKEOYUYCESJQ
QSKHUKARUUOEFSDPQPARBHSNMNAPGF
XFZZUUFSBLZKALGVEIONUJKRVSAMUJ
ODVDRNVXCNAAEYRSRFPLAEJATBGCXO
SOGASVBSKMVHDCSFKFRZITMNDACZUC
JEWLPMIIZIQTRGZIOSYMYTEYFRTFEC
EWBUWDMNAFKIEDDKZKOEIIIRGABQIZ
SMOUIVYJRSLQYPGSCHZQGSUCIXRBLH
YSENSOGBWYEQTOWVSCEZBOBNIMNWIE
EKBSCBFTVBFDSKENZPYFINRMIZRCMC
MGWGYKFKMYBPKXXPZVTIMETHUSEJZS
YFOIMPISHPEWECLGEYCLHDKFMNGJWF
KYFXCYALJRTSNHZKELUOURVXSNAZMA
DDSDIXJLIKAQENOTSDNASBKPEOUBTX
DBJJHSYXTCOWIVALUIFSYYUCOOLRLA
NMKMBKCZZGYNZKQCHRYMUXJXERYMRE
GFCRYPTICFKPAYTRCMYJEROMBVPRNH
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test > large-2.txt

```
1  Q J Z G G W M T P C O I I J C I U A H Y D M P A O M X K R Y Z I
2  G I B C O R N E R E D S C H S N N D X V U I C Q B R V H K C W Q
3  Q T M M N Z I I S R H H C I P O R T R G Z I D H O J C L M P M M
4  E S J Q I W V J L M P C P R Z R B L Z Z B J G L Q Q U G X I M F
5  H N B V R G B K X D L V C M T A P F A X W T J C T W I N K Y D A
6  M S F M E V V K A U M F C P E C S Z T N U T E T P D C I A V V Z
7  B Q W Y U Q W P T X C O C W T A Z O N D T O L Z Z J K M D Q Z A
8  R L I M T N P R Q T O R E P R M T U K L Q Z H N Y N N U F J Q M
9  K O N G O D P V Z O X X O N C D D E T R O B A V K Q R H K C A H
10 M V C D B F D I O R K B V U K V K F V Q Z O G B X U Y X E U B Q
11 P L B P I P W D I U V H J C C Q F L A J I H J N C B G E Y V N Q
12 O J J S S E N I S O N H G A D H X C B V B T W M T U Q M U F Q K
13 B X Q K M V A N Q E P O H A D Z I A C A O A E M W T C N H Z V I
14 H Y H D A A P G W H I O I O D R L N S O N R H Z H W D S X O V J
15 C M K H O O Y X Z D L Q W D Q L J K G Q O C E T S F T R A Z F F
16 Y N B Q K E A O K A U X K G U F I V I R N M C D O H C B O P W L
17 D L R K K V R W R A H E A V E N L Y M T S R O T A L U S N I S Y
18 H B N T R L T P R A G Q I G G E U A D S E L H Q H B H F C M D I
19 I I B O W Q S C P N L W S T A U N C H S N A N K G M D J E N G H
20 L A O K H J K G I F Y T J N E K A L P E S R Y R E L L N D W T X
21 Y F I R E V P L K Y I A Q U Q U G H K N E K D L U C I S E F R T
22 F I M Z K I L H I G O B P F I H S Q J I Z W U A N A Q Y I D T T
23 A A Z W I O J R P N R W P P S V N Y G P F M U H L Z W B K S G M
24 X H R D R A H L V G J Y R D W A T A E M H A E L E V A T O R I Z
25 A N M T U J E S I N E C W I O A V Y N U A J R V E C F Y O X K K
26 G U A R X W Y K K F A N Q A A V G Q S L H O N N D A E O F Q U Q
27 J P B Q C C U F L H D J G I Z J G F L L R Y X Y X S V B L Y F E
28 B G D S T J C X C S N E D P N T D Q D P N R W Z L E C R I L D Y
29 I J H F X G N F I Z L B J M B B S D Y T W B R H D S W B F H F H
30 V C M S Y X G K V J T H X Z U H C Y L B I S S O P P U V F Y D C
31 U T G F J J G E M S C T D J S D I S E A S E M D I K P H X K U R
32 Q L T J W W S U E G N I R E G N I L X S H N I L N F E K Y B N X
33 W S N I W I N Y H J X S C M D O W P G E M Y O W X N Y Q A P B Y
34 U Q P X X K S I G O F R D T J Q I R G T Q Z K W E V C G Y V J Y
35
36 ABORTED
37 ALOHA
38 BASKING
39 CORNERED
40 CROUCHING
41 DISEASE
42 ELEVATOR
43 EXHUMING
44 FAVORED
45 GROOVED
46 HEAVENLY
47 INSULATOR
48 LINGERING
49 LUMPINESS
50 MACARONI
51 MAYORAL
52 MENIAL
53 NAGS
54 NONSENSE
55 NOSINESS
56 ONLY
57 PATROLLING
58 PIZZAZZ
59 POSSIBLY
60 STAUNCH
61 TAWDRY
62 TROPIC
63 VERIFY
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Jumlah perbandingan keseluruhan : 18257
Waktu eksekusi fungsi: 22000 microseconds

Solusi :
Q J Z G G W M T P C O I I J C I U A H Y D M P A O M X K R Y Z I
G I B C O R N E R E D S C H S N N D X V U I C Q B R V H K C W Q
Q T M M N Z I I S R H H C I P O R T R G Z I D H O J C L M P M M
E S J Q I W V J L M P C P R Z R B L Z Z B J G L Q Q U G X I M F
H N B V R G B K X D L V C M T A P F A X W T J C T W I N K Y D A
M S F M E V V K A U M F C P E C S Z T N U T E T P D C I A V V Z
B Q W Y U Q W P T X C O C W T A Z O N D T O L Z Z J K M D Q Z A
R L I M T N P R Q T O R E P R M T U K L Q Z H N Y N N U F J Q M
K O N G O D P V Z O X X O N C D D E T R O B A V K Q R H K C A H
M V C D B F D I O R K B V U K V K F V Q Z O G B X U Y X E U B Q
P L B P I P W D I U V H J C C Q F L A J I H J N C B G E Y V N Q
O J J S S E N I S O N H G A D H X C B V B T W M T U Q M U F Q K
B X Q K M V A N Q E P O H A D Z I A C A O A E M W T C N H Z V I
H Y H D A A P G W H I O I O D R L N S O N R H Z H W D S X O V J
C M K H O O Y X Z D L Q W D Q L J K G Q O C E T S F T R A Z F F
Y N B Q K E A O K A U X K G U F I V I R N M C D O H C B O P W L
D L R K K V R W R A H E A V E N L Y M T S R O T A L U S N I S Y
H B N T R L T P R A G Q I G G E U A D S E L H Q H B H F C M D I
I I B O W Q S C P N L W S T A U N C H S N A N K G M D J E N G H
L A O K H J K G I F Y T J N E K A L P E S R Y R E L L N D W T X
Y F I R E V P L K Y I A Q U Q U G H K N E K D L U C I S E F R T
F I M Z K I L H I G O B P F I H S Q J I Z W U A N A Q Y I D T T
A A Z W I O J R P N R W P P S V N Y G P F M U H L Z W B K S G M
X H R D R A H L V G J Y R D W A T A E M H A E L E V A T O R I Z
A N M T U J E S I N E C W I O A V Y N U A J R V E C F Y O X K K
G U A R X W Y K K F A N Q A A V G Q S L H O N N D A E O F Q U Q
J P B Q C C U F L H D J G I Z J G F L L R Y X Y X S V B L Y F E
B G D S T J C X C S N E D P N T D Q D P N R W Z L E C R I L D Y
I J H F X G N F I Z L B J M B B S D Y T W B R H D S W B F H F H
V C M S Y X G K V J T H X Z U H C Y L B I S S O P P U V F Y D C
U T G F J J G E M S C T D J S D I S E A S E M D I K P H X K U R
Q L T J W W S U E G N I R E G N I L X S H N I L N F E K Y B N X
W S N I W I N Y H J X S C M D O W P G E M Y O W X N Y Q A P B Y
U Q P X X K S I G O F R D T J Q I R G T Q Z K W E V C G Y V J Y
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test > large-3.txt

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B Q N W I Q W A L R E G P O B C L I V J I C A H E C G A Z H E J S E
W A B T A Y B K E C G O O L P S F A C I R C U M V E N T X T D Z Q G
R F Z B Y T E S O F N Z P P L D Q T Y O P E X T O L L E D V J Y E S
Q J V M R R L U F T C A T C O W G H U T U E F L G F O P E O F R S Q
B L O O J D X H O V K D W K C W B V Y M K F G X X T A F V D N O X T
M W Z E Z H I O U Z K O Q H K V Z J I V D P I V K Q O G O M U C W F
P X I G O M N Q L E K G X S S Y F Z V W B V J Z K C K B M Z N C B C
A B H A J E U A X V I V T I L N Q V U G O S V A D T E W C Q U Y R Q
S V L B T N T O Q I K J Y Y W T N N Y A O R H Y F E O Q O E C C C T
O C Y B F A T K I T U C T C K B X I I Q V W U J V L I W V G Y H V B
U Y W I Y X G D J C A L F Q W L M D U E L O S L B W H B S R S A P C
X N O R R A F K T E R R I F I E D W Z E X U I H V S D O V U V G Q A
H T X C G X F R J J T E L A O I A G K K U U S D W X L A P P A P Q S
U I F Y K R C H I B K A U T F N X T Y B D L L Y A A F P S A K P Q L
B T H A V T S N W O L P E E L O O C H H J C B T R N R P N H U F A W
T R K U J R L A M J V S Y D A J T B Y E E W P F E E C B L X V I I N
H A U E O I I K S K C M O R K N N Z I O R C U L S D K E M P T P D U
P H G Y Q X O Y A X T H L M E G P U O B O M U S B S Z G R S P X R B
E S I L N N X Y H F D L O M O Y W H J G S Q E V H E R M E T I C V X
C Z S B V C F S C S Z M A O N E B E P P E D Q N H D O L X K B H K Q
F B Z Y T V Q Y J A B N O U X B Z U T A U J L R G S E D Z L H Q G V
V D B C D U Z N A M R O N T T R H Y T N I A T R E C L L E Y L F T G
T Q O W X F Q Q V U G V N H U F F V G W G I T L J B F B C A C Z J X
Z C U B V T H U O B M B I F M R O F R J F A H X U O Y D O Y R J Z B
E K J X R G E T W Y F A D U U U J B D M D G R G V E N R L Y C Z V P
V L Y N I B X N E O N S K L Y A G T J F J N E A N E X H W J R I E I
A T Z R B B O D D G P O I B I M Z X V W S D A X T C E C S C Q T B F
M C T K U K W S Z O A M M V Y C H C S E N S O R J I Y L Y H A R J R
H M K R F J G S Q D N I K E C Q G K V Q Q Y M A Y T P O X G C H S Q
O U A R M O G X E E F M F I G N U P N J M X S N E N P Z I C A P L B
Z W A H C A W S V M N W T S N E O C X A I Z J J W E J T W R V U Z M
N R E K H N D F P U N E I P X V H Y V Q Z H I L B V G W R U O F N N
U Z H N C Y K W K S R H M A J V T A I K R K I G S L I P U P E N T Z
W L W X P G R V K E G Z N W P O L Z B O P I K E X T T S E X P W H N
Z R B E L W J A H R K T G X U E A R R W E R L P J B K H U D Q D N Q
X U O M Z B C R P I N S R A P X J W N K C D Z T Z Y E N K D K B N Z
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ALTHOUGH
AVOIDANCE
BICYCLED
BYTE
CALF
CELESTIAL
CERTAINTY
CIRCUMVENT
CRIBBAGE
ENTICE
EROSE
EXTOLLED
EXULTED
FATED
HAGS
HEGEMONY
HERETIC
HERMETIC
HUFF
INNS
LOCKS
MIMOSA
MOUTHFUL
NORMAN
OBJECTIVE
PARSNIP
PIKE
PONTOON
PUPIL
PURGE
REAPS
RESUMED
SENSOR
SOLAR
SUPPRESSED
TACTFUL
TENDON
TERRIFIED
TOURNAMENT
WEATHERMEN

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Jumlah perbandingan keseluruhan : 31212
Waktu eksekusi fungsi: 37001 microseconds

Solusi :
B Q N W I Q W A L R E G P O B C L I V J I C A H E C G A Z H E J S E
W A B T A Y B K E C G O O L P S F A C I R C U M V E N T X T D Z Q G
R F Z B Y T E S O F N Z P P L D Q T Y O P E X T O L L E D V J Y E S
Q J V M R R L U F T C A T C O W G H U T U E F L G F O P E O F R S Q
B L O O J D X H O V K D W K C W B V Y M K F G X X T A F V D N O X T
M W Z E Z H I O U Z K O Q H K V Z J I V D P I V K Q O G O M U C W F
P X I G O M N Q L E K G X S S Y F Z V W B V J Z K C K B M Z N C B C
A B H A J E U A X V I V T I L N Q V U G O S V A D T E W C Q U Y R Q
S V L B T N T O Q I K J Y Y W T N N Y A O R H Y F E O Q O E C C C T
O C Y B F A T K I T U C T C K B X I I Q V W U J V L I W V G Y H V B
U Y W I Y X G D J C A L F Q W L M D U E L O S L B W H B S R S A P C
X N O R R A F K T E R R I F I E D W Z E X U I H V S D O V U V G Q A
H T X C G X F R J J T E L A O I A G K K U U S D W X L A P P A P Q S
U I F Y K R C H I B K A U T F N X T Y B D L L Y A A F P S A K P Q L
B T H A V T S N W O L P E E L O O C H H J C B T R N R P N H U F A W
T R K U J R L A M J V S Y D A J T B Y E E W P F E E C B L X V I I N
H A U E O I I K S K C M O R K N N Z I O R C U L S D K E M P T P D U
P H G Y Q X O Y A X T H L M E G P U O B O M U S B S Z G R S P X R B
E S I L N N X Y H F D L O M O Y W H J G S Q E V H E R M E T I C V X
C Z S B V C F S C S Z M A O N E B E P P E D Q N H D O L X K B H K Q
F B Z Y T V Q Y J A B N O U X B Z U T A U J L R G S E D Z L H Q G V
V D B C D U Z N A M R O N T T R H Y T N I A T R E C L L E Y L F T G
T Q O W X F Q Q V U G V N H U F F V G W G I T L J B F B C A C Z J X
Z C U B V T H U O B M B I F M R O F R J F A H X U O Y D O Y R J Z B
E K J X R G E T W Y F A D U U U J B D M D G R G V E N R L Y C Z V P
V L Y N I B X N E O N S K L Y A G T J F J N E A N E X H W J R I E I
A T Z R B B O D D G P O I B I M Z X V W S D A X T C E C S C Q T B F
M C T K U K W S Z O A M M V Y C H C S E N S O R J I Y L Y H A R J R
H M K R F J G S Q D N I K E C Q G K V Q Q Y M A Y T P O X G C H S Q
O U A R M O G X E E F M F I G N U P N J M X S N E N P Z I C A P L B
Z W A H C A W S V M N W T S N E O C X A I Z J J W E J T W R V U Z M
N R E K H N D F P U N E I P X V H Y V Q Z H I L B V G W R U O F N N
U Z H N C Y K W K S R H M A J V T A I K R K I G S L I P U P E N T Z
W L W X P G R V K E G Z N W P O L Z B O P I K E X T T S E X P W H N
Z R B E L W J A H R K T G X U E A R R W E R L P J B K H U D Q D N Q
X U O M Z B C R P I N S R A P X J W N K C D Z T Z Y E N K D K B N Z
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D. GITHUB

https://github.com/ghebyon/Tucil01-Stima

E. PENILAIAN MANDIRI

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	✓	